

Assessing the Effectiveness of Educational Training on Pain Management Techniques for Intrauterine Device Insertion

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**Assessing the Effectiveness of Educational Training on Pain Management Techniques for
Intrauterine Device Insertion**

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Abstract

Background: Women are frequently not being adequately treated for pain with intrauterine device (IUD) placement, which is an invasive, often painful procedure. Healthcare providers are not consistently utilizing the most effective pain management techniques that are available to implement during the procedure. This DNP project aims to provide educational training on effective pain management strategies to utilize during IUD placement for healthcare providers. Providing education of these methods may improve future utilization of pain management techniques while also improving the experience for both patients and providers.

Methods: An evidence-based 20-minute audio-visual presentation was created to review non-pharmacologic and pharmacologic pain management techniques to use during IUD insertion. The presentation was delivered to healthcare providers at an Obstetrics and Gynecology (OBGYN) office network. Pre- and post-intervention surveys were delivered with the presentation to determine the change in knowledge and attitudes towards IUD placement. Open response questions were included in the post-intervention survey to gather additional data.

Results: Providers attitudes and knowledge towards various pain management strategies improved after the educational presentation. Providers expressed willingness to potentially change their pain management practices based on the education and also identified barriers to implementing change.

Conclusion: There are a variety of effective pain management techniques that are available for IUD insertion, that are often being underutilized in current practice. Educational training on these techniques helps to expand knowledge of effective pain management strategies, while also inspiring future practice changes among providers placing IUDs.

Keywords: intrauterine device, IUD, pain, pain management

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Introduction

The risk of improper pain management among women undergoing intrauterine device (IUD) placement is indicated by patients' fears of IUD procedure and results from a knowledge deficit among healthcare providers of appropriate and effective pain management techniques available (Akdemir & Karadeniz, 2019). This creates unnecessary fear and anxiety surrounding IUD placement, a safe and beneficial contraceptive method that should be accessible to all women (American College of Gynecology [ACOG], 2017). Currently, there is no standard of care for pain management in women undergoing IUD placement (Curtis et al., 2024).

The purpose of this project was to assess the effectiveness of educational training of pain management techniques for healthcare providers to utilize during IUD insertion. This project used pre- and post-surveys to assess providers' knowledge and attitudes of IUD pain management techniques and included an evidence-based audio-visual presentation of various pain strategies available to implement. The project aimed to improve healthcare provider knowledge of the most effective pain management strategies that are available to use during IUD insertion for their patients. The project also explored areas of opportunity for future practice, and strategies to address barriers to care when it comes to pain management with IUD insertion.

Background

Intrauterine devices are the most effective long-acting reversible contraceptives available for women in healthcare today (Apter, 2019; Samey et al., 2019). Intrauterine devices are highly preferred by patients due to their high efficacy and low maintenance, however, pain during the procedure is often a major deterrent to using this contraceptive method (Samey et al.,

2019). Practice recommendations for contraceptive use, previously unrevised for eight years, were revised by the Center for Disease Control and Prevention (CDC) in August 2024 (Curtis et al., 2024). Important suggestions surrounding contraception management were highlighted. These included evidence-based knowledge of both effective and ineffective pain management methods for IUD insertion and the importance of approaching contraceptive management on an individualized basis with each patient (Curtis et al., 2024).

There are a multitude of factors that may contribute to or exacerbate the pain experienced by women during IUD placement. There is a strong correlation between anxiety and pain that must first be understood. Women who have higher pre-procedure anxiety, including an anxiety disorder, experience worse pain during an IUD procedure (Akdemir & Karadeniz, 2019; Perez-Lopez et al., 2018). Anxious women may have had a prior painful experience such as an uncomfortable examination, whereas other women who have had a painless vaginal birth, may have fewer anxieties before the procedure (Perez- Lopez et al., 2018). Women who are nulliparous, have dysmenorrhea, or have not had the procedure previously may also have a greater pain experience than other women (Perez-Lopez et al., 2018). It is imperative to remember that the experience of IUD placement is unique to each person (Curtis et al., 2024). Addressing anxieties before the procedure may be a significant factor in also reducing the pain experience (Akdemir & Karadeniz, 2019).

While a variety of pharmacologic strategies have been studied for IUD placement, many have been found to be ineffective or underutilized by healthcare providers (Akdemir & Karadeniz, 2019). Studies have found that the most recommended and utilized pharmacologic measures are the least effective at treating pain (Akdemir & Karadeniz, 2019; Curtis et al., 2024). New pharmacologic techniques are available that may adequately treat pain for the

patient, however, some require further research into their efficacy. In addition, it is important to recognize the role of non-pharmacologic pain management strategies that may also be effective at reducing pain for some women. Improving healthcare providers' knowledge of these strategies may increase the use of these methods and in turn improve the experience for both patients and providers during IUD placement (Strasser et al., 2023).

Problem Statement

Concern over pain during IUD placement remains a primary barrier to use among patients, especially those who are nulliparous, or have pre-existing depression or anxiety (Curtis et al., 2024). Failure to adequately address pain on an individualized basis, may prevent use of this contraceptive method, leading to a gap in contraceptive care for women worldwide (Callahan et al., 2019). Currently, what is most often used in practice and what has been shown to be most effective at treating pain during IUD insertion differs greatly. This DNP project assessed the current knowledge and attitudes toward pain management in IUD placement among healthcare providers. It attempted to improve knowledge of both pharmacologic and non-pharmacologic therapies that can be utilized to enhance patient care, while also encouraging providers to express barriers that currently exist.

Organizational “Gap” Analysis

Only half of primary care providers feel comfortable prescribing contraception and only 20% feel comfortable placing IUDs (Strasser et al, 2023). Fear of causing pain during the procedure may prevent many healthcare providers from prescribing this contraceptive method (Strasser et al, 2023). Pain is overwhelmingly the most reported reason why women choose not to have an IUD placed initially or have an IUD placed again in the future (Callahan et al., 2019). In addition, many providers are utilizing outdated or ineffective pain management

strategies currently in practice, due to a lack of knowledge of new and effective pain management methods (Callahan et al., 2019; Strasser et al., 2023). As previously stated, in August 2024, the CDC published new practice recommendations for contraceptive use which highlighted important practice changes, including guidelines for pain management with intrauterine contraception (Curtis et al., 2024).

Review of the Literature

The review of literature included a search of CINAHL and PubMed to identify research studies relevant to the topic. The initial search of CINAHL used the search terms “*intrauterine device or iud or icd or intrauterine contraceptive device and pain management or pain relief or pain control or pain reduction.*” This yielded 174 results. The search parameters were narrowed to include articles published in academic journals between 2018 and 2023. The results were then narrowed to include only journals in English. This yielded 51 results. A search of PubMed used the search term “*pain intrauterine device insertion,*” which yielded 971 results. The search parameters were narrowed to include systematic reviews and randomized control trials that were published between 2018 and 2023 in English. This yielded 47 results. After screening for duplicates, there were 44 articles to review. Fifteen articles were excluded due to non-relevance to the topic, including articles discussing endometriosis pain or menstruation pain. Of the 29 remaining articles, 14 were excluded due to repetitive topics of research. For example, there were multiple studies reviewing paracervical blocks and the use of lidocaine, so after previewing the abstracts, the most relevant article(s) were chosen on that specific pain management option. This yielded 15 results gathered between PubMed and CINAHL, which were then organized via a matrix for the literature review (See Appendix B).

Findings

The review of the literature revealed there are many available options for pain management with IUD insertion, with mixed outcomes on their efficacy (Conti et al., 2019; Pérez-López et al., 2018; Samy et al., 2019). In general, the goals of the studies were to decrease pain and, in some studies, anxiety, before, during, and after IUD insertion (Akdemir et al., 2019; Nguyen et al., 2020). The studies focused on understanding whether certain pain management techniques effectively helped to reduce pain, and which strategies, including both pharmacologic and non-pharmacologic were most effective (Conti et al., 2019; De Nadai et al., 2020; Hunter et al., 2020; Perez- Lopez et al., 2018; Samy et al., 2019). Other studies assessed supplemental resources used to improve insertion technique such as video assistance or ultrasound (Baradwan et al., 2022; Eric et al., 2019). Three of the articles reviewed perspectives of whether patients would choose to receive an IUD again after their initial placement and the reasons behind their choice (Akdemir et al., 2019; Callahan et al., 2019; Hunter et al., 2020). Of note, there was an overall high level of satisfaction with the efficacy and low maintenance of this long-acting contraceptive method, despite the intraprocedural pain (Callahan et al., 2019).

The majority of studies used surveys to measure pain scores or perspectives of anxiety with or without use of a pain management technique including paracervical lidocaine block and nitrous oxide (Conti et al., 2019; De Nadai et al., 2020; Fowler et al., 2022; Hunter et al., 2019; Perez- Lopez et al., 2018; Samy et al., 2019). Two studies used interviews as the method to understand physicians' perspectives on the quality of placement during IUD insertion with various assistive devices, for example, ultrasound-guided placement (Apter, 2019; Baradwan et al., 2022). Two of the articles included in this literature review were not randomized control trials or systematic reviews, but were expert opinions (Hillard, 2019; McCarthy,

2018). However, they were relevant to incorporate as they gave clinical knowledge surrounding IUD insertion with guidelines that may be used to improve the patient and provider experience.

Several studies reported limitations of generalizability in their results due to the subjects primarily being White or due to only evaluating either parous or nulliparous women in their research (Conti et al., 2019; De Nadai et al., 2020; Fowler et al., 2022). Only one study addressed race and ethnicity as a potential predictor of pain, reporting that Black or African American participants had the highest anticipated pain scores before IUD insertion (Hunter et al., 2020). While this project aimed to address IUD pain management for all patients, regardless of race, it is important to understand that ethnic minority groups may be at higher risk for inadequate pain management in current practice. Hunter et al. (2020) suggested that future research may look to address the gap in literature among Black and ethnic minority groups with IUD pain management in order to have a comprehensive understanding of this problem.

The number of participants in the reviews varied, some with very large population groups, and some with small focus groups (Akdemir & Karadeniz, 2019; Callahan et al., 2019; Conti et al., 2019; De Nadai et al., 2020; Eric et al., 2019; Fowler et al., 2022; Hunter et al., 2020; Nguyen et al., 2020; Perez- Lopez et al., 2018; Samy et al., 2018). Three of the studies had less than 100 subjects (Callahan et al., 2019; Fowler et al., 2022; Hunter et al., 2020), four of the studies had between 100-400 subjects (Akdemir & Karadeniz, 2019; Conti et al., 2019; De Nadai et al., 2020; Eric et al., 2019), and three of the studies had greater than 1000 subjects (Nguyen et al., 2020; Perez- Lopez et al., 2018; Samy et al., 2018).

Of the 4 systematic reviews, between 11 and 38 sources were included (Baradwan et al., 2022; Nguyen et al., 2020; Perez- Lopez et al., 2018; Samy et al., 2018). Six of the studies were randomized control trials (Akdemir & Karadeniz, 2019; Callahan et al., 2019; Conti et al., 2019;

De Nadai et al., 2020; Eric et al., 2019; Fowler et al., 2022). The majority of studies used a quasi-experimental design (Akdemir & Karadeniz, 2019; Callahan et al., 2019; Conti et al., 2019; Eric et al., 2019), however, two of the studies used an experimental design in their research (De Nadai et al., 2020; Fowler et al., 2022).

Pharmacologic Techniques

Although there are a wide variety of pain management therapies, the results from this literature review demonstrated that providing a form of pain relief before the procedure did help to decrease pain during IUD insertion (De Nadai et al., 2020; Pérez-López et al., 2018; Samy et al., 2019). Lidocaine was the most widely studied pharmacological technique and was delivered in a variety of routes in four of the studies (Conti et al., 2019; De Nadai et al., 2020; Perez-Lopez et al., 2018; Samy et al., 2018). Paracervical blocks utilizing lidocaine as well as topical genital applications of lidocaine were broadly studied, each with varied levels of efficacy (Conti et al., 2019; De Nadai et al., 2020; Samy et al., 2018). One study found lidocaine to be ineffective (Conti et al, 2019) while others found it to be moderately effective (De Nadai et al., 2020; Samy et al., 2018). One study found highly variable results among participants depending on the method of delivery, including increased pain with the use of a needle during intracervical lidocaine administration, and overall lack of benefit of topical lidocaine application (Perez-Lopez et al., 2018). Each of the studies discussing the utilization of lidocaine noted the importance of further research via different administration routes to understand its efficacy fully (Conti et al., 2019; De Nadai et al., 2020; Pérez-López et al., 2018; Samy et al., 2019).

Paracervical blocks work to block pain transmission before the uterus at the cervical os and were found to be the superior method for delivering pain therapy (Samy et al., 2019). While using paracervical block provided the most optimal pain relief, this method requires proper

training of the provider to ensure adequate delivery (Curtis et al., 2024; De Nadai et al., 2020; Pérez-López et al., 2018; Samy et al., 2019).

Genital administration of lidocaine was found to be effective in some studies (Conti et al., 2019; Samy et al., 2019), however, others did not find it to be effective (De Nadai et al., 2020; Pérez-López et al., 2018;). Lidocaine in combination with procaine was shown to be the most effective measure in reducing pain during tenaculum placement and during IUD insertion (Pérez-López et al., 2018, Samy et al., 2019). Lidocaine was the next most effective pain management strategy when injected paracervically (Samy et al., 2019). There remains much unknown about the efficacy and utilization of lidocaine independently and in combination with procaine for pain management during IUD placement. However, initial studies have shown promising results in the effectiveness of this drug (De Nadai et al., 2020; Pérez-López et al., 2018; Samy et al., 2019).

Intracervical misoprostol and oral nonsteroidal anti-inflammatory drugs (NSAIDs) were overall not found effective at decreasing pain, which is currently the most widely used pain management approach (Curtis et al., 2024; Samy et al., 2019). Ketorolac had the most analgesic effect of all of the NSAIDs, however still provided suboptimal pain relief during insertion compared to other therapies (Samy et al., 2019). Misoprostol as a cervical ripening agent was previously used by providers to attempt to reduce pain, however, has now been shown to be the least effective pharmacologic intervention and should not be routinely administered to patients (Curtis et al., 2024; Samy et al., 2019). Misoprostol has not been shown to reduce pain, adverse events, or ease provider placement, and in some cases has been shown to worsen abdominal pain prior to the procedure (Curtis et al., 2024). Misoprostol is now only recommended in select circumstances, such as recently failed IUD placement (Curtis et al., 2024).

Less invasive pharmacological measures such as nitrous oxide were discussed in two of the studies, which provided adequate pain control and increased patient satisfaction with IUD placement (Fowler et al., 2022; Nguyen et al., 2020). Nitrous oxide has both amnesia and anxiolysis properties, which helps to address both pain and anxiety during IUD procedures (Fowler et al., 2022). While it is important to consider the additional staff, cost, and resources that may be necessary with nitrous oxide administration, a cost-benefit analysis may be an important next step in determining whether this can be more widely used for healthcare providers (Fowler et al., 2022).

Non-pharmacologic Techniques

Non-pharmacologic measures to reduce pain and anxiety were also evaluated, including ultrasound guidance, video tutorials, and adequate verbal counseling before the procedure (Baradwan et al., 2022; Eric et al., 2019, Hillard, 2019; McCarthy, 2018). Non-pharmacologic approaches were found to be significant ways providers can help prepare the patient for IUD placement and improve outcomes (Baradwan et al., 2022; Eric et al., 2022; McCarthy, 2018). The use of ultrasound guidance allows for decreased procedure time with clear visualization during placement as well as significantly reducing the number of misplaced IUDs (Baradwan et al., 2022). While this does not directly decrease the amount of pain experienced, it does improve the patient's overall IUD placement experience by decreasing the length of time and chance for potential errors, which therefore improves outcomes (Baradwan et al., 2022).

Verbal counseling involves a unique approach by allowing each provider to deliver appropriate expectations of the procedure. This may include addressing anticipated pain, anxiety, and what the post-procedure process entails. Adequate verbal counseling about expectations and

the progression of the procedure has been shown to significantly impact the patient experience for women (McCarthy, 2018). Healthcare providers must share appropriate education with their patients surrounding the procedure in an individualized approach. This non-pharmacological and non-invasive measure has been shown to make a significant difference in care by allowing patients to feel more prepared, less anxious, and allow for their questions and concerns to be answered (McCarthy, 2018).

Patient Perspectives

Overwhelmingly, women reported a negative experience involving IUD placement (Callahan et al., 2019). However, it is important to recognize that while the experience was often traumatic or negative for the patient, the majority of women report high satisfaction with the efficacy and low maintenance involved with IUD contraception (Callahan et al., 2019).

Commonly expressed reasons behind not having an IUD placed again in the future included experienced pain during the procedure and continued pain after the procedure (Callahan et al., 2019). Women expressed that family or friends' negative experiences during IUD placement and fear of insertional pain were the top reasons they chose not to have an IUD placed initially (Callahan et al., 2019). These factors further necessitate the need for addressing pain during the procedure and creating an appropriate standard of care that therefore increases women's willingness to obtain this safe and effective contraceptive method.

Provider Perspectives

Provider perspectives were discussed throughout the literature, as many providers wanted to deliver a better experience for patients during IUD insertion, but either did not feel comfortable placing an IUD based on their training, or did not know effective pain management strategies for placement (Strasser et al., 2023). Healthcare providers who had specific training in

family planning felt more comfortable placing IUDs as opposed to those who did not receive specific training (Strasser et al, 2023). The use of assistive devices such as ultrasound significantly shortened placement time for the procedure, which in turn improved patient satisfaction and allowed providers better visualization (Baradwan et al., 2022).

Reducing pain during IUD placement not only benefits the patient but also may ease the placement for the provider and reduce the risk of complications (Samy et al., 2019). The anticipated pain during the procedure as well as potential difficulties in placement may lead healthcare providers to recommend alternative contraceptive methods rather than IUDs (Samy et al., 2019).

Clinical Impact

Allowing providers to have a better understanding of methods to reduce pain and anxiety, including both pharmacologic and non-pharmacologic techniques, may improve their willingness to offer these options to patients. This can also help to improve the experience for patients, who may express apprehension or distress surrounding IUD placement. This project aims to increase provider knowledge by providing an evidence-based educational intervention on pain management techniques for healthcare providers to utilize during IUD placement. This may in turn improve the experience for both patient and provider and encourage pain management as a priority with each visit.

Theoretical Framework

The Theory of Reasoned Action Model describes how a person's behavior, intention, attitude, and beliefs are linked together (Nickerson, 2023). These four factors have direct influences upon one another, that impact a person's normative behavior and influence their intentions. This theoretical framework was used as a guide to developing the evidence-based

educational intervention, as the goal was to improve knowledge by providing education to healthcare providers regarding pain management during IUD procedures. By providing education on available pain management strategies, providers may then adapt their normative practices to include appropriate pain therapies prior to the procedure to support their patients. Education about effective pain management therapies can help to transform healthcare providers' beliefs that appropriate pain management is feasible. This can then help to change their intentions, and finally behaviors, which is the foundation of the theory (Nickerson, 2023).

Methods

Purpose

The purpose of this project was to increase healthcare providers' knowledge of effective pain management techniques during IUD insertion. The aim was to examine the effectiveness of an evidence-based educational presentation on pain management strategies for IUD insertion. A secondary aim was to identify the barriers and facilitators to implementing this change in practice.

An evidence-based educational audio-visual presentation was created, lasting approximately 20 minutes, on effective pain management strategies to utilize during IUD insertion based on the current research and literature review. Pre- and post- intervention survey questions were created based on the Knowledge and Attitudes Survey Regarding Pain (KASRP). This allowed for a comparison of perceived knowledge and attitudes of pain management with IUD procedure pre- and post-educational intervention.

The project was intended to be a one-time intervention that the participant could complete in its entirety in less than an hour. The post-intervention survey aimed to show an increase in participants' knowledge and attitudes towards pain management with IUD insertion.

It also aimed to examine potential barriers and facilitators to introducing new pain management strategies in current practice.

Project Site and Sample

Participants were recruited from an OBGYN office network in central Massachusetts. The office has three locations spread across central Massachusetts, with a total of 21 healthcare providers who rotate between the sites. The office provides services for a range of reproductive healthcare needs including high risk obstetrics, family planning, contraceptive and preconception counseling, and others. Inclusion criteria included healthcare providers who have placed IUDs in practice or have educated and/or counseled patients prior to or after IUD insertion. There were no exclusion criteria. Group email lists were obtained from the OBGYN office manager of eligible participants. This included one email group for the Medical Doctors (MDs), Nurse Practitioners (NPs), and Certified Nurse Midwives (CNMs). Another email list for nurses and medical assistants was also obtained.

Participants were recruited via email to participate in this study. An initial email was sent approximately three weeks prior to the project launch which explained the intention behind the project. This included an explanation of the goals of the project, the anticipated length of the project, and the virtual delivery method (See Appendix B). Participants were encouraged to contact the DNP student with questions or concerns.

On the day of the project launch, the same email lists were used from the OBGYN network to send the links to the project surveys and the evidence-based educational presentation. This email again summarized the goals of the project, notified participants that the presentation would be available for the next 10 business days, and encouraged them to contact the student with any technical issues, questions, or concerns (See Appendix C). This email also noted that

the student would be visiting the office later that week to provide a lunch and address any questions in person if they preferred. A total of 11 providers accessed the survey, and eight providers completed the pre- survey only. Six providers completed both the pre- and post-intervention surveys.

Intervention

An evidence-based educational audio-visual presentation was created that summarized effective pain management techniques with IUD insertion that have been used and studied in practice. The presentation began with a brief history of the students' decision behind this project topic. There was also a concise description of the efficacy of IUDs as a long-acting reversible contraceptive method and discussed the current gaps in practice relating to pain management during IUD insertion.

Data from the literature review about the most effective pharmacologic and non-pharmacologic pain management strategies were then detailed throughout the presentation. Some of the methods included the use of paracervical blocks, topical lidocaine, misoprostol, nitrous oxide, ultrasound guidance, visual tools, and adequate verbal counseling. The goal was to share insight into potentially underutilized techniques in each provider's current practice or expand on techniques that may have been unfamiliar to them.

Emphasis was placed on considering what options were most feasible in clinical practice and what barriers exist to implementing each of the discussed topics. The presentation also discussed the importance of addressing stigma and patients' fears surrounding IUD procedures in order to increase access and use of this contraceptive method in future practice.

Measurement Instrument

To measure the outcomes of this DNP Project, the Knowledge and Attitudes Survey Regarding Pain (KASRP) was utilized as a foundation to create questions for the pre- and post-educational intervention surveys. The KASRP was designed to evaluate knowledge and attitudes regarding pain in pre- and post-education programs (Ferrel & McCarthy, 2014). The reliability of this tool has been well founded with repeat testing to show internal consistency of items that reflect both knowledge and attitudes (Ferrel & McCarthy, 2014). Understanding that the goal was to assess knowledge regarding IUD pain management in practice, a sample of questions were chosen from the KASRP to be used in the projects surveys that were most pertinent to this topic. Some questions were included as written in the KASRP survey, while others were modified to specify knowledge and attitudes regarding pain management with IUD placement. For example, wording of a question regarding the usefulness of NSAIDs was changed to specify applicability to IUD placement, verses bone metastases as written in the original KASRP. It was necessary to make these changes to the survey question wording in order to make it applicable to the topic of IUD placement for this project.

This measurement allowed for a thorough analysis of the perceived knowledge and attitudes regarding pain management strategies. The pre-intervention survey consisted of 28 multiple-choice and Likert-style questions (See Appendix D) and the post-intervention survey consisted of nine multiple-choice and Likert-style questions (See Appendix E). The post-intervention survey asked four open-ended questions for providers to offer additional information, clarification, or details about their experience placing IUDs. An area for general comments was included at the bottom of both the pre- and post-intervention surveys to account for all potential questions or feedback.

Data Collection Procedures/ Implementation

The data was collected via an online survey for easy accessibility. As the intervention was an audio-visual PowerPoint, an online survey was appropriate method to deliver the pre- and post-intervention surveys. Participants were provided a secure link via Qualtrics, leading them to a pre-survey. The survey was delivered via Qualtrics to ensure confidentiality of the participants. Once the pre-intervention survey was completed, participants were directly led to the educational PowerPoint presentation followed by the post-survey. The intervention contained three components:

1. A pre-intervention survey regarding current knowledge and attitudes regarding pain management during IUD procedures with collection of brief demographic information.
2. A 20-minute recorded evidenced-based educational audio-visual presentation of effective pain management strategies available to utilize during IUD insertion.
3. A post-intervention survey measuring knowledge and attitudes towards implementing appropriate pain management techniques following the educational intervention.

The pre and post intervention surveys were each estimated to take approximately 10 minutes or less to complete. Along with the educational intervention, the project was intended to be completed as a one-time session, lasting less than an hour in its entirety to be fully finished by participants. Initially, participants were allowed 10 days to complete the project, however, this was extended to 21 days in order to allow them flexibility to complete it at their convenience and as an attempt to recruit additional participants.

The DNP student went into the office one week after the project launched to thank the office staff with lunch (See Appendix F). The link to the project was available via QR code during this luncheon to attempt to capture more potential participants in person. During the

luncheon, the student was available to briefly summarize the project for providers who had not yet read the invitation emails and encouraged them to participate if they chose. The student was also available throughout the luncheon to address potential questions, concerns, or obtain feedback on the presentation. Prior to the luncheon, only one provider had completed the projects survey. After the luncheon, an additional two participants completed the surveys that day. After the project's deadline extension, an additional five participants completed the surveys.

During the in-office lunch, numerous providers noted the importance of this topic, and shared brief discussions of the barriers they currently face in practice. Participants were encouraged to contact the DNP student at any time during the recruitment or intervention period, with questions surrounding the project. The DNP students' email was checked daily to ensure questions were promptly answered. No questions were sent via email throughout the project launch.

Data Analysis

Descriptive statistics were calculated on participants' demographic data and survey data. Pre- and post-intervention survey data were compared to understand the effectiveness of the educational project. Results were reviewed to see if attitudes towards pain management strategies changed among participants. The qualitative responses were surveyed to reveal themes in provider opinions towards various aspects of IUD insertion.

Ethical Considerations/ Human Subjects' Protection

Approval from the University of Massachusetts Amherst (UMass) Internal Review Board (IRB) was obtained prior to initiating the DNP project (See Appendix G). All survey responses were anonymous and delivered via Qualtrics, ensuring the protection of the participant's

identities. There was no direct contact with patients for this project and surveys included minimal personal demographic information, enhancing confidentiality.

Results

A total of 21 healthcare providers from the OBGYN office network received the email to participate in the educational intervention. Providers were given a total of 21 days to complete the project. Eight providers completed the pre-survey only. Six providers completed the pre- and post-intervention surveys, for a response rate of 29%. All of the participants were female, the majority being nurses (50%, $n=4$) and nurse practitioners (25%, $n=2$). One participant who replied “other” was a medical assistant. Of the eight participants who completed the pre-intervention survey, one nurse and one certified nurse midwife (CNM) did not complete the post-intervention survey. All participant demographic information is illustrated in Table 1.

Table 1*Participant Demographics*

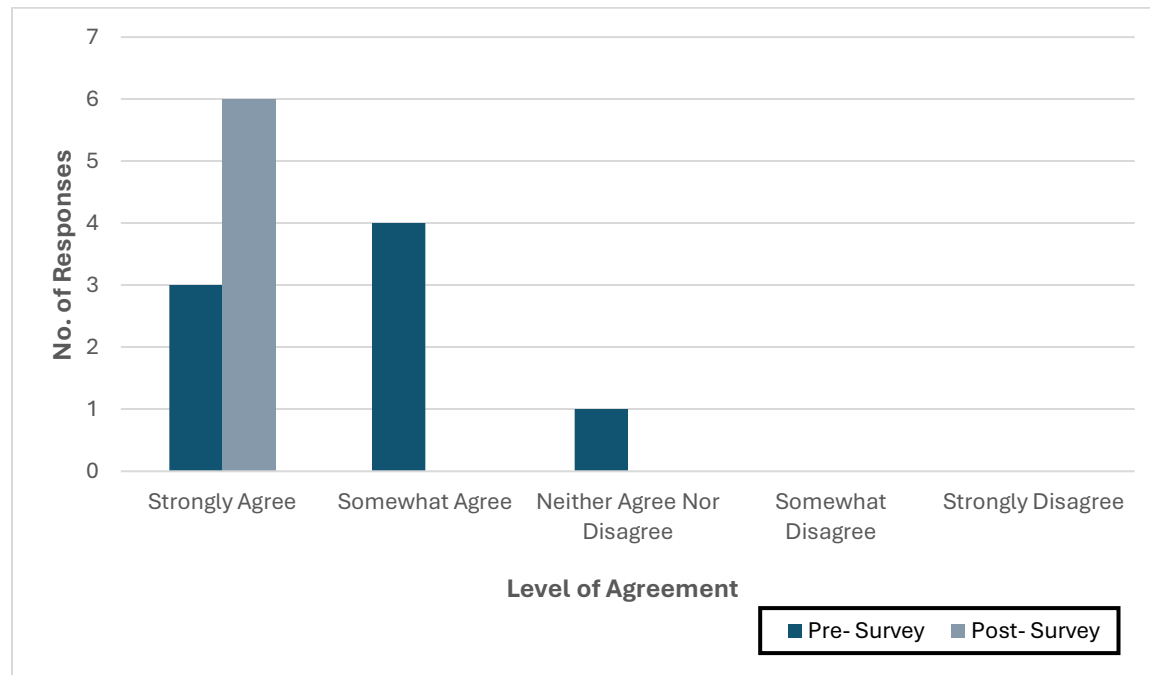
Participant Characteristics	<i>n</i>	%
Gender		
Male	0	0
Female	8	100
Level of Training		
MD/DO	0	0
Certified Nurse Midwife	1	13
Nurse Practitioner	2	25
Nurse	4	50
Other	1	13
Years of Practice in Current Role		
0-3 years	3	38
3-5 years	3	38
5-10 years	1	13
10-15 years	1	13
more than 15 years	0	0
Place IUDs/ Provide Education as Part of Role		
Yes	5	63
No	3	38
Number of IUDs Placed Monthly		
0-5 per month	5	63
5-15 per month	3	38
15-30 per month	0	0
more than 30 per month	0	0

Non-Pharmacologic Pain Management Techniques

Non-pharmacologic pain management techniques and their underutilization were studied in the project. Pre-intervention, 38% ($n=3$) of participants strongly agreed that non-pharmacologic pain management techniques are greatly underutilized during IUD insertion, 50% ($n=4$) of participants somewhat agreed, and 13% ($n=1$) neither agreed nor disagreed. Post-intervention, 100% ($n=6$) of participants strongly agreed that these methods are strongly underutilized (See Figure 1).

Figure 1

Comparison of Survey Responses on the Underutilization of Non-Pharmacologic Pain Management Techniques with IUD insertion



Of these non-pharmacologic pain management techniques, ultrasound guidance was reviewed as one of the many options that are available for use to ease IUD placement. Pre-intervention 25% ($n=2$) strongly agreed, 13% ($n=1$) somewhat agreed, 38% ($n=3$) neither agreed nor disagreed, 13% ($n=1$) somewhat disagreed, and 13% ($n=1$) strongly disagreed that ultrasound guidance can be helpful to ease IUD placement. Post-intervention, 83% ($n=5$) strongly agreed, and 17% ($n=1$) somewhat agreed of its benefit.

Pharmacologic Pain Management Techniques

Various pharmacologic pain management techniques were also discussed throughout the project, including cervical ripening agents and oral analgesics. Positions on cervical ripening agents, such as misoprostol, as an effective technique at reducing pain during IUD insertion were

examined. Sixty three percent ($n=5$) somewhat agreed, 13% ($n=1$) neither agreed nor disagreed, 13% ($n=1$) somewhat disagreed, and 13% ($n=1$) strongly disagreed that these agents are effective at reducing pain. When asked about the use of oral analgesics, 63% ($n=5$) strongly agreed that oral analgesics are what is being routinely offered to patients, while 25% ($n=2$) somewhat agreed, and 13% ($n=1$) strongly disagreed this is what is being offered.

When inquired about the benefits of oral analgesics and cervical ripening agents in the post-intervention survey, 33% ($n=2$) strongly agreed of their benefit, 17% ($n=1$) somewhat agreed, 33% ($n=2$) somewhat disagreed, and 17% ($n=1$) strongly disagreed that patients benefit from taking these agents prior to arrival for IUD placement.

The usefulness of nitrous oxide as a pharmacologic technique was also explored. In the pre-intervention survey 63% ($n=5$) strongly agreed and 37% ($n=3$) somewhat agreed that nitrous oxide can be used to help ease IUD placement. In the post-intervention survey, 67% ($n=3$) of providers shared that nitrous would be the most helpful pain management technique that can be offered to patients undergoing IUD placement. Providers also highlighted the value of ultrasound, topical lidocaine, heat, distraction, and aromatherapy as the most beneficial options in open-ended replies (see Table 2).

Table 2*Responses to Open-Ended Questions Among Participants*

Question	Participants' Responses
What barriers do you think there are to attempting to implement new pain management techniques in the office?	"I think counseling about pain management and prescribing/performing pain management takes more time and it can be challenging to fit it in when you are very busy throughout your day." "Resources" "Resources" "Barriers include patient needing additional resources for transportation post-procedure if any management stronger then NSAIDs or Tylenol are used. Office resources and time constraints also are a barrier because providers are booked daily with appointments. If nitrous oxide were to become a new standard resources for monitoring during and post-procedure would be needed. If ultrasound were to be utilized, resources on equipment and training would be needed." "I think a lot of women talk to their friends about how their experience was which, like you mentioned, can have patients coming in with pre-conceived notions and higher anxiety to begin with. "
What pain management strategy do you think would be/ is most helpful to offer to patients undergoing IUD placement?	"I think offering nitrous would be very beneficial. Currently I think topical lidocaine is the most effective method we have in our office." "Nitrous oxide" "Nitrous oxide, ultrasound guidance, and TIVA if needed for difficult anatomy. " "Topical lidocaine & non-pharmacological methods like heat, distraction & aromatherapy."

Adequate Pre- Procedure Counseling

Data was analyzed to better understand provider experiences with pre-procedural counseling in IUD placement. Eighty-eight percent ($n=7$) of providers strongly agreed that pain counseling can impact a woman's satisfaction with IUD placement, and only 50% ($n=3$) felt that the counseling they provide to women prior to IUD placement is adequate. When asked about the average time it takes to provide pre- procedure teaching, 50% ($n=3$) reported it takes on average 5-10 minutes, 13% ($n=1$) reported it takes less than 5 minutes, 25% ($n=2$) take 10-20 minutes, and 13% ($n=1$) take more than 20 minutes.

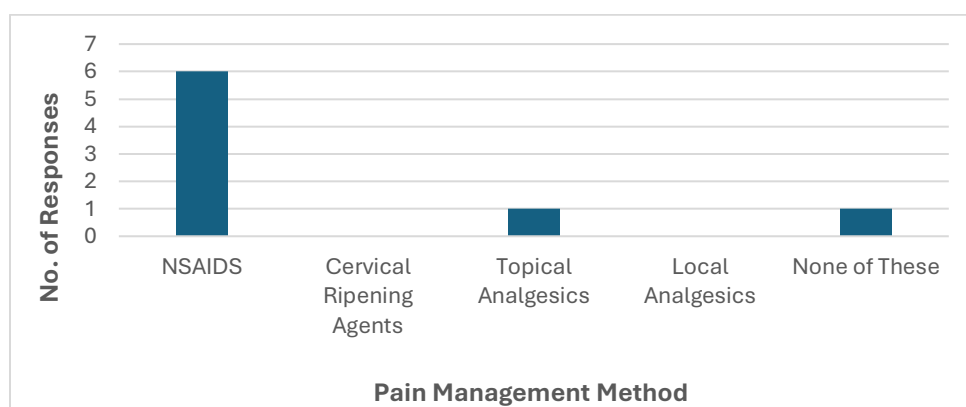
Seventy-five percent ($n=6$) of participants reported they strongly agreed that adequate pre-procedure counseling has an impact on women's experience, while 25% ($n=2$) reported they somewhat agreed. Post- intervention, 100% ($n=6$) of participants reported they strongly agreed that adequate pre-procedure counseling has an impact on women's experience during IUD insertion.

Current Practice Standards and Barriers to Change

In the pre-intervention survey, providers were asked whether offering some form of pain management is the current standard of care for women undergoing IUD placement. Thirteen percent ($n=1$) of participants strongly agreed, 38% ($n=3$) somewhat agreed, 13% ($n=1$) neither agreed nor disagreed, 25% ($n=2$) somewhat disagreed, and 13% ($n=1$) strongly disagreed. When asked what is currently most often being offered to patients, the majority of providers (75%, $n=6$) noted NSAIDs are what is most commonly being recommended, while 13% ($n=1$) said topical analgesics, and 13% ($n=1$) said none of these (see Figure 2).

Figure 2

Pre-Intervention Responses to What is Most Currently Being Used in Practice for Pain Management



In the post-intervention survey, participants were asked whether they feel their current pain management technique is effective most of the time. Fifty percent ($n=3$) of providers stated “No,” while other providers responded, “I feel I am doing the best I can,” “depends on the person- but mainly yes,” and “the current pain management protocol is not effective for all patients” in open-ended replies.

Barriers to attempting to decrease pain with IUD insertion were also addressed. Resources appeared as a common theme among providers’ responses. Time restraints, as well as pre-procedure anxiety, were also emphasized in responses (see Table 2).

In the post-intervention survey, participants responded on the potential to see themselves changing their pain management recommendations in future practice. Sixty- seven percent ($n=4$) of providers reported they would definitely see themselves changing their future practice, 17% ($n=1$) probably would, and 17% ($n=1$) might or might not see themselves changing their current practices. When looking to examine the effectiveness of this type of educational intervention, in the post-survey 100% ($n=6$) of participants strongly agreed that they learned or expanded on at least one new pain management strategy available to utilize during IUD insertion.

Discussion

The results from this project demonstrated an increase in provider knowledge regarding pain management techniques during IUD insertion. When responses were compared between pre- and post-educational intervention, many of the providers' opinions and responses differed after the post-intervention. Providers also expressed potential interest in trialing new pain management strategies in the future based on the education provided.

This project first attempted to understand the evidence for best practices in pain management during IUD insertion. When analyzing pre-intervention responses of what is most currently being used in practice, the majority of providers noted they are routinely prescribing NSAIDs to their patients. This aligns with what has been found in the research that NSAIDs continue to be the most routinely prescribed analgesic in current practice, despite their proven inefficacy at treating IUD procedural pain (Curtis et al., 2024; Samy et al., 2019).

The secondary aim of this project was to see if providers would potentially change their current pain management practices based on what has been found to be most effective in the research. Nitrous oxide and topical lidocaine were both supported throughout the literature review as more efficacious pain management methods (Fowler et al., 2022; Nguyen et al., 2020; Samy et al., 2019). Post-intervention, when asked about the pain management strategy they think would be most helpful to use during the procedure, the majority of providers reported nitrous oxide as a beneficial method, while also expressing value in topical lidocaine and other non-pharmacologic methods, such as distraction, as useful methods. While current literature emphasizes that both of these methods need to be further investigated to fully understand their efficacy, it introduces the potential for expanded use of lidocaine and nitrous oxide in future

practice (Baradwan et al., 2022; Eric et al., 2019; Fowler et al., 2022; Hillard, 2019; McCarthy, 2018; Nguyen et al., 2020; Samy et al., 2019).

This project found that providers understood the value and importance of adequate pre-procedural counseling prior to IUD placement, consistent with what has been demonstrated in the literature on this topic (Akdemir & Karadeniz, 2019). Fear of pain prior to IUD placement is overwhelmingly the most reported reason why patients choose not to have an IUD placed initially, or again in the future (Callahan et al., 2019). Opportunities to address pre-procedural anxiety and fears include understanding a patient's previous pain experiences, including those with previous IUD placements, pre-existing anxiety, or hearing from friends and family about previous poor experiences with IUD placement. Important steps to then address these fears include allowing adequate timing in the office to be able to address questions, and ensuring the patient has the necessary transportation to be able to provide pharmacologic pain management if needed (Akdemir & Karadeniz, 2019; Callahan et al., 2019). Additionally, half of providers noted they take on average 5-10 minutes to provide pre-procedural teaching, which may or may not be sufficient for patient education. Addressing patient's fear and anxiety prior to placement is essential in order to decrease barriers and enhance access to this safe and effective contraceptive method for women.

In the post-intervention survey, the majority of providers reported they would definitely see themselves changing their practices in the future. These results align closely with the theoretical framework underlying this project. The Theory of Reasoned Action Model describes that when attitudes are able to be changed, behavioral practices change. Educating providers about the effectiveness of new pain management strategies can influence their behaviors. The pre-intervention survey responses support the research that currently, outdated methods are most

commonly being used in practice. However, after the educational intervention, these thoughts changed, and providers expressed interest in potentially changing their future practice. This is supported by the nursing theory that beliefs, behaviors, intentions, and attitudes are directly influenced by one another. By working to change attitudes and knowledge regarding pain management strategies, this can then influence positive changes in intentions and beliefs for future practice (Nickerson, 2023).

The results from this project demonstrate that evidence- based educational training regarding IUD insertion pain management is an effective way to introduce new knowledge and potentially change attitudes towards current practice. All of the projects' participants strongly agreed that they learned or expanded on at least one new pain management strategy available to utilize during IUD insertion. Additionally, many providers' attitudes towards various pharmacologic and non-pharmacologic techniques changed after the educational intervention, as depicted with the comparison of pre- and post-intervention survey responses. Providers displayed new understanding of various pain management techniques and expressed interest in trialing new methods they had not used prior.

Other pain management methods, such as nitrous oxide, have always been viewed as beneficial to practice, however, are not being routinely used by providers. Comparison of pre- and post-intervention survey responses of attitudes towards nitrous oxide show that providers have previously viewed and continue to view this as an advantageous method to offer to patients for IUD placement. Lack of resources was the most expressed barrier to implementation of this method in office. Consideration of nitrous oxide's benefits verses other non-efficacious methods encourages future practice changes to expand its use.

Limitations

A major limitation to this project is its small sample size. While the in-office lunch and extended participation deadline allowed for additional recruitment of participants, the sample size remained small. Future projects looking at educational training on pain management techniques for IUD insertion with a larger sample size may allow for a more in-depth statistical analysis of the data. Future research is also needed to better understand the effectiveness of many of the pharmacologic and non-pharmacologic methods that were mentioned. Many of the research articles used throughout this paper are the first or only of their kind. For example, while nitrous oxide has been highly supported in this project by providers as an area of future practice change, the only current research to support its use with IUD placement has been shown in an adolescent study, necessitating the need for expanded exploration with adults. Pain management for women undergoing gynecological procedures, including IUD placement, is a highly under-represented area of research that needs to be explored further in order to improve care.

Conclusion

Women are frequently not effectively treated for pain during IUD insertion. There is currently no standard of care for pain management in women undergoing IUD placement, which can deter patients from seeking this safe and effective contraception method. This project addressed an area of practice which is highly disregarded and demands increased attention. Enhancing care for women undergoing IUD placement necessitates increasing provider knowledge of effective pain management strategies, which may be done with evidence-based educational interventions such as the one performed in this project. Expanding provider knowledge and understanding barriers to implementing practice change are important steps in improving future care for women undergoing IUD placement. Individual pain management

strategies may decrease unnecessary pain and anxiety, encouraging the use of this highly advantageous contraceptive method for women of childbearing age.

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Appendix A: Project Timeline

Task	Sept 2024	Nov 2024	Dec 2024	Jan 2025	Feb 2025	March 2025	April 2025	May 2025
Request participation and establish contact with office manager at OBGYN office	X							
Receive IRB approval		X	X					
Recruitment of healthcare providers		X	X					
Participation in educational intervention			X	X				
Analysis of outcomes				X	X	X		
Results presented							X	X

Appendix B: Matrix

Authors/title/journal/Date	Research Question/problem/issue	Methodology (Quant, Qual, secondary data, population, measures?)	Results (Key findings)	Discussion Limitations, suggestions for translation, solutions to solve the problem identified.	Implications for practice, a DNP project
Title: Uterine or paracervical lidocaine application for pain control during intrauterine contraceptive device insertion: a meta-analysis of randomised controlled trials Authors: Faustino R. Perez-Lopez, Samuel J. Martinez-Dominguez, Gonzalo R. Perez-Roncero, and Adrian V. Hernandez Journal: The European Journal of Contraceptive and Reproductive Health Care Date: May 24, 2018 DOI: https://doi.org/10.1080/13625187.2018.1469124	The effect of different forms of lidocaine application on the genital area for pain control during IUD insertion.	Meta Analysis of 11 RCT's comparing lidocaine treatment vs. control (placebo or no intervention) to prevent pain during IUD insertion, tenaculum placement, and immediate post-IUD insertion. Examined use of a lidocaine block or topical lidocaine application before IUD insertion. Mean differences (MD's) in visual pain scores were measured and compared.	Application of lidocaine revealed an overall MD -0.99 in tenaculum placement pain, MD -1.26 in IUD insertion and MD -1.25 in immediate post IUD insertion period. Results reveal a modest reduction in pain with any form of lidocaine treatment prior to the procedure.	Limitations: different lidocaine doses and formulations were used, high degree of statistical heterogeneity, and lack of information on lidocaine's analgesic effect 30+ min after IUD insertion. Lidocaine in combination with procaine may result in the most optimal pain control for IUD procedure (shown in 2 of the studies).	There are many different formulations of lidocaine that may be used based on availability, provider, or patient preference, etc. Some patients may prefer not to use paracervical injection of lidocaine as the needle may cause more pain without benefit on IUD insertion as compared to topical application on genital area.
Title: Evaluating different pain lowering medications during intrauterine device insertion: a systematic review and network meta-	Evaluate the most effective pain relief medications for patients undergoing intrauterine device (IUD)	Systemic review and meta- analysis of 38 RCT's (n=6,314) to compare pain relief for those who received pain relief medications	Lidocaine with prilocaine was the most effective medication at reducing pain at all three steps of the procedure. Lidocaine was	Limitations: statistically significant inconsistencies in the pooled effect estimates- may be due to wide	NSAID's which are commonly prescribed and widely used were not shown to be effective in reducing pain during IUD

analysis Authors: Ahmed Samy, M.D., Ahmed M. Abbas, M.D., Mostafa Mahmoud, M.D., Ayman Taher, M.D., Mohamed Hammam Awad, M.D., Tarek El husseiny, M.D., Mohamed Hussein, M.D., Mohamed Ramadan, M.D., Mohamed A. Shalaby, M.D., Mohamed El sharkawy, M.D., Dina Hatem, M.D., Ahmed Alaa-El-din Wali, M.D., Shimaa M. Abd-el-fatah, M.D., Amr H. Hussein, M.D., and Hisham Haggag, M.D. Journal: American Society for Reproductive Medicine Date: November 12, 2018 DOI: https://doi.org/10.1016/j.fertnstert.2018.11.012	placement. This included a variety of medications with various routes of application.	verses placebo. Visual analog scale (VAS) pain scores were measured during tenaculum placement, IUD insertion, and 5-20 min after IUD placement.	the next effective medication, then ketorolac, then naproxen. Nitroprusside and misoprostol were ranked least effective at reducing pain.	population characteristics. Misoprostol, the least effective pain management medication should not be used to reduce pain and IUD insertion, and other more effective measures have been studied including lidocaine-prilocaine cream.	placement regardless of route or dose. Misoprostol, another routinely used medication for pain reduction prior to insertion was also shown to be the least effective pharmacologic intervention. This shows that the pain reduction practices that are commonly utilized by healthcare providers may no longer be best practice and more beneficial measures have been studied and shown to be more effective.
Title: Self-administered vaginal lidocaine gel for pain management with intrauterine device insertion: a blinded, randomized controlled trial Authors: Jennifer A. Conti, MD, MS; Klaira	Assess pain control with IUD insertion after patient-administered lidocaine gel compared to a placebo group.	RCT with (n= 215) participants divided into two groups. One group was given 20mL of 2% lidocaine gel and one group was given placebo gel. The participants self-administered the gel vaginally at least 15 min prior	Self-administered lidocaine gel was not shown to be effective in pain reduction verses the placebo group. However, participants found the gel to be non- invasive and 92% stated they would be willing to wait	Limitations: potential generalizability (majority of participants were white, nulliparous, and highly educated). A self-administration method may address potential	The majority of women reported willingness to wait an extended time for effective pain control prior to having their IUD placed, showing the importance of addressing pain during the procedure and

Lerma, MPH; Rebecca J. Schneyer, BA; Charlotte V. Hastings, BA; Paul D. Blumenthal, MD, MPH; Kate A. Shaw, MD, MS Journal: The American Journal of Obstetrics & Gynecology Date: February 2019 DOI: https://doi.org/10.1016/j.ajog.2018.11.1085		to the IUD procedure. Results were measured via VAS (0-100).	prior to an IUD procedure in order to have effective pain management (whether this involved self-administered lidocaine gel or other methods).	time constraints expressed with IUD placement. Women overall were willing to wait for extended times to allow for the gel to work to gain potential pain relief.	finding effective methods. Women found the vaginal leaking with the gel administration minimally inconvenient, opening the possibility of other self-administered medications as a future area of research.
Title: Intrauterine contraception insertion pain: nursing interventions to improve patient experience Author: Carmel McCarthy, BSN Journal: Journal of Clinical Nursing Date: January 2018 Doi: doi: 10.1111/jocn.137519	Determine nursing strategies to best assess and manage pain during IUD insertion.	Integrated literature review which included 8 papers that discussed physiological elements of pain, pain assessment, and physical elements of pain as main themes for nurses to assess and treat.	A combination of physical, environmental, and psychological factors contributes to the patient's pain experience. An effective universal prophylactic analgesia was not described in any of the research. Cervical and oral anesthesia may be effective in reducing pain along with distraction techniques that can be employed by nurses.	Nonpharmacological measures were discussed including heat, distraction, etc. which can promote pain management. Nurses have the ability to reduce pain and anxiety with an IUD procedure by creating a trustworthy environment including reducing false reassurances and having an honest dialogue about the expectations of the procedure.	Anxiety is a large precursor to pain, reducing anxiety may also help to reduce experience pain. HCP's also have anxieties about instilling pain on their patients with this procedure. This in turn may cause providers not to place IUD's if they are uncomfortable with the procedure, reducing access to care. If HCPs know of effective pain management techniques, this can help reduce anxiety from both parties
Title: Intracervical block for	Evaluate whether 3.6mL of 2%	RCT using (n= 302) participants divided into 3	Group 1 (received lidocaine via	Limitations: Lack of diversity of participants	Each person's pain experience is unique and

levonorgestrel-releasing intrauterine system placement among nulligravid women: a randomized double-blind controlled trial Author: Mariane N. De Nadai, MD; Omero B. Poli-Neto, MD, PhD; Silvio A. Franceschini, MD, PhD; Ercilene M. M. Yamaguti, MD; Ilza M. U. Monteiro, MD, PhD; Julia K. Troncon, MD; Cassia R. T. Juliato, MD, PhD; Laura F. Santana, MD, PhD; Luis Bahamondes, MD, PhD; Carolina Sales Vieira, MD, PhD Journal: The American Journal of Obstetrics & Gynecology Date: March 2020 DOI: https://doi.org/10.1016/j.ajog.2019.09.013	intracervical lidocaine was effective at reducing pain in IUD insertion in nulliparous women. Also assess whether an intracervical block eases device insertion and overall experience of the procedure.	groups. Group 1 received 2% lidocaine injected intracervically. Group 2 received intracervical dry needling, using the same needle as the first group but without lidocaine. Group 3 received no intervention (the current standard of care). A FACES and VAS pain scales were used to measure pain after the procedure.	intracervical block) had the lowest pain scores compared to Groups 2 and 3. Women who received the intracervical lidocaine block described the IUD insertion as less uncomfortable and reported they would be more willing to undergo the procedure again. However, HCPs did not report more ease with placement of the IUD in group 1 as compared to other groups.	(income, race, schooling). Only included participants 18 years and older. Half of participants with no intervention (group 3) did not report severe pain with IUD insertion. This study suggests that because of this, the intracervical block may be used as an option but should not be routinely used in all participants due to varied reports of pain.	should be assessed and approached individually. Using intracervical lidocaine may be offered as an option to reduce pain with IUD insertion as it did show improved pain management and patients stated they would have the procedure again because of the better experience.
Title: Practical Tips for Intrauterine Device Counseling, Insertion, and Pain Relief in Adolescents: An Update Author: Paula J. Adams Hillard MD	Practical tips using the BRAIDED acronym for clinicians to guide intrauterine device counseling in pediatric and adolescent patients.	Review on navigating discussions surrounding IUD's including counseling, benefits, side effects, pain management, and contraceptive alternatives to IUD's.	A seasoned adolescent gynecologist gives her advice on ways to approach the conversation with adolescents regarding IUD's and how to navigate challenging/	Counseling about potential side effects including amenorrhea is essential. Addressing questions surrounding insertion and pain including NSAID use prior to the procedure and	Adequate counseling is essential to successful placement of an IUD in adolescent patients. Pain is one of the most commonly expressed concerns which can be addressed

Journal: Journal of Pediatric and Adolescent Gynecology Date: 2019 DOI: https://doi.org/10.1016/j.jpag.2019.02.121			unfamiliar questions about its use.	paracervical block. Let the patient know the procedure usually takes about 10 minutes to address potential concerns about length of the procedure.	using anticipatory guidance and validating language.
Title: Strategies to Mitigate Anxiety and Pain in Intrauterine Device Insertion: A Systematic Review Author: Laura Nguyen, BHSc; Larkin Lamarche, PhD; Robin Lennox, MD; Amanda Ramdyal, MD; Tejal Patel, MD; Morgan Black, MD; Dee Mangin, MBChB Journal: Journal of Obstetrics and Gynecology Canada Date: September 2020 DOI: https://doi.org/10.1016/j.jogc.2019.09.014	Identify and categorize strategies for reducing anxiety and pain (pharmacological and nonpharmacological) with IUD insertion and the ways in which these were assessed.	Systematic review using 35 studies to examine pain and anxiety with IUD placement. Results were measured with a VAS score and the Spielberger anxiety questionnaire.	Pharmacological measures including topical lidocaine (in various concentrations) and oral tramadol were reviewed, with mixed results of significant effects. Nonpharmacological interventions included inhaled lavender, slow verses fast tenaculum insertion, and use of nitrous oxide, none of which produced statistically significant decreased pain. Inhaled lavender was shown to decrease anxiety prior and after to the procedure.	Limitations: small number of studies with a small sample size, limited generalizability, and many of the studies did not report a baseline pain level prior to the procedure. Few studies have looked into nonpharmacological therapies to reduce pain and anxiety in IUD placement. Anxiety may contribute to pain perception and therefore interventions aimed to decrease anxiety may in turn also reduce pain.	Significant anxiety is a predictor of pain during a procedure and therefore managing anxiety may help to reduce pain. Nonpharmacological interventions such as music therapy and distraction have been used and effective during labor, and therefore may have benefits for IUD placement and improving quality of care. Patients may have their own preferences for these strategies.

Title: International Perspectives: IUDs and Adolescents Authors: Dan Apter MD, PHD Journal: Journal of Pediatric and Adolescent Gynecology Date: September 2019 DOI: https://doi.org/10.1016/j.jpog.2019.04.009	Long-Acting Reversible Contraceptives (LARCs) have been shown to be the most effective contraceptive method in reducing the risk of unwanted, unplanned pregnancy in adolescents worldwide. Worldwide guidelines must reflect this data.	Review of current guidelines/ recommendations regarding LARCs in various European countries.	Many European countries do not support the use of LARC's in youth patients, therefore they are being highly underutilized and may create potential gaps in care. Efforts need to be made to disseminate the efficacy of this contraceptive method and reduce the potential misunderstandings of contraindications to IUD use.	Successful adolescent contraception use requires motivation for use, existence of good methods, ability to obtain a good method, and correct use. Myths and lack of information surrounding IUD's have reduced access and acceptability among providers and patients.	Data surrounding the safety and effectiveness including cost benefits needs to be shared in order to reduce potential barriers to care and increase access among patients who need this therapy.
Title: Training in Residency and Provision of Reproductive Health Services Among Family Medicine Physicians Authors: <u>Julia Strasser, DrPH¹</u>; <u>Ellen Schenk, MPP¹</u>; <u>Qian Luo, PhD¹</u>; <u>Mandar Boda, PhD¹</u>; <u>Olivia Anderson, BA¹</u>; <u>Candice Chen, MD, MPH¹</u> Journal: Journal for American Medical Associates Date: August 23, 2023 DOI: doi:10.1001/jama.networkopen.2023.30489	Determine what residency training factors are associated with family medical (FM) physicians' provision of reproductive health services to Medicaid patients. Does being enrolled in a residency program with a specific training for family planning increase the likelihood of prescribing contraceptives for patients?	A one-year observational study examining FM physicians who treated at least one Medicaid patient with contraceptive therapy including oral contraceptives, IUD or implants.	FM physicians whose residency programs had an integrated family planning program were more likely to provide contraceptive treatment including IUD insertions. Physicians who were not enrolled in integrated family planning programs were more likely to prescribe oral contraceptives but were less likely to provide IUD placements in their setting.	Limitations: Only applies to Medicaid population in this study. 7 states were excluded from the study. Training physicians in family planning care including IUD contraceptives is critical to maintaining access to care and improving the likelihood of prescribing by FM providers.	Providing adequate training and knowledge about the benefits of IUD insertion can increase the physician's likelihood of prescribing it and placing an IUD rather than referring patients to an OBGYN or other prescribers. This increases access for patients as well as expands knowledge for the prescribers, especially potentially underserved patients ex. Medicaid patients.

Title: Anticipated Pain During Intrauterine Device Insertion Authors: Tegan A. Hunter SB , Sara rita Sonalkar MD, MPH , Courtney A. Schreiber MD, MPH , Lisa K. Perriera MD, MPH , Mary D. Sammel ScD ⁴, Aletha Y. Akers MD Journal: Journal for Pediatric and Adolescent Gynecology Date: February 2020 DOI: https://doi.org/10.1016/j.jpbg.2019.09.007	To identify predictors of anticipated pain with intrauterine device insertion in adolescents and young women	RCT that took place in 3 clinics in Philadelphia studying 93 young women's (ages 14-22) perception of ANTICIPATED pain using a visual analog scale during 7 points throughout IUD insertion (baseline, speculum placement, insertion, removal, etc.) Demographic variables including age, race, ethnicity, marital status was also gathered.	Race and ethnicity were potential predictors of anticipated pain during IUD insertion. Black or AA participants had the highest mean anticipated pain score, followed by white participants, followed by participants of other races. Younger age participants (14-17 years old) also had higher perceived anticipated pain scores.	Limitations: young population, provider characteristics may also influence patient comfort before the insertion. High levels of anticipated pain among Black or AA participants is not likely due to biological factors but rather social and structural factors among these patients.	Provider efforts to increase awareness of racial disparities in the pain experience may improve the counseling and treatment of pain with IUD insertion among these racial and ethnic groups.
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Title: Does Ultrasound Guidance Provide Pain Relief During Intrauterine Contraceptive Device Insertion? A Systematic Review and Meta-Analysis of Randomized Controlled Trials Authors: Saeed Baradwan, Majed Saeed Alshahrani, Albara a Alnoury, Khalid Khadawardi, Mahmoud Anis Khan, Rehab Abdelkhalek Ahmed, Abdelkader Ola I Saleh, Heba Mohammed Galal, Suzan Mohamed Abdelkareem Mohamed, Ahmed Mohamed Abdelhakim, Aasma M Elgedawy, Amira M Elbahie, Mostafa A Gaber, Amr Ahmed Magdy, Kareem Shaheen Journal: Journal of Ultrasound Medicine Date: December 30, 2022 DOI: https://doi-org.silk.library.umass.edu/10.1002/jum.16166	Evaluate use of ultrasound guidance with IUD insertion and its effect on pain relief.	Systematic review of 7 RCT's to examine the reduction in pain via VAS among patients with an ultrasound guided placed IUD vs. the control group.	Procedure time was significantly shorter among patients with an ultrasound guided IUD placement and women were more satisfied with the procedure. In addition, there were less complications including misplacements in the ultrasound group.	Limitations: limited number of trials that fit the inclusion criteria, no cost-benefit analysis was examined in the study A full bladder is needed for ultrasound use along with an assistant to help with placement of the ultrasound probe in the correct area. Requires additional training and resources for this to occur with the procedure.	Poses a nonpharmacological pain relief measure for improving care with IUD insertion. Patients were overall more satisfied with the use of ultrasound and decreased time needed during the placement period.
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Title: The Effect of Video Assisted Information on Anxiety and Pain Associated with Intrauterine Device Insertion Authors: Jule Eric¹, Yunus Emre Purut², Hatice Harmanci³ Journal: Gynecologic and Obstetric Investigation Date: October 25, 2019 DOI: https://doi.org/10.1159/000503819	Evaluate the effect of video assisted information on the anxiety and pain levels of patients undergoing IUD placement.	Observational study of 100 patients. Half received video and verbal based information regarding the IUD placement procedure. Half received only verbal information. Anxiety was measured via Spielberger's State-Trait Anxiety Inventory (STAI) scale and pain was measured via VAS.	There was no statistically significant difference in pre and post STAI scores, however there was a significant difference in reported pain scores after the procedure for patients who received the video tutorial.	Limitations: small population group Another nonpharmacological intervention to help relieve pain during the procedure. The study also looked to address anxiety and how this plays a role in the procedure and its outcomes.	A video tutorial about expectations of the procedure may help to alleviate pain associated with IUD insertion.
Title: Will it Hurt? The Intrauterine Device Insertion Experience and Long-Term Acceptability Among Adolescents and Young Women Authors: Dana G. Callahan MD, Laura F. Garabedian PhD, MPH, Kathleen F. Harney MD, Amy D. DiVasta MD, MMSc Journal: Journal of Pediatric and Adolescent Gynecology Date: December 2019 DOI: https://doi.org/10.1159/000503819	Examine how the IUD insertion experience impacts long term IUD use acceptability among adolescents.	Survey of 95 adolescents with an average age of 20.8 years old examining the anxiety experienced during the procedure, pain experience, and likelihood to recommend IUD insertion to a friend or willingness to get another IUD in the future.	80% of patients reported moderate to severe insertional pain, 52% of users reported the procedure hurt more than they anticipated, however 63% would consider getting another IUD in the future. The most commonly expressed reasons for not getting another IUD in the future include pain during the procedure and pain after the procedure. Patients most commonly described pain during the procedure as the most common	Limitations: subject to recall bias, survey had a response rate of only 9%, procedure details including difficulty of insertion, sexual activity, device indication were not accounted for. There was an overwhelming account of negative IUD insertional experience among participants. However, many patients stated that the pain was "worth" the contraceptive benefits of the procedure.	The number of women choosing IUD's for their contraceptive benefits continues to rise, however there needs to be a focus on adequate pain management to reduce unnecessary distress during the procedure. Women understand the benefits and think the pain was worth its benefits, however we need to look into how we can improve this standard of care.

1016/j.jpag.2019.08.004			reason they would not recommend an IUD to a friend.		
Title: The relationship between pain at IUD insertion and negative perceptions, anxiety, and previous mode of delivery Authors: Yesim Akdemir and Mustafa Karadeniz Journal: The European Journal of Contraception and Reproductive Health Date: April 20, 2019 DOI: https://doi.org/10.1080/13625187.2019.1610872	Look to better understand the relationship between pain during IUD insertion and anxiety, negative perceptions of IUD's, and the previous mode of delivery in parous women.	Prospective cohort study of 210 women examining women's anxiety levels prior to IUD insertion using the Beck Anxiety Inventory and pain via VAS. The groups were separated by mode of delivery Group 1: vaginal with epidural. Group 2: vaginal with no epidural Group 3: caesarean section delivery	Previous c-section and high levels of pre-procedure anxiety was associated with higher pain scores. Women with a previous vaginal delivery with epidural analgesia experienced the lowest rated pain scores. Negative perceptions of IUD's were the most significant factor for pain during IUD insertion.	Limitations: only assessed parous women, did not evaluate nulliparous women Education to correct negative perceptions surrounding IUD's along with risks and benefits can reduce pain experienced for patients who have had a child previously.	Improved patient education surrounding the benefits of the procedure, addressing concerns about pain, and expectations may help to improve the experience for women by reducing pain and anxiety about IUD insertion.

Title: Nitrous Oxide Use for Intrauterine System Placement in Adolescents Authors: Kylie G. Fowler, Gita Byraiah , Cas saundra Burt , Daniel B. Lee, Rachel J. Miller Journal: Journal of Pediatric and Adolescent Gynecology Date: April 2022 DOI: https://doi.org/10.1016/j.jpap.2021.10.019	Evaluate effectiveness of using nitrous oxide for pain control during IUD placement in adolescents.	RCT examining 74 adolescent patients, 29 of which received nitrous oxide for their IUD placement.	Nitrous oxide use was associated with decreased pain and greater satisfaction among patients. They were more likely to recommend the procedure to a friend. Nitrous oxide has anxiolytic and amnesia properties, making it useful for an IUD procedure.	Limitations: primarily a non-Hispanic white population was used, lack of randomization This was the first study to use nitrous oxide in adolescent patients for IUD placements. Overall showed positive benefits with use and improved satisfaction with the procedure.	Nitrous oxide may be a beneficial, minimally invasive approach to improving the patient experience with IUD placement and reducing pain and anxiety.
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Appendix C: Project Introduction Email

Dear AFA OBGYN Providers,

My name is Jenna Bird, and I am a graduate Doctor of Nursing Practice, Family Nurse Practitioner student at The University of Massachusetts Amherst.

I am currently completing my final DNP project, which is a quality improvement project aimed at improving knowledge of effective pain management techniques that are available during intrauterine device (IUD) insertion. I am inviting you to participate because you are a healthcare provider who places IUDs as part of your practice or counsels/ educates patients about IUD placement.

Participation in this quality improvement project includes an anonymous online survey about pain management intervention in your practice, watching an audio-visual presentation, and completing a follow-up survey. This will take approximately 30 minutes in total and is completely free.

For the surveys, questions will explore your current practice behaviors and knowledge about pain management interventions for women having an IUD placed as well as potential knowledge gained after the presentation.

This information will be used for study purposes only and all of your responses are anonymous. By answering the questions, you are agreeing to let me use this information in the study. There are no foreseeable risks associated with participating in this project. If you choose to participate in the study, you may discontinue participating at any time without penalty. By participating, you do not give up any personal legal rights you may have as a participant in this study.

The link to the survey and educational presentation will be sent out in the next several weeks. If you have any questions in the interim, please do not hesitate to contact me.

Thank you for your time and consideration,

Jenna Bird

DNP- FNP student

The University of Massachusetts Amherst

Jmbird@umass.edu

(774) 922 2154

Appendix D: Project Link Email

Dear AFA OBGYN Providers,

Attached is the link to my quality improvement project regarding pain management techniques with intrauterine device (IUD) insertion. If you would like to participate in this quality improvement project on **Assessing the Effectiveness of Educational Training on Pain Management Techniques for Intrauterine Device Insertion**, please complete the pre- presentation survey, presentation, and post- intervention survey within the next 10 business days.

For this project, questions are based on your current practice behaviors and knowledge about pain management interventions for women having an IUD placed. You may not directly benefit from this project, or receive any compensation for participating. However, we hope that your participation in the study may help healthcare providers learn of effective pain management strategies to utilize during IUD insertion with their patients.

There are known risks in participating, and you can drop out at any time. You may also choose to skip any question you prefer not to answer. The information will be used for study purposes only and all of your responses are anonymous. By answering the questions, you are agreeing to let me use this information in the DNP project.

Survey and Presentation Link: [HERE](#)

Post- Presentation Survey Link: [HERE](#)

*A pop- up link may need to be allowed to open the survey in a separate tab

For technical issues, questions, or concerns about this project, please contact Jenna Bird at jmbird@umass.edu, or the faculty sponsor of this study, Dr. Joohyun Chung, at joohyunchung@umass.edu.

I will also be available in the Concord office Friday Dec 6, 2024, for a lunch & to answer any questions.

Thank you for your time and consideration,

Jenna Bird, DNP- FNP student

The University of Massachusetts Amherst

Jmbird@umass.edu

(774) 922 2154

Appendix E: Pre-Intervention Survey Questions

1. What is your gender?
2. What is your level of training?
3. How many years of practice do you have in your current role?
4. Do you place IUDs as part of your practice or provide counseling/ education to patients surrounding IUD placement in your role?
5. How many IUDs do you place monthly?
6. Fear of inflicting pain on patients is a common reason why providers do not feel comfortable placing IUD's.
7. Pain counseling can impact a woman's satisfaction with IUD placement.
8. I feel the counseling I provide women prior to IUD placement is adequate most of the time.
9. The current pre- procedure teaching I provide patients when having an IUD placed takes on average approximately.
10. I feel that on average, the current pain management techniques I am able to provide patients during/prior to IUD placement to treat their pain is adequate.
11. I have time to listen to my patients about their pain experiences and concerns prior to IUD placement.
12. IUD insertion can be painful for some women.
13. IUD insertion can be an anxiety provoking experience for some women.
14. Often, women who have higher anxiety entering an IUD procedure, experience a higher level of pain post procedure.
15. Women who have had traumatic or painful experiences with GYN procedures may perceive IUD placement as more painful.

16. I feel knowledgeable in counseling patients about expectations during IUD placement.
 17. The current knowledge I have regarding pain management methods available for IUD insertion is.
 18. Currently, the standard of care for women having IUDs placed is to offer some form of pain management.
 19. Oral analgesia is typically what is being offered during IUD placement.
 20. It is more beneficial to offer topical verses oral pain medication for IUD insertion.
 21. Patients who can be distracted from pain usually do not have severe pain.
 22. Aspirin and other nonsteroidal anti-inflammatory drugs (NSAIDs) are NOT effective analgesics for IUD placement.
 23. What are you currently most often prescribing/ recommending patients for pain management for IUD placement?
 24. Adequate pre- procedure counseling has an impact on women's experience during IUD insertion.
 25. Intracervical cervical ripening agents (misoprostol) are effective at reducing pain during IUD insertion.
 26. Nitrous Oxide is a pharmacologic strategy that can help ease pain during IUD placement.
 27. Non- pharmacologic pain management strategies are greatly underutilized during IUD insertion.
 28. Ultrasound guidance is a non- pharmacological strategy that can help ease IUD placement.
 29. Anything you would like to add to this pre- presentation survey (questions/ concerns)?
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Appendix F: Post-Intervention Survey Questions

1. Non- pharmacological pain management strategies are greatly underutilized during IUD insertion.
2. Adequate pre- procedure counseling has an impact on women's experience during IUD insertion.
3. Ultrasound guidance is a non- pharmacological strategy that can help ease IUD placement.
4. It can be beneficial for patients to take oral analgesics or oral cervical softening agents before arriving for an IUD placement.
5. It can be beneficial to offer the use of local anesthesia during an IUD placement in women.
6. I believe incorporating non-pharmacologic interventions will decrease the pain experienced for women having an IUD placed.
7. From this presentation I learned or expanded on at least one new pain management strategy available to utilize during IUD insertion.
8. What pain management method are you most commonly prescribing/ recommending to patients in your current practice?

9. Do you think your current pain management technique for IUD insertion is effective most of the time?

10. Do you think there is sufficient research to support an alternative method to what you are currently recommending for pain management with IUD insertion?
11. What pain management strategy do you think would be/ is most helpful to offer to patients undergoing IUD placement?

12. What barriers do you think there are to attempting to decrease pain associated with IUD insertion?

13. Do you potentially see yourself changing your pain management recommendations with IUD insertion in future practice?

14. Any additional questions/ concerns/ feedback?

Appendix G: Cost Benefit Analysis

Item	Cost	Benefit
In-office lunch provided to staff	\$135.89	Promoted participation in project and attracted providers to partake in the educational project during their lunchbreak or at a convenient time for them.

Appendix H: IRB Approval

UMassAmherst

Human Research Protection Office

Mass Venture Center
100 Venture Way, Suite 116
Hadley, MA 01035
Telephone: 413-545-3428

LETTER OF EXEMPT DETERMINATION

Date: December 4, 2024

To: Professor Joohyun Chung and Jenna Bird, College of Nursing

From: Professor Lynnette Leidy Sievert, Chair, University of Massachusetts Amherst IRB

Protocol Title: *Assessing the Effectiveness of Educational Training on Pain Management Techniques for Intrauterine Device Insertion*

Protocol ID: 5851

Review Type: Exempt – Amendment

Review Date: 12/04/2024

No Continuing Review Required

The Human Research Protection Office (HRPO) has reviewed the above named submission and has determined it to be EXEMPT from the federal regulations that govern human subject research (45 CFR 46.104)

Note: This determination applies only to the activities described in this submission. All changes to the submission (e.g. protocol, recruitment materials, consent form, additional personnel), must be reviewed by HRPO prior to implementation.

A project determined as EXEMPT, must still be conducted in accordance with the ethical principles outlined in the Belmont Report: respect for persons, beneficence, and justice. Researchers must also comply with all applicable federal, state and local regulations as well as UMass Amherst Policies and procedures which may include obtaining approval of your activities from other institutions or entities. All personnel must complete CITI training.

Consent forms and study materials (e.g., questionnaires, letters, advertisements, flyers, scripts, etc.) - Only use the consent form and study materials that were reviewed by the HRPO.

Final Reports - Notify the IRB when your study is complete by submitting a Close Request Form in the electronic protocol system.

Serious Adverse Events and Unanticipated problems involving risks to participants or others - All such events must be reported in the electronic system as soon as possible, but no later than five (5) working days.

Annual Check In - HRPO will conduct an annual check in to determine the study status.

Please contact the Human Research Protection Office if you have any further questions. Best wishes for a successful project.