

DESCRIBING CONTEMPORARY USE OF INTRAUTERINE DEVICE CLINICAL
PRACTICE GUIDELINES FOR ADOLESCENTS IN SOUTHERN ARIZONA

by

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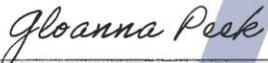
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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by *Whitney E. Pettijohn*, titled *Describing Contemporary Use of Intrauterine Device Clinical Practice Guidelines for Adolescents in Southern Arizona* and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.



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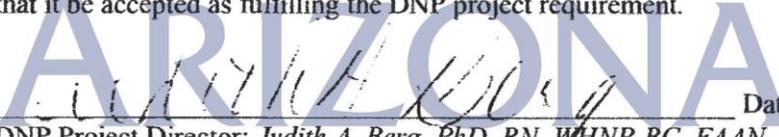
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ABSTRACT

Problem Statement: Unintended pregnancies (UP) are preventable life events that place both personal and societal strain accounting for approximately half of all pregnancies in the United States annually. Intrauterine devices (IUD) are highly effective forms of contraception that prevents UPs but are often underutilized due to several barriers including misconceptions about safety and efficacy, especially when considering adolescent women.

Purpose: To describe contemporary use of IUD clinical practice guidelines (CPG) amongst various providers and to determine the effect of an evidence based educational intervention on perceptions and practice beliefs.

Methods: Descriptive quantitative pretest posttest design with a brief educational intervention in the form of a PowerPoint presentation. All providers trained to counsel on and prescribe IUDs to adolescents within a large community health center in Tucson, Arizona were surveyed before and after the educational intervention to assess changes in perceptions and future practice patterns.

Results: The provider responses indicate varying levels of limited provider knowledge related to selecting candidates, counseling on and prescribing IUDs to adolescent patients as dictated by current CPGs. The information also indicates that lack of knowledge may attribute to a perceived lack of confidence which may result in decreased numbers of IUDs being prescribed. Finally, post-education responses indicate a change in perceived self-efficacy and knowledge surrounding current CPG information.

Significance: Targeted educational interventions for providers of contraception to adolescent patients positively affects adherence to evidence-based CPGs intended to reduce UP rates.

Increased education also positively affects providers' knowledge and perceived ability to safely counsel on and/or prescribe IUDs to nulliparous adolescents.

INTRODUCTION

An unintended pregnancy (UP) is defined as one that is unwanted or mistimed and often results from lack of preventative measures or the incorrect and inconsistent use of contraceptive measures (Centers for Disease Control and Prevention [CDC], 2015a). Unintended pregnancy rates are a core concept in understanding fertility of populations and the unmet needs of contraception (CDC, 2015a). Despite advances in modern contraception, UP rates remain high accounting for approximately 49% of all pregnancies in the United States in 2011, which is higher than any other developed nation (Guttmacher, 2016b). According to the American Academy of Pediatrics [AAP] (2014), nearly half of US high school students report having sexual intercourse with approximately 750,000 adolescents becoming pregnant and 80% of those pregnancies being reported as unintended. There is sizeable evidence that indicates long-acting reversible contraception (LARC) methods, such as intrauterine devices (IUDs), are the most highly effective forms of contraception with failure rates of less than 1% when compared to traditional forms such as the daily hormonal pill which has a failure rate of nearly 9% within the first year (Lotke, 2011). Despite this evidence, adolescent use of IUDs is low when compared to adult women, indicating an unmet need for counseling and provision of highly effective forms of contraception for adolescent populations (AAP, 2014).

Background Knowledge

Prevention of UP is not only a personal goal but also a national goal. In fact, in 2011 Healthy People 2020 (HealthPeople.gov, 2011) set goals in place to improve pregnancy planning and spacing as well as increase the rate of planned pregnancies to 56% throughout the nation. All ethnic groups and communities are affected by UPs, with minorities such as Hispanics and

African Americans, experiencing rates at disproportionate levels (Finer & Zolna, 2011). Education, poverty level and age also play significant roles in increased rates throughout the country.

Although a large amount of research supports the efficacy and safety of IUDs, they are often underutilized, especially in adolescent patients as they once were deemed unsafe (Lotke, 2015). In the most recent National Survey of Family Growth conducted by the National Center of Health Statistics and The Centers for Disease Control (CDC), it was found that the most commonly used forms of contraception by United States women were oral contraceptives, female sterilization and condoms (Uphold & Graham, 2013). The World Health Organization (WHO) currently lists LARC methods, such as IUDs, as first tier, considered to be the most effective forms of contraception available (Uphold & Graham, 2013). Although this is true, IUDs are often underutilized due to various barriers including upfront cost, lack of access as well as patient and provider misunderstanding about efficacy and safety (Lotke, 2015).

Local Problem

In 2010, 51% of all pregnancies among women ages 15-44 in the state of Arizona were documented as unintended, with 61% resulting in live births and 23% resulting in elective abortions (Guttmacher, 2016a). In 2010, 64.6% of unintended childbirths in Arizona were publically funded through taxpayer dollars, with approximately \$531 being allocated per woman ages 15-44 per UP for costs related to prenatal care and childbirth (Guttmacher, 2016a). Adolescent UPs accounted for 56 out of 1,000 births in women ages 15-19, higher than the national average of 52 out of 1,000 live births (Guttmacher, 2016a). Given these statistics, it is

vital for Arizona's healthcare providers to understand current clinical practice guidelines (CPG) regarding safe and effective use of IUD contraceptives.

MHC Healthcare, formerly known as Marana Health Care, is a large community health center serving Southern Arizona residents in 15 locations throughout Pima County and the Tucson metropolitan area. MHC provides care to approximately 50,000 patients annually throughout several different specialties of care including family practice, women's health, pediatrics and many more. MHC is committed to providing quality care to all individuals in Southern Arizona by eliminating common barriers to care such as ability to pay. MHC has not participated in any studies that focuses on decreasing barriers related to contraceptive provision in female patients in the last five years.

Purpose

The purpose of this project is to describe current knowledge and CPG utilization and determine the effect of educational intervention on provider knowledge and future practice patterns for the provision of IUDs for adolescent patients in Southern Arizona. Assessment of current provider practices and knowledge with the use of survey questions derived from current guidelines were performed in order to obtain a better understanding of current provider beliefs and practices. Providers were given a brief educational intervention created directly from current CPG recommendations (Appendix E) and then surveyed again in order to ascertain if increased knowledge changed perceptions (Appendix D). This project may lead to better creation of health services and educational programs that aim to decrease community adolescent UP rates.

Stakeholders, such as administration and clinical management, play a major role in establishing safe, efficient, and cost-effective policies and procedures on preventative

reproductive healthcare. Healthcare providers are uniquely positioned to provide preventative counseling in order to educate adolescents about their own reproductive rights and available services (Lotke, 2015). Understanding current IUD CPG utilization amongst health care providers creates a unique opportunity to understand potential misconceptions and knowledge gaps. Financial expenditures related to increased UP rates are important reasons why administration within MHC have a stake in this project. Finally, stakeholders with a vested interest in the well-being of Tucson's inhabitants, local and state government expenditures and the overall wellness of the community, all benefit from decreasing the burden of unplanned adolescent pregnancies. The underlying assumption was the increased provider knowledge of IUD CPGs could lead to better IUD uptake as a step toward decreasing UPs.

Study Question

What are Southern Arizona community healthcare providers' knowledge and use of IUD CPGs about prescribing IUDs to adolescent patients, age 13-18 years?

FRAMEWORK AND SYNTHESIS OF EVIDENCE

Theoretical Framework

A theoretical framework that guided in understanding of the practice application of IUD CPGs is Bandura's Social Cognitive Theory (SCT), which aims to explain specific individual behaviors within personal and context-related factors (Grol, Bosch, Hulscher, Eccies & Wensing, 2007). Bandura (2004) states that this causal model helps one to understand behaviors, such as opting out of IUD insertion counseling or initiation, personal factors, such as bias and fear, and environmental factors such as decreased information, and how they all operate as interacting determinants to influence one another. Lotke (2015) found an important and avoidable barrier to

adolescent women choosing contraceptive measures that are directly related to inadequate provider knowledge regarding of the benefits, efficacy and safety. In fact, a recent American Congress of Obstetricians and Gynecologists (ACOG) survey found that only 43% of OBGYNs surveyed believed that IUDs were appropriate for adolescent patients despite research has that established safety and efficacy in this population time and time again (Lotke, 2015).

Misinformation and misperceptions about IUD provision in this population directly translates into suboptimal contraceptive care for all women (Lotke, 2015). Assessing the knowledge and use of current CPGs could provide a unique position to devise educational interventions that change misconceptions and ultimately improve uptake of IUD use.

Bandura's (2004) theory is comprised of three major aspects and include mastery modeling, strengthening individual beliefs and enhancing self-motivation through goals. Modeling is the first step in developing intellectual, social and behavioral competencies which in turn can be mastered through practice and education, all with the goal of creating self-belief and confidence in the capabilities taught (Bandura, 2004). With respect to understanding IUD CPG knowledge and utilization, the social cognitive theory aided in understanding how, when and why providers made the decision to counsel on and implement IUD contraception while also gaining knowledge about various perceived barriers when opting out. The aspect of mastery modeling was applied using an evidence based educational module given to providers, while enhancement of self-motivation was assessed through intent to prescribe IUDs afterwards. Ultimately, through the application of this framework, an in-depth understanding of individual behavioral decisions aided in assessing misunderstandings or underutilization of current CPGs,

provide mastery modeling through education and assessed in understanding beliefs and self-motivation through intent to prescribe.

Concepts

The purpose of this project was to understand and assess knowledge and utilization of current IUD CPG amongst community health providers. This ultimately aimed to better understand health patterns, such as high rates of unintended pregnancies, and behaviors, such as low rates of IUD initiation in adolescents, by creating a link to specific interventions such as describing and enhancing provider knowledge and utilization of current CPGs.

CPG

CPGs are systematically designed statements that assist provider with patient care decisions that are linked to specific clinical circumstances (DiCenso, Ciliska, Dobbins, & Guyatt, 2005). CPG creators gather, appraise and combine best practice evidence in order to address all issues that a clinician may face when making decisions and then guide them through the use of clinical recommendations (DiCenso et al., 2005).

IUD

IUDs are a form of highly effective LARCs with efficacy rates of 99% at preventing UP in the first year after insertion (Lotke, 2011). The intrauterine implant is available in hormonal, containing Levonorgestral (LNG), and non-hormonal forms (ACOG, 2017b). The copper T380A IUD device, otherwise known as ParaGard, is made of polyethylene and is wrapped with copper wire around the stem and arms which prevents fertilization through inhibition of sperm viability (ACOG, 2017b). There are several LNG containing IUDs currently available in the US including Mirena, Kyleena, Liletta and Skyla, all with varying levels of hormone secretion, which prevents

pregnancy through increased viscosity of cervical mucus, making it impenetrable to sperm (ACOG, 2017b) (Table 1). The Federal Drug Association (FDA) approves all available forms of IUDs for all women including nulliparous adolescents (ACOG, 2017b).

TABLE 1. *Available IUD approved by FDA*

Brand Name	Hormone	Dose	Approved Effective Time
ParaGard	N/A, copper	N/A	10-12 years
Mirena	Levonorgestrel (LNG)	20mcg/day (52mg total)	5-7 years
Liletta	Levonorgestrel (LNG)	18.6mcg/day (52mg total)	3-5 years
Kyleena	Levonorgestrel (LNG)	17.5mcg/day (19.5mg total)	5 years
Skylla	Levonorgestrel (LNG)	14mcg/day (13.5mg total)	3 years

IUD provision is guided by current evidence-based CPGs that aid in the decision of appropriate candidates, risks and benefits, potential adverse effects and contraindications by providing explicit recommendations. Assessing the intent to prescribe IUDs to adolescents is also important to linking Bandura’s SCT framework to this project and is closely tied to the important concept of provider beliefs, which are directly linked to personal perceived capabilities in performing specific tasks. Individuals who doubt their capabilities in tasks such as adequately choosing IUD candidates, counseling and safely performing the initiation process, may shy away from prescribing IUDs and opt for less invasive and efficient methods such as the oral contraceptive pill (Bandura, 2004; Lotke, 2015). Understanding provider perceived abilities to successfully prescribe IUDs through their understanding of current CPGs will give insight into varying levels of confidence and knowledge.

Synthesis of Evidence

UPs account for the majority of all pregnancies that occur in the United States annually (CDC, 2015a) with rates significantly increasing when considering adolescent populations (Ravi,

Prine, Waltermaurer, Miller, & Rubin, 2014). IUDs are highly effective forms of contraception but although current CPGs and evidence-based practice deem them to be a safe and effective form of contraception, they are often highly underutilized (Ravi et al., 2014). Several well-known barriers to adolescent provision of IUDs exist and include provider misperceptions about safety and efficacy, misconceptions related to suitable candidate selection and limited access to adequate training (Kavanaugh, Jerman, Ethier, & Moskosky, 2013; Ravi et al., 2014). These findings are concerning considering current CPGs deem IUDs to be an effective means of decreasing UP in this population, therefore more research is needed on this topic.

To gain a better understanding of current provider beliefs, knowledge and practice patterns related to IUD insertion in adolescent patients, several literature searches were performed using PubMed, Cumulative Index of Nursing and Allied Health Literature (CINAHL) and Embase databases. Key words such as: long-acting reversible, intrauterine devices, contraception, adolescents, provider beliefs and provider practices, were used. Limiting factors of published in less than 10 years, English language, human species, pediatric population and full text were utilized to narrow results. The search yielded a total of 84 articles. Exclusions were made if the articles were not closely related to provider practices or beliefs. Ultimately, 10 articles met the criteria for the project's purpose (Appendix A). In addition, current CPG were obtained and analyzed through nationally recognized and accredited organizations (Appendix A).

Provider Perceptions of IUD Safety and Efficacy

Kavanaugh et al. (2013), Kohn et al. (2012) and Murphy et al. (2016) all explored the perceptions that providers have about IUD safety and efficacy in adolescent populations. Common themes that resonated throughout these studies included concerns over increased

likelihood of developing sexually transmitted infections (STI) due to decreased condom use (Kavanaugh et al., 2013), increased risk of pelvic inflammatory disease (PID) (Kohn et al., 2012) and a general lack of interest by teenagers to use IUDs (Murphy et al., 2016). IUD CPGs indicate that these major concerns are unfounded by current research and recent data shows a steadily increasing adoption of these forms of contraception amongst adolescents indicating a need for more research related to this topic (Kavanaugh et al., 2013).

Effects of Educational Intervention of Provider Knowledge and Beliefs

Postlethwaite et al. (2007) and Thompson et al. (2016) studied the effects of educational interventions on the beliefs and practice patterns of providers regarding IUD provision for women. Both studies found that with increased education or educational reinforcement, providers in intervention groups reported feeling more likely to prescribe IUDs when compared to control groups (Postlethwaite et al., 2007; Thompson et al., 2016). Postlethwaite et al. (2007) found statistically significant changes in not only practice patterns but also general attitudes towards IUDs compared to the standard care comparison group. These studies are examples of how multifaceted, evidence-based education can rapidly effect the practice patterns and beliefs that providers have towards prescribing highly effective forms of contraception (Postlethwaite et al., 2007; Thompson et al., 2016).

Beliefs and Practices Related to CPGs

Only one study found in the literature addressed provider perceptions about risks and indications compared to current practice guidelines. Stubbs and Schamp (2008) used mailed surveys to assess family practice providers' current beliefs and perceptions regarding possible risks and contraindications for IUD insertion. They found a significant proportion of providers

falsely believed IUDs to carry higher rates of incidence of serious adverse events, such as PID and ectopic pregnancy, than the current research and practice guidelines suggest (Stubbs & Schamp, 2008). This study indicates that misconceptions like the ones discussed are likely causes of low IUD initiation rates (Stubbs & Schamp, 2008) supporting the claim that more research is needed to fully understand where the gap in knowledge lies.

Strengths

The literature review revealed evidence that supports the benefits of IUD use in adolescent populations, as well as the direct impact that increased evidence-based education can have on provider views regarding safety and efficacy. The search also revealed several descriptive qualitative studies that aimed to better understand provider beliefs about IUD provision in adolescents. Strengths in the literature were found in three studies as they provided diverse sample populations that included various forms of medical providers which is important in understanding how disciplines may affect clinical decision making regarding IUD provision in adolescents (Kohn et al., 2012; Murphy et al., 2016; Postlethwaite et al., 2007).

Weaknesses

There were limited studies found that investigated contemporary use and knowledge of current CPGs by providers who counsel adolescents on contraceptive choices.

Gaps

The literature reviews also failed to discuss the potential link between provider bias or misconceptions due to CPGs historic exclusion of teens as they were deemed ineligible due to perceived high risk behaviors. This gap indicates the need for more research on this vital topic in order to better understand the current beliefs and practices of providers. This knowledge could

directly aid organizations in understanding where current knowledge and practice falls short in order to ultimately create more substantial educational materials, training sessions and policies.

This project has the potential to illuminate current providers' beliefs and practice patterns and then compare them to current CPG information. This may aid the organization in recognizing where gaps in knowledge lie and to begin the process of closing said gaps through better provider educational programs and training, as well as improvements in health care services overall.

METHODS

Design

To answer the project question, what are Southwest Arizona community healthcare providers' knowledge and use of IUD CPGs about prescribing IUDs to adolescent patients, age 13-18 years, a descriptive quantitative study with a pretest posttest design one group with no control was utilized. Descriptive quantitative pretest posttest designs are defined as quasi-experimental studies aimed to understand participant behaviors before and after an experimental manipulation (Rouen, 2017). In addition, a demographic component survey allowed the project lead to collect data to fully assess if specific factors such as age, gender, discipline, years in practice and patient population effect pretest posttest outcomes.

Setting

According to the Guttmacher Institute (2016), the teen pregnancy rate in Arizona was 56 per 1,000 women aged 15-19, placing the state at number 32nd highest in the nation in 2011. Despite millions spent in publicly funded family planning centers across the state, teen pregnancy rates remaining constant. The specific setting for this project took place in a large

Community Health Center that provides care to a vast array of individuals in Tucson, Arizona. This setting provided a unique opportunity to study current IUD CPG utilization across many different specialties of care throughout the greater Tucson community.

Participants

MHC employs over 50 healthcare providers, however not all may counsel on or prescribe contraception to adolescents, therefore, participants were selected based on their qualifications to counsel on and prescribe contraceptive methods including IUDs to adolescents. This included Family Nurse Practitioners (FNP), Pediatric Nurse Practitioners (PNP), Medical Doctors (MD) and Physicians Assistants (PA) and totaled approximately 35-40 individuals. Participants in the study were identified through their employment at MHC as healthcare providers with the help of Dr. Serrano-Feliciano, Chief Medical Officer (CMO). Inclusion criteria for participant selection included the individuals' ability to prescribe contraception to adolescent patients, ages 13-18. Exclusion criteria included if the selected individual did not treat patients in the above age range or their inability to prescribe contraceptive methods to adolescents deemed by scope of practice. Participants were asked to exclude themselves from the study if not all inclusion criteria are met which was outlined in the disclosure form sent prior to the pretest survey (Appendix C).

In collaboration with Dr. Serrano-Feliciano, participants were identified and initially communicated with through their MHC employee e-mail addresses. E-mail addresses were identified using the Microsoft Outlook group filtering feature, targeting groups with the following labels: family practice, internal medicine, OBGYN and pediatrics. Once participants were identified, Dr. Serrano-Feliciano served as the lead survey disseminator by e-mailing the links to all the participants from her MHC work e-mail with a brief project introduction attached.

A response rate of 30-40% was expected (Thayer-Hart, Dykema, Elver, Schaeffer, & Stevenson, 2010). Therefore, all providers who prescribe contraceptive methods to adolescents within MHC, approximately N=40, were contacted electronically via e-mail to obtain an expected sample size of 15 to 20 providers. To ensure optimal participation, a reminder e-mail was planned to be sent approximately one week after the initial dissemination (Appendix F).

Data Collection

Data was collected over a two-week period with the use of self-administered, computerized questionnaires (Appendix C) that were electronically mailed to all participants in the potential sample size through their assigned work e-mail addresses. Surveys are an efficient means of obtaining information and feedback related to specific topics of interest (Thayer-Hart et al., 2010). The survey was comprised of questions created directly from the most up-to-date evidence-based CPGs available including The American Academy of Family Physicians (AAFP), American Academy of Pediatrics (AAP), American Congress of Obstetricians and Gynecologists (ACOG) and the Centers of Disease Control (CDC). The survey questions were answered on Likert scale from '1' (*I strongly agree*) to '5' (*I strongly disagree*) with each choice represented by a numerical value assigned to it for the purposes of data analysis. A brief educational intervention (Appendix E) in the form of a read-only PowerPoint describing current, evidence-based IUD CPGs for adolescent women was administered after the initial survey. Once the provider completed the educational intervention (Appendix E) they were immediately prompted to complete a posttest survey (Appendix D), with similar questions as the pretest survey, also derived from current CPGs in order to assess changes in perceptions or practice patterns.

Data derived from the above mentioned survey tools was collected and stored via the electronic service, Qualtrics. Qualtrics is an online, anonymous survey tool that was utilized through the University of Arizona's license. Data was then exported from Qualtrics to Excel by the lead investigator. In the event there was more than 20% of missing items on a survey, that survey was omitted from analysis.

Both the pretest and posttest survey tools (Appendix D), along with the educational PowerPoint (Appendix E) were original and created by the project lead for the purposes of this project. The interventional tool was derived directly from information in current CPGs.

Data Analysis

Data analysis included descriptive statistics in order to describe variables of interest and demographic data (Sut, 2015). Relationships between data were also assessed to determine the effect of demographic characteristics on pretest, posttest results. Assessing for these relationships, provided a better understanding if outside factors were responsible or had any significance on counseling and prescribing IUDs to adolescent patients. Pearson's product correlations were run to assess for any statistically significant relationships. For ease of data analysis, questions from pretest and posttest surveys were divided into five categories including demographics, selection of IUD recipients, common misperceptions leading to patient barriers, organizational barriers and personal beliefs.

Implementation

A successful implementation process consists of several important factors that must be addressed during the planning phases (Moran & Burson, 2017). In order to ensure that overall goals of the project were met, stakeholders to the organization were first made aware of the

potential benefits (Moran & Burson, 2017). Factors related to improving quality of care, patient satisfaction, efficiency and cost reduction should all be related to the project in order to instill interest and participation from key stakeholders (Moran & Burson, 2017). This project has the potential to determine knowledge gaps and misperceptions regarding IUD provision in adolescents, which ultimately could lead to increased IUD initiation rates and decreased teen pregnancy rates within the Tucson community.

Ethical Considerations

There are three main ethical principles that apply to research with human subjects and include respect for persons, beneficence and justice. Each principle is important to ensuring that all participants are treated safely and protected throughout this project.

Respect for Persons

This ethical principle refers to ensuring that all individuals are treated as autonomous agents whom are able to make decisions for their well-being without pressure or coercion (U.S. Department of Health and Human Services [USDHHS], 1979). In order to fully respect an individual's autonomy, consideration must be given to their opinions and choices in regards to any activity related to the research being conducted (USDHHS, 1979). Each individual must enter the research activity voluntarily and with adequate information to ensure that informed consent is received before participation (USDHHS, 1979).

Due to the fact that data will be collected from various providers throughout the organization to assess IUD CPG utilization and knowledge, in order to protect their basic ethical right of respect, informed consent was gathered. Web-based surveys were the means of data collection for this project, therefore participants were given information regarding the purpose of

the survey and the intended use of the information collected (Hammer, 2017). According to Hammer (2017), once the adequate information is provided, individuals should be given the option to choose to participate or not. In addition, they will be given the choice to refrain from answering certain questions if they choose to do so (Hammer, 2017). All was achieved with the disclosure letter administered prior to the pretest survey (Appendix C).

Beneficence

Beneficence ensures that, during the investigative process, no harm is done and efforts are made to maximize and protect individual well-being (USDHHS, 1979). Obligations of beneficence also extend to more than the individual but also to society and local community that may be effected by the research implications (USDHHS, 1979). Assessing provider utilization and knowledge of IUD CPGs for adolescents, this project has the potential to inform not only the organization but the community as a whole of the potential need for increased provider education which ultimately could increase IUD provision and decrease UP rates. Beneficence is met by recognizing the large scale, long term benefits and risks that may result from the knowledge obtained from this project (USDHHS, 1979). In addition, beneficence is met by avoiding future harm, such as the variety of strain that UP places on communities, that may result from the application of previously acceptable ideas and practice patterns of providers related IUD provision in adolescents (USDHHS, 1979).

Justice

A general fairness in regards to who benefits from any research project defines the ethical principle of justice (USDHHS, 1979). Selection of research subjects must take into account whether certain individuals are excluded due to extenuating circumstances such as welfare and

race (USDHHS, 1979). This specific project has the potential to affect the Tucson community as a whole, therefore participants should be chosen in a way that includes every person eligible to counsel and prescribe IUDs to adolescents, no matter their specific patient population, clinic location or personal demographic data (USDHHS, 1979). By involving every provider in the data collection process, justice was met by preventing from choosing individuals that may provide the best possible data to aid in the project (USDHHS, 1979).

IRB approval (Appendix G) for the project was obtained from the University of Arizona Institutional Review Board. By obtaining this approval, assurance that the ethical issues detailed above were met.

RESULTS

Demographics

Of the 40 providers who received the survey e-mail, nine (N=9) completed the pretest survey and eight completed the posttest survey following the educational intervention. Of the eight posttest responses, two were omitted due to greater than 20% of the questions being left unanswered, leaving a posttest sample size of six (N=6). The findings of both the pretest and posttest demographic survey are depicted below in Table 2.

TABLE 2. *Participant demographic data*

	Pretest Count (%)	Posttest Count (%)
Total	<i>N</i> =9	<i>N</i> =6
Gender		
Female	9 (100.0%)	6 (100.0%)
Male	0	0
Transgender	0	0
No Response	0	0
Professional Role		
Nurse Practitioner	6 (66.7%)	4 (66.7%)
Physician	3 (33.3%)	2 (33.3%)
Certified Nurse Midwife	0	0
Physician's Assistant	0	0
Specialty		
Internal Medicine	1 (11.1%)	0
Family Practice	7 (77.8%)	5 (83.33%)
Obstetrics and Gynecology	1 (11.1%)	1 (16.7%)
Pediatrics	0	0
Midwifery	0	0
Years in Practice		
< 1 year	2 (22.2%)	1 (16.7%)
> 1 year, <5 years	4 (44.4%)	3 (50.0%)
> 5 years, < 10 years	2 (22.2%)	1 (16.7%)
>10 years, < 15 years	0	0
> 15 years	1 (11.1%)	1 (16.7%)
Percentage of Adolescent Patients		
< 25%	7 (77.8%)	5 (83.3%)
25-50%	1 (11.1%)	0
50%-75%	1 (11.1%)	1 (16.7%)
> 75%	0	0
Experience Counseling and/or Rx IUDs		
Yes	8 (88.9%)	5 (100.0%)
No	1 (11.1%)	0
Experience Counseling and/or Rx IUDs to Adolescents		
Yes	5 (55.6%)	4 (66.7%)
No	4 (44.4%)	2 (33.3%)
IUD Training		
Yes	4 (44.4%)	2 (40.0%)
No	5 (55.6%)	3 (60.0%)
# IUD Counseled on and/or Rx in Last Year		
< 5	7 (77.8%)	4 (66.7%)
>5, <10	1 (11.1%)	1 (16.7%)
>10, < 20	1 (11.1%)	0
>20	0	1 (16.7%)

NPs reported low rates of IUD provision in their adolescent patients. Pretest provider responses related to IUD provision rates when compared to professional roles within the MHC system can be found in Table 3 below.

TABLE 3. *IUD provision rates among physicians and nurse practitioners in one year*

		<i>What is your professional role within MHC?</i>		
		Physician	Nurse Practitioner	Total
<i>Number of IUDs counseled about and/or prescribed to adolescents in the prior calendar year.</i>	<5	2	5	7
	>5 - <10	1	0	1
	>10 - <20	0	0	0
	>20	0	1	1
	Total	3	6	N=9

Note, pretest provider responses by practice specialty and IUD insertion training indicate the majority of providers had not completed IUD insertion training (N=5, 55.6%) (Table 4). Of the individuals who had not completed training, 80% (N=4) are currently employed in Family Practice settings. Among those who self-identified as FP providers (N=7), 57.1% (N=4) had not completed formal IUD training. Posttest group analysis was omitted as answers to the question of IUD training would not change.

TABLE 4. *IUD training completion compared to specialty of practice*

		<i>What is your specialty of practice?</i>			Total
		Internal Medicine	Family Practice	Obstetrics and Gynecology	
<i>Have you completed IUD insertion training?</i>	Yes	0	3	1	4
	No	1	4	0	5
	Total	1	7	1	N=9

CPG Adherence

Twenty questions (Appendix D) focused on information gathered from current CPGs related to safe and effective candidate selection, counseling, prescribing and patient follow-up practices for IUD provision in adolescent populations.

Selection of IUD Recipients

Survey participants were asked three questions on safe selection of IUDs for adolescents. Pretest and posttest survey responses of current provider beliefs on IUD provision are displayed in Table 5.

TABLE 5. *Provider beliefs on safe patient selection for IUD provision*

	Pretest Count (%)	Posttest Count (%)
Total	N=9	N=6
IUDs safe and effective for adolescents		
Strongly Agree	4 (44.4%)	6 (100.0%)
Agree	0	0
Neither Agree nor Disagree	3 (33.3%)	0
Disagree	2 (22.2%)	0
Strongly Disagree	0	0
IUDs first line contraceptive for adolescents		
Strongly Agree	0	2 (33.3%)
Agree	3 (33.3%)	2 (33.3%)
Neither Agree nor Disagree	3 (33.3%)	2 (33.3%)
Disagree	3 (33.3%)	0
Strongly Disagree	0	0
Hx PID in last year, not good candidate for IUD		
Strongly Agree	0	0
Agree	4 (44.4%)	0
Neither Agree nor Disagree	4 (44.4%)	0
Disagree	1 (11.1%)	4 (66.7%)
Strongly Disagree	0	2 (33.3%)

Common Misperceptions Leading to Patient Barriers

IUD provision to adolescent patients is currently guided by CPGs from several professional organizations. Four questions were asked to both the pretest and posttest group that aimed to understand current beliefs in the providers surveyed. Results can be found in Table 6.

TABLE 6. *Provider beliefs related to common misperceptions leading to unnecessary barriers to patient access*

	Pretest Count (%)	Posttest Count (%)
Total	<i>N</i> =9	<i>N</i> =6
Increased promiscuity/ decreased condom use		
Strongly Agree	0	0
Agree	2 (22.2%)	0
Neither Agree nor Disagree	3 (33.3%)	1 (16.7%)
Disagree	2 (22.2%)	3 (50.0%)
Strongly Disagree	2 (22.2%)	2 (33.3%)
Increased risk PID IUDs should be avoided		
Strongly Agree	0	0
Agree	3 (33.3%)	0
Neither Agree nor Disagree	3 (33.3%)	0
Disagree	2 (22.2%)	2 (33.3%)
Strongly Disagree	1 (11.1%)	4 (66.7%)
STI screening and documentation required before insertion		
Strongly Agree	4 (44.4%)	0
Agree	2 (22.2%)	0
Neither Agree nor Disagree	2 (22.2%)	1 (16.7%)
Disagree	1 (11.1%)	1 (16.7%)
Strongly Disagree	0	4 (66.7%)
Parental consent required for insertion		
Strongly Agree	0	0
Agree	2 (22.2%)	0
Neither Agree nor Disagree	3 (33.3%)	1 (16.7%)
Disagree	3 (33.3%)	3 (50.0%)
Strongly Disagree	1 (11.1%)	2 (33.3%)

Perceived Barriers and Personal Beliefs

Perceived organizational barriers and personal beliefs were assessed.

Organizational Barriers

In order to better understand common barriers that may affect IUD provision in adolescent populations, the survey participants were asked questions related to perceived organizational barriers. Organizational barriers include any systems in place that inhibit patient access to highly effective forms of contraception including IUDs. Table 7 displays the pretest and posttest results related to these common organizational barriers.

TABLE 7. *Provider perceptions of organizational barriers*

	Pretest Count (%)	Posttest Count (%)
Total	<i>N</i> =9	<i>N</i> =6
Systems in place to ensure privacy to adolescents seeking contraceptive care		
Strongly Agree	1 (11.1%)	1 (16.7%)
Agree	4 (44.4%)	3 (50.0%)
Neither Agree nor Disagree	3 (33.3%)	1 (16.7%)
Disagree	1 (11.1%)	0
Strongly Disagree	0	1 (16.7%)
Adolescents have access to unbiased, factual information regarding IUDs		
Strongly Agree	3 (33.3%)	2 (33.3%)
Agree	3 (33.3%)	1 (16.7%)
Neither Agree nor Disagree	3 (33.3%)	3 (50.0%)
Disagree	0	0
Strongly Disagree	0	0
Current policy and procedure adequately define who is a proper candidate for IUD provision		
Strongly Agree	0	0
Agree	4 (44.4%)	2 (33.3%)
Neither Agree nor Disagree	4 (44.4%)	3 (50.0%)
Disagree	1 (11.1%)	1 (16.7%)
Strongly Disagree	0	0
Adequate time to safely counsel on and prescribe IUDs		
Strongly Agree	0	0
Agree	3 (33.3%)	3 (50.0%)
Neither Agree nor Disagree	2 (22.2%)	0
Disagree	3 (33.3%)	2 (33.3%)
Strongly Disagree	1 (11.1%)	1 (16.7%)

Table 7 and Table 8 detail providers' time allotted to counsel and prescribe IUDs compared to their personal feelings of having adequate time (Table 8). Of the pretest participants, 44.4% (N=4) did not feel they have enough time to adequately prescribe IUDs. Notice, when fewer than 10 minutes to counsel was reported, participants disagreed with the statement they had adequate time. One (N=1) individual self-reported having as much as 15 to 20 minutes during contraceptive appointments, but still had feelings of inadequate time to safely provide IUD care.

TABLE 8. *Provider perceptions on having adequate time to counsel on and Rx IUDs compared to self-reported time spent*

		<i>I feel I have enough time during patient appointments to safely counsel on and/or place an IUD.</i>			
		Agree	Neither Agree nor Disagree	Disagree	Total
<i>How long is typically spent providing contraceptive counseling?</i>	< 10 minutes	0	2	2	4
	>10 minutes <15 minutes	3	0	1	4
	>15 minutes <20 minutes	0	0	1	1
	>20 minutes	0	0	0	0
	Total	3	2	4	N=9

Personal Beliefs

Two questions focused on personal beliefs and self-confidence about counseling and prescribing IUDs to adolescents. Providers were asked if they felt confident in their current ability to counsel on and prescribe as well as their feelings of reluctance to begin the process of providing IUDs to adolescents. See Table 9 for a display of MHC provider responses.

TABLE 9. *Personal beliefs related to ability to counsel on and prescribe IUDs to adolescents*

	Pretest Count (%)	Posttest Count (%)
Total	N=9	N=6
I feel confident in my ability to counsel on and Rx IUDs to adolescents		
Strongly Agree	2 (22.2%)	2 (33.3%)
Agree	2 (22.2%)	1 (16.7%)
Neither Agree nor Disagree	2 (22.2%)	2 (33.3%)
Disagree	0	0
Strongly Disagree	3 (33.3%)	1 (16.7%)
I am reluctant to counsel on and/or Rx IUDs to adolescents		
Strongly Agree	0	0
Agree	2 (22.2%)	0
Neither Agree nor Disagree	2 (22.2%)	0
Disagree	2 (22.2%)	4 (66.7%)
Strongly Disagree	3 (33.3%)	2 (33.3%)

DISCUSSION

Demographics

Key demographic variables were examined with selected items from the questionnaire to determine if relationships existed using descriptive statistics and Pearson's product moment correlations to assess for statistical significance. The first key demographic variable of interest was related to the majority of participants (66.7%) in the pretest group being NPs (Table 2). This finding is likely attributed to the possibility there are more NPs currently employed in primary care settings at MHC than there are MDs. According to the Association of American Medical Colleges (AAMC), by 2030 there will be an estimated shortage of 100,000 physicians in primary care settings (NP, n.d.). In order to combat that shortage, NPs with full practice authority have been aiding in filling that gap, with approximately 86.6% currently working in areas of primary care (NP, n.d.). This fact supports the possibility that more NPs currently work at MHC, therefore lead to an increased rate of NP participants in this study when compared to MDs.

Next, professional role within MHC was compared to the total of self-reported number of IUDs counseled about and/or prescribed to adolescents within the last calendar year was examined (Table 2). Please note, Certified Nurse Midwife (CNM) and Physician Assistant (PA) were both omitted from this analysis due to no participants representing those specialties. The responses found in Table 2, indicate that of those who counsel about and/or prescribe fewer than five IUDs in the last calendar year, NPs comprised the majority. These findings are troublesome in that NPs comprise the vast majority of individuals who are employed in FP settings as discussed above. In conjunction with these findings, Table 4 shows a relationship between IUD insertion training completion and specialty of practice. FP providers had the fewest number of

IUD training completions when compared to IM and OBGYN. These findings, although not statistically significant ($p=0.73$), do raise concern considering FP providers care for individuals throughout the lifespan including adolescents.

IUD training and education has been directly correlated to an increase in the number of IUDs prescribed within healthcare settings. For example, Postlethwaite et al. (2007) compared beliefs and attitudes about IUD provision amongst healthcare providers that received an educational intervention and those without while also collecting data on IUD provision rates. The study found statistically significant changes in both attitudes and practice patterns in intervention group participants compared to the nonintervention group (Postlethwaite et al., 2007). IUD insertion rates, although not statistically significant, did rise in the intervention group when compared to the nonintervention group suggesting the trend that increased education results in increased rates of IUD provision (Postlethwaite et al., 2007). Studies such as this one make it plausible to assume that without formal training, providers may shy away from discussing IUDs as a form of contraception, which may lead to low insertion rates. If increased IUD provision rates have been linked to education and training, it is important to recognize provision of education and training a logical intervention to increase adolescent IUD uptake. This may be especially true in FP settings where it would be useful to increase the number of providers trained to insert IUDs as a strategy to increase uptake.

Finally, demographic data indicated the vast majority of participants, without taking into account specialty practice or professional role, indicate their patient population is comprised of less than 25% adolescents (Table 2). This may be related to the fact that general FP settings care for patients across the lifespan with adults comprising the majority when compared to pediatric

healthcare settings. Although this may be true when compared to general pediatric populations, according to the AAFP, FP providers serve the largest number of adolescents in the US and are uniquely positioned to do so due to increased training in interdisciplinary care and use of public health tools to prevent disease (Ham & Allen, 2012). Studies have shown that adolescents are more satisfied and more likely to share personal information with FP providers who are able to raise sensitive topics such as sexuality in a secure and confident manor (Ham & Allen, 2012). These facts further support the claim that FP providers, especially NPs who comprise the majority of those employed in this setting, must be adequately trained regarding IUD provision in order to have the confidence and ability to adequately reach this important patient population.

CPG Adherence

Selection of IUD Recipients

Current CPGs emphasize the importance of safe and effective patient selection when deciding who is a suitable candidate for IUD provision. They also state all women of childbearing age, without current purulent cervicitis, should be considered for IUD contraception (ACOG, 2017b). Pretest survey results (Table 5) indicated of the nine survey respondents, fewer than half believed that IUDs are safe and effective forms of contraception for adolescents. In conjunction, 33.3% (N=3) of respondents disagree with the statement that IUDs should be considered a first line form of contraception for the adolescent age group. The notion that IUDs are not an appropriate form of contraception stems from outdated beliefs regarding their safety for this age group. New evidence-based findings have led to FDA approval of all forms of IUDs (Table 1) for adolescent populations. Full dissemination of these new thoughts has taken time and has yet to be fully embraced by providers or adolescents. Once participants completed the

CPG derived educational intervention (Appendix E), which contained one slide dedicated to appropriate and safe candidate selection, they were again asked the same questions regarding appropriate IUD provision. Posttest survey results indicated a change in perceptions and beliefs related to who is and is not an appropriate candidate for IUD initiation. Changes in perception and comparison of pretest responses and posttest participant responses are found in Table 5.

Another common misperception related to IUD candidate selection is the idea that an individual with a recent history of PID is unsuitable for IUD provision. Analysis of data also identified a change, when comparing pretest to posttest responses, in the belief that adolescent patients with a history of PID within the last year were not suitable candidates for IUD provision. Current CPGs specifically state that a history of PID is not a disqualifying factor (ACOG, 2017b). However, only one participant in the pretest group disagreed with that statement. After implementation of the educational component of the survey, there was a change, although not statistically significant, that suggested a trend toward disagreeing with the statement that an adolescent with a recent history of PID was not a suitable candidate for IUD insertion.

These findings indicate that evidence based educational interventions have the potential to change provider perceptions related to appropriate patient selection for IUD uses as a form of contraception. These findings, although not statistically significant due to the small sample size, indicate a shift in beliefs that suggest a favorable trend.

Common Misperceptions

Low IUD initiation rates in adolescent populations may be attributed to misinformation surrounding safety, efficacy, and misperceptions related to patient interest (Lotke, 2015). Provider misperceptions about the safety and efficacy of IUDs in adolescent populations are

regarded as a large barrier that many patients face when seeking contraceptive care. A common barrier explored in this study is the misconception that adolescents are at higher risk for STI and PID contraction after IUD insertion due to their increased promiscuity and lack of barrier contraceptives use. The educational intervention contained two slides that focused on correcting common falsehoods surrounding the safety of IUDs in adolescent patient populations. Posttest group responses when compared to pretest group responses to all four questions indicate a trend towards correctly making accurate and safe judgments surrounding IUD provision for adolescents. Pretest and posttest comparison can be found in Table 6.

Another common misperception examined was the belief that CPGs require STI screening and documentation in order to place an IUD. Although it is indicated that purulent cervicitis on inspection be tested and treated before insertion, there are no current guidelines that require baseline STI screening and documentation prior to insertion when no high risk behavior is present. This belief has the potential to act as a significant barrier for adolescents, as it may lead to multiple appointments, multiple co-payments and prolonged waiting times. After the educational intervention, posttest group survey results indicated a change related to unnecessary STI clearance prior to insertion (Table 6). Pretest responses indicated the majority believed this common barrier is true, while post-educational responses showed that all participants understood STI testing and results were not needed prior to insertion. Adherence to current CPGs renders clinicians capable of correctly and safely counseling and providing IUDs.

A final important and potentially troublesome barrier explored is the misguided belief that any individual under the age of 18 years requires parental consent to have an IUD placed. According to the Guttmacher Institute (2018), 26 states, including Arizona, currently have laws

in place that protect individuals under the age of 18 to ensure they have access to contraceptive services without the consent of a parent or guardian. Although these laws have been in place for several decades, misperceptions often remain. This misperception is a major barrier that adolescents may face especially in home-life situations that do not openly discuss reproductive health. If providers believe that a parental guardian is required for IUD insertion it is plausible they will avoid discussing this form of contraception with adolescents and opt for a more traditional form such as the contraceptive pill or condoms, both of which are significantly less effective. See Table 6 for comparison of pretest and posttest results related to parental/guardian consent requirements. After the educational intervention was implemented, posttest group responses indicate the majority of providers understand that parental consent is not necessary in Arizona. These findings suggest that through increased education, it is possible to undermine common misconceptions related to IUD provision in adolescent populations, which could ultimately lead to increased IUD counseling, uptake and decreased unintended pregnancy rates.

Perceived Barriers and Personal Beliefs

Organizational Barriers

Several organizational barriers have been studied when considering the provision of various forms of LARCs including IUDs over the years. Kavanaugh et al.'s 2013 study, indicated perceived barriers at the organizational level such as cost-related, education-related and access-related challenges, all directly impact a provider's ability to adequately counsel about and prescribe LARCs to young women. Patients also face organizational barriers such as perceived lack of access to unbiased information and a perceived lack of systems in place to ensure privacy and confidentiality (Kavanaugh et al., 2013). Pretest and posttest groups were asked four

questions related to policy and procedure, appointment time allotment and patient privacy. There were no significant changes in beliefs after the educational intervention was implemented (Table 7). This lack of change indicates that MHC providers firmly believe that their current organization has systems in place to support IUD provision.

However, an important finding was related to time for patient visits. Participants overall perceived they had insufficient time to counsel, prescribe and insert IUDs in adolescent patients. Although not statistically significant ($p=.70$), a relationship between self-reported time spent counseling patients about contraceptive choices and self-perceived allotted appointment time is possible (Table 8). These findings are of interest as they indicate that even with seemingly adequate time, some providers within the MHC healthcare system do not feel confident in their ability to perform safe IUD provision within this patient population in the time available. Please note, posttest data are not discussed here, as there was no significant change after the educational intervention was administered. This finding is supportive of the assumption that without proper education providers, even with adequate appointment time, may not feel it is within their ability to safely provide IUD care.

Personal Beliefs

Finally, common barriers that adolescents may face when seeking contraceptive care is encountering a provider who lacks confidence in their ability to safely prescribe IUDs. Bandura's SCT emphasizes the importance of developing behavioral competencies through practice and education in order to ultimately enhance self-confidence and self-motivation (Bandura, 2004). Pretest and posttest groups were asked two questions regarding self-confidence and reluctance to prescribe IUDs to adolescents. Table 9 displays the pretest and posttest comparison related to

these questions. Providers were asked about their reluctance to prescribe IUDs before and after the educational intervention and an interesting trend was noted. Before the educational tool, the majority of providers admitted to some degree of reluctance. However, after the educational intervention, all providers stated they did not feel reluctant to counsel about and prescribe IUDs to adolescent patients. Although not statistically significant due to small sample sizes, this trend supports Bandura's theory that through education and practice, enhancement of self-confidence and self-motivation will occur leading to changes in practice patterns. These findings again suggest that increased education has a direct effect on personal perceptions of confidence and the ability to perform a task which may ultimately lead to increased IUD provision and decrease adolescent unintended pregnancy rates.

Strengths and Limitations

Strengths of this study include this is the first study to directly compare provider practice patterns and current evidence based CPGs in Southern Arizona. Another strength is related to survey response rates. As discussed above, web-based survey response rates average 30-40% of the total individuals selected to participate (Thayer-Hart et al., 2010). According to Flannigan, McFarlane, and Cook (2008), surveys conducted on medical professionals such as physicians often yield lower response rates than with the general population, with an approximate 10% average response rate. MHC reached out to approximately 40 providers, with nine completing the survey, totaling a response rate of greater than 20% which is higher than the expected healthcare provider rate discussed above.

Limitations of this study include attrition of two participants in the posttest phase due to incomplete responses. Both had 20% or more missing data and thus were eliminated from

posttest analysis. Another limitation was the small sample size, which did not provide sufficient power to detect significant differences amongst data. Although not unexpected, this study was unable to find statistically significant relationships between pretest and posttest results. The small sample size may partially be attributed to the fact the planned reminder e-mail (Appendix F) one week after the initial dissemination of surveys was not sent by the MHC CMO. This may have affected the response rate.

Conclusion

Fully understanding provider knowledge and utilization of IUD counseling and provision care guidelines for adolescent patients is urgently needed to help curb local and national unintended pregnancy rates. IUDs are a safe and highly effective method to control fertility and reduce unintended pregnancy in the adolescent age group. MCH providers' potential inability to adequately prescribe IUDs to adolescents may lead to increased healthcare costs for the organization and community as a whole. According to the CDC (2015b), for every public dollar spent to prevent a pregnancy, \$4.02 is saved on maternity and infant care cost caused by UP. By providing contraceptive care in the form of highly effective forms such as IUDs, providers' are decreasing the likelihood of patient non-adherence which may ultimately results in UP (CDC, 2015b).

The information gained from this project indicates that increasing provider knowledge of current CPGs through the use of evidence-based educational tools, has the potential to increase self-confidence in their ability to effectively counsel about and prescribe IUDs to adolescents. These findings support educational interventions as a way for providers to increase IUD uptake

in adolescents, curb organizational barriers to IUD insertion in this population, and develop policy and procedures that increase IUD uptake and decrease teen unintended pregnancy rates.

APPENDIX A:
EVIDENCE REVIEW TABLES

SYNTHESIS REVIEW

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
Berlan E.D., Pritt, N.M., & Norris, A.H. (2016)	Understanding pediatrician beliefs and attitudes towards counseling adolescents on IUD contraception and how these beliefs influence contraceptive counseling	Descriptive qualitative	<p>Sample: Primary care pediatricians (n=24)</p> <p>Setting: Midwestern city; all providers affiliated with Nationwide Children's Hospital</p>	<p>Data Collection: Semi-structured interviews 30 minutes in duration using open ended questions with demographic data collected via a short survey. All interviews were recorded and transcribed</p> <p>Data Analysis: Quantitative data analyzed for frequencies and medians</p> <p>Qualitative data was analyzed using two-fold coding schema: Piori coding and open coding; NVivo 10 software used for all coding and analysis</p>	<p>Demographic – mean age 43 years; 73% female; majority practiced >5 years; treated average 17 adolescents per week; 83% would see adolescent patient without guardian present</p> <p>Survey – major themes include: Unfavorable attitudes regarding IUD prescribing for adolescents based on outdated knowledge</p> <p>Negative beliefs about adolescent maturity making them poor candidates</p> <p>Personal opinions regarding safety of IUDs based on a lack of evidence based data</p> <p>Lack of counseling on IUDs during routine contraceptive counseling</p>

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
Harper, C. C., Rocca, C. H., Thompson, K. M., Morfesis, J., Goodman, S., Darney, P. D., ... Speidel, J. J. (2015).	Does a clinic-level intervention in a randomized trial improve access to LARCs and reduce pregnancy rates?	Cluster randomized controlled trial	<p>Sample: Training was provided at 20 family planning intervention sites</p> <p>Sexually active women aged 18-35 years who did not desire pregnancy (n=1500)</p> <p>Setting: 40 Planned Parenthood Federation of American (PPFA) centers in the U.S. that served at least 400 low-income women with diverse racial and ethnic backgrounds annually with less than 20% LARC insertion rates and had no other LARC intervention programs in place</p> <p>Clinics were from 15 different states</p>	<p>Data Collection: Randomization was performed by an independent statistician and was stratified by clinic size</p> <p>Intervention group participated in 0-5 days of evidence-based clinical training and received CME credits</p> <p>Control group received no training</p> <p>Patient perspectives after both intervention and control group counseling was gathered using questionnaires 3,6,9 and 12 months after counseling as well as at home pregnancy tests; participants received \$20 for each questionnaire and \$30 for each pregnancy test</p> <p>Data Analysis: Calculations were based on sample size on a two-group comparison (intervention and control) of the proportion of women</p>	<p>Study intervention increased women's choice of LARC without coercing the decision making process or sense of autonomy</p> <p>Unintended pregnancy rates significantly reduced in women who attended intervention family planning counseling session compared to those who attended control group counseling sessions (7.9 vs 15.4 per 100 person-years)</p>

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
				<p>choosing LARCs</p> <p>Analysis was done by intention to treat</p> <p>Intervention effect on women's choice of LARC was done using logistic regression with generalized estimated equations</p> <p>Pregnancy rates were analyzed using life-table analysis and Kaplan-Meier survival estimates</p>	
Kavanaugh, M. L., Frohwirth, L., Jerman, J., Popkin, R., & Ethier, K. (2013).	1) Describe and compare provider and patient perspectives about LARC methods for young women as well as 2) examine and identify strategies for addressing challenges experienced by facility staff in providing LARC methods to young women	Descriptive Qualitative	<p>Sample: Various types of participants including administrative directors (n=20); facility staff (n=37); clients aged 16-24 (n=48) with 22 between the ages of 16-19 and 26 between the ages of 20-24</p> <p>Setting: Title X, publicly funded, family planning sites that identified as having high (>6%) and low (<2%) IUD insertion rates</p>	<p>Data Collection: Data was collected from 3 sources: 1) Hour long semi-structured telephone interviews with administrative directors split evenly between sites the reported high and low insertion rates 2) Six 90-minute focus group discussions (FGDs) 3) 1 hour private semi-structured in-depth interviews (IDIs)</p> <p>Data Analysis: Recordings were transcribed verbatim;</p>	Major themes included 1) Client knowledge of LARCs among young women 2) Staff attitudes and beliefs about LARC candidate selection 3) Staff beliefs regarding pros and cons of IUDs 4) Director identified challenges in providing LARCs to young women 5) Strategies to improve access and provisions

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
				FGDs responses were organized according to emerging themes; director interviews and IDIs used coding schemes prior to data collection; 3 members of the research team continuously monitored and adapted code throughout the data gathering process; NVivo 8 was used to organize data, code transcripts and generate code reports	
Kohn, J. E., Hacker, J. G., Rousselle, M. A., & Gold, M. (2012).	Examine the knowledge and attitudes of adolescent health care providers regarding the use of IUDs by adolescents; assess the provider likelihood of recommending IUDs for adolescents	Descriptive Qualitative	<p>Sample: School-based health center staff (SBHC) (n=162) including clinicians (n=69) and non-clinicians (n= 93)</p> <p>The majority of clinician responses were from Nurse Practitioners (20%) and physicians (12%)</p> <p>Setting: New York City; 3 different mandatory SBHC meetings which presented latest research on IUDs for adolescents</p>	<p>Data Collection: 36 item self-administered, pretest/posttest given before and after meetings, survey with a 90% response rate</p> <p>Data Analysis: SPSS version 16 was used to conduct univariate analysis of sample characteristics, frequencies of responses and mean summary scores</p> <p>Bivariate correlations were conducted to</p>	<p>Major themes included: 1) knowledge of IUDs with nearly all respondents answering correctly the questions about safety of IUD use in adolescents 2) Likelihood to recommend IUDs 3) perceived patient receptivity and counseling</p> <p>Ultimately the study found that although increased knowledge is important, it may be insufficient in increasing provisions</p>

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
				<p>analyze associations between key variables</p> <p>Independent sample t tests and chi-square tests were used to analyze response differences between clinicians and non-clinicians</p> <p>p value = .05 set to assess statistical significance</p>	<p>because even with increased knowledge there is still a general fear or unwillingness to initiate IUDs in adolescents posing a significant barrier</p>
<p>Luchowski, A. T., Anderson, B. L., Power, M. L., Raglan, G. B., Espey, E., & Schulkin, J. (2014).</p>	<p>Assessment of obstetrician-gynecologists' knowledge, training, practice and beliefs regarding LARC methods</p>	<p>Qualitative</p>	<p>Sample: Fellows and junior fellows of the American College of Obstetricians and Gynecologists were selected using membership database; sample size was randomly chosen with the use of a computer-generated in order to have a national representation with a response rate of 51.7%, (n=1552)</p> <p>Setting: Mailed surveys were representative of major geographical districts throughout the nation</p>	<p>Data Collection: 8-page written survey was developed using prior surveys; questions related to practice demographics, frequency of health plan discussions with patients and an estimate of percentage of patients that use various forms of contraception including LARC methods insertions in the past year; Providers were also asked to provide previous training or education they had received on LARC methods</p>	<p>Major findings to survey questions included a limited amount of providers reporting receiving continuing education in the past 2 years focused on IUDs (38.1%)</p> <p>Respondents who answered in agreement that unintended pregnancy was a serious health concern were more likely to have received continuing education in IUD insertion (43% v 35.6%, p = .009)</p> <p>Ultimately, barriers to</p>

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
				<p>Data Analysis: Data was analyzed using computer-based software, specifically SPSS 20.0</p> <p>Comparison between categorical parameters were evaluated using chi-square; binary logistic regression was used to identify significant factors affecting LARC method choice</p> <p>Significance level of $p < .05$</p>	LARC provisions could be significantly decreased with increased provider training and education
Murphy, M. K., Stoffel, C., Nolan, M., & Haider, S. (2016).	Understand self-reported attitudes and practices of providers regarding LARC provision to adolescents	Modified grounded theory	<p>Sample: Purposive sampling of pediatricians, family medicine providers and APNs (n=16)</p> <p>Setting: Participants were from large academic and community health centers, federally qualified health centers, school based health centers and private practices in the Chicago area</p>	<p>Data Collection: Semi-structured audio-recorded qualitative interviews with time lengths between 23-47 minutes</p> <p>Participants were compensated with a \$30 gift card</p> <p>Data Analysis: Interviews were transcribed using a qualitative data management system known as Dedoose</p>	<p>Three major components of providing LARC to adolescents emerged: 1) provider confidence 2) patient-centered counseling 3) instrumental support for insertion including training</p> <p>In conclusion, providers face a variety of perceived barriers and express varying degrees of confidence when navigating these barriers</p>

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
				<p>version 6.2.21</p> <p>Themes were identified using coding, memo-writing and development of conceptual models</p> <p>Code was modified iteratively during the initial stages and 2 study team members independently coded the data</p> <p>Cohen k test of inter-rater reliability of codication was performed all codes</p>	
<p>Postlethwaite, D., Shaber, R., Mancuso, V., Flores, J., & Armstrong, M. A. (2007).</p>	<p>Does offering current and consistent evidence-based information about IUC to clinicians and patients, in conjunction with cost removal, result in changes in knowledge and attitudes, ultimately resulting in a change in practice patterns and IUC device insertion rates?</p>	<p>Descriptive quantitative pretest posttest</p>	<p>Sample: Provider beliefs and knowledge: 420 pre-survey and post-survey recipients; 50% responded to both surveys (n=212); nurse practitioners were more likely to respond than physicians (p=.04)</p> <p>IUC utilization: Intervention group = 9 medical centers; nonintervention group= 8 medical centers</p>	<p>Data Collection: Data was collected during various phases of the study with the use of pre-intervention surveys, intervention (series of evidence-based education over a 9-month period), post-intervention surveys and IUC utilization rates before and after the intervention</p> <p>IUC utilization data was collected through chart</p>	<p>There were four major findings categories: Knowledge changes, attitude changes and practice pattern changes; All categories showed increases in intervention group compared to non-intervention group.</p> <p>IUC utilization rates found statistically significant increase in IUC insertion between two groups from pre-</p>

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
			<p>Setting: 17 various Kaiser Permanente medical centers and satellite offices divided into 6 medical services areas</p>	<p>review of documented IUC device insertion over a 9-month period divided in quarterly time frames</p> <p>Data Analysis: Survey data was analyzed using SAS version 8 software; Pearson χ^2 tests were used to detect statistically significant differences in demographic characteristics of survey respondents as well as significant differences between intervention and control group responses to selected post-survey questions</p> <p>IUC utilization rate analysis was done through summation of IUC devices inserted over 9 month period and divided by the average number of female health plan members aged 15-44; independent sample-t tests were used to determine insertion rates between the two study groups; statistically</p>	<p>intervention to post-intervention ($p=.02$) with a rate increase of 3.3 per 1000 women aged 15-44 compared to an increase of 1.9 per 1000 women of the same age range</p>

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
				significant changes over time were conducted using paired t tests	
Ravi, A., Prine, L., Waltermaurer, E., Miller, N., & Rubin, S. E. (2014).	Compare 6-month post IUD insertion experience between adolescents and adults	Retrospective cohort study	<p>Sample: Female patients aged 35 or younger who had an IUD inserted by a family practice provider at an IFH site in 2011 (n=684)</p> <p>Adolescents were defined as aged 21 or younger (n=182; 27%)</p> <p>Setting: Federally qualified health center (FQHCs) in New York City staffed by family physicians</p>	<p>Data Collection: Retrospective chart review of all IUDs inserted in 2011</p> <p>Data was collected from electronic health records and each chart was reviewed from date of insertion for up to 6 months after insertion or until device of removed</p> <p>If no contact with provider was made after initial 6 months post-insertion, the chart was reviewed for an additional 6 months.</p> <p>Data Analysis: Descriptive statistics were tested using x2 tests, t tests and Wilcoxon signed-rank tests with a significance of $P < .05$ defined prior</p> <p>Kaplan-Meier tests were used to compare adult to adolescent data</p>	<p>Five major categories of findings:</p> <ol style="list-style-type: none"> 1) Frequency and content of IUD-related, patient-initiated follow-up; during the 6 month post-insertion period adolescents were significantly less likely to initiate discussion with provider compared to adults (59% v 43%; $P < .001$). 2) IUD discontinuation; No significant difference in continuation between the two age groups 3) Expulsions; No significant difference in expulsion rates between age groups 4) Removals; no significant difference between age groups 5) STI rates; study found that adolescent's experiences significantly higher rates of STI testing before insertion ($P < .01$). No significant

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
					difference in testing post-insertion between age groups
Stubbs, E. & Schamp, A. (2008).	To determine current perceptions of family practice providers regarding the risks of and contraindications of using IUDs and how these beliefs compare to established clinical guidelines	Descriptive qualitative	<p>Sample: All family practice providers received a survey totaling 131 surveys mailed</p> <p>96 active FP providers responded; 56% women; 89% having practiced >10 years</p> <p>Setting: Kingston, Ontario, Canada family practice providers</p>	<p>Data Collection: 3-part self-administered questionnaire mailed</p> <p>1) questions related to physician demographics (age, gender and years practiced)</p> <p>2) questions on perceptions of risks associated with the use of IUDs</p> <p>3) questions on indications for use of IUDs</p> <p>All non-respondents received a second survey 1 month later and then again 2 months later</p> <p>Data was compiled using numerical identifiers to maintain anonymity</p> <p>Data Analysis: Responses about risks were compared with ranking or risks reported in current CPGs</p>	<p>FP providers in practice 0-9 years were more likely to prescribe IUD than those in practice longer (P=.037)</p> <p>Women physicians were more likely than men to prescribe (89% v 74%)</p> <p>50% were interested in attending a course on IUD insertion</p> <p>Ectopic pregnancy as a major risk factor (60%); major risk of failure (47%); increase painful bleeding (45%)</p> <p>Results showed a significant gap between provider beliefs and current practice guidelines information related to risks and contraindication</p>

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
				Demographic data was compared to practice patterns using x2 tests with P<.05 significance level	
Thompson, K. M., Rocca, C. H., Kohn, J. E., Goodman, S., Stern, L., Blum, M., ... Harper, C. C. (2016).	Is public funding for contraception associated with LARC use when providers receive training on these methods?	Randomized controlled trial	<p>Sample: Randomly assigned clinics across the U.S. (n=40); Half of the sites were randomly selected to receive a 4-hour training (n=20)</p> <p>Women aged 18-25 (n=1500; 802 interventions, 698 controlled) were enrolled and followed for one year</p> <p>Setting: Planned Parenthood clinics across the U.S.</p>	<p>Data Collection: Primary outcome of LARC initiation was assessed with follow-up questionnaires at 3,6,9 and 12 months; as to whether LARC were initiated, chart reviews were performed at 12 months</p> <p>Sources of funding for contraception was retrieved using clinic- and individual- level data; managers of the clinics reported funding while individuals reported their type of insurance</p> <p>Data Analysis: Followed an intent to treat approach and accounted for clinic-level clustering</p> <p>Life table analysis was used to assess overall LARC initiation rates</p>	LARC initiation was significantly higher in the intervention group compared to the control group (22 vs 18 per 100 PY; adjusted hazard ratio [AHR] = 1.43; 95% confidence interval [CI] = 1.04, 1.98) Women with public health insurance had higher LARC initiation rates than uninsured women (AHR = 1.56; 95% CI = 1.09, 2.22)

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
				To estimate the effects of intervention and funding sources on LARC ignition, Cox proportional hazards model with shared facility was used.	
Wesson, J., Gmach, R., Gazi, R., Ashraf, A., Méndez, J. F., Olenja, J., ... Janowitz, B. (2006).	Introduce new IUD screening checklist to active family planning providers to determine: a) The comprehensibility and acceptability of the IUD screening checklist to providers b) Whether the IUD screening checklist will facilitate the client screening process so that providers: 1) correctly rule out women with contraindications 2) rule in appropriate candidates for IUD insertion, even those previously though to be ineligible	Mixed methods	Sample: Convenience sampling of family planning providers chosen based on recommendation of local ministries of health officials and voluntary status (n=135) Setting: Providers were invited from 4 different countries including Dominican Republic, Kenya, Bangladesh and Senegal	Data Collection: Four focus groups were conducted in each country with 8-12 providers in each group Oral consent was given prior to participation Along with focus groups, case studies were given to do with the use of the checklist Data Analysis: Case study scenarios were completed and submitted anonymously from all participants; answers were tabulated using Microsoft Excel 2003. Focus group discussion were taped and transcribed by an independent study investigator	Most providers surveyed found the checklist to have positive impacts on expanding IUD eligibility in practice settings However, there was a low percentage of correct answers to the case study scenarios when utilizing the checklist Hesitations regarding patient eligibility still existed even after the checklist algorithm suggesting more education and policy change will need to happen for increased LARC uptake

Author / Article	Research questions/ Hypothesis	Study Design	Sample/Setting	Data Collection / Analysis	Findings
				Cross-country trends were compiled and summarized by staff at a central location	

CLINICAL PRACTICE GUIDELINE REVIEW

Reference	Indicated safety of IUDs for use in adolescents	LARC, like IUDs, should be considered first line contraceptive method	Need for counseling for IUD initiation	Confidentiality is adhered to during contraceptive appointments	Closer follow up recommendations for adolescents	Required STD screen prior to insertion	Required confirmation of understanding prior to initiation
Hardeman & Weiss (2014)	X					X	
American Academy of Pediatrics (2014)	X	X	X	X	X		X
American College of Obstetricians and Gynecologists (2017a)	X	X	X	X			
American College of Obstetricians and Gynecologists (2017b)	X		X			X	
Curtis (2016)	X	X	X		X	X	
Gavin et al. (2014)	X	X	X	X		X	X

APPENDIX B:
LETTER OF PARTICIPATION

MHC Healthcare
13395 N. Marana Main Street
Marana, AZ 85653

3/2/2018

University of Arizona Institutional Review Board
c/o Office of Human Subjects
1618 E Helen St
Tucson, AZ 85721

Please note that Ms. Whitney Pettijohn, UA Doctor of Nursing Practice student, has permission of the MHC Healthcare Clinic to conduct a quality improvement project at our facility for her project, "Describing Contemporary Use of Intrauterine Device Clinical Practice Guidelines for Adolescents in Southern Arizona."

Ms. Pettijohn will conduct a survey of health care providers at MHC Healthcare Clinic. She will recruit providers through email. The email will provide a description of the project, what they will be asked to do, the time involved, and a link to the online survey. Ms. Pettijohn's activities will be completed by May 31, 2018.

Ms. Pettijohn has agreed to provide to my office a copy of the University of Arizona Determination before she recruits participants. She will also present aggregate results to the providers at their monthly staff meeting.

If there are any questions, please contact my office at 520-682-4111 Ext. 6071 or at jeserrano@mhchealthcare.org.

Signed,



Jenitza Serrano-Feliciano, MD
Chief Medical Officer

APPENDIX C:
DISCLOSURE

Welcome,

You have been selected to participate in the following survey because you may provide contraceptive counseling to adolescent patients. The purpose of this survey is to gather information related to provider experience and perceptions of prescribing long-acting reversible contraception (LARC), specifically intrauterine devices (IUD) to nulliparous adolescent patients and how they compare to current clinical practice guidelines. If your current practice does not involve counseling on or prescribing contraception to individuals ages 13-18 you may exclude yourself from this study now.

The survey is part of a doctoral project being conducted by Whitney E. Pettijohn, a graduate student in the Doctor of Nursing Practice program at The University of Arizona.

Participation in this study includes an anonymous online survey, followed by a brief educational PowerPoint presentation, and completed with a follow-up survey. This will take approximately 20 minutes to complete.

There are no foreseeable risks associated with participating in this project. Participation is voluntary and you may choose to not participate. If you do choose to participate, please know that all answers are anonymous and no identifying information will be stored or shared with anyone. Only aggregate, de-identified data will be shared with the organization. If at any time you wish to stop answering questions in the survey, you may do so without penalty.

Your participation in this survey is greatly appreciated and your feedback is important to informing this DNP project.

If you have any questions related to this survey or the purposes of its' findings, you may contact the doctoral chair, Dr. Judith A. Berg at jaberg@email.arizona.edu or the student, Whitney E. Pettijohn at wpettijohn@email.arizona.edu.

By continuing to answer the following questions, you are indicating that you have read the attached consent and fully consent to participate in the survey.

Thank you for your participation,
Whitney Pettijohn, DNP/FNP candidate

APPENDIX D:
SURVEY TOOLS

DEMOGRAPHIC QUESTIONNAIRE

The following questions will aid me in understanding more about you, the survey participant. There are no right or wrong answers, please answer as honestly as possible.

1. What is your gender? Please mark one.

Male

Female

Transgender

Prefer not to respond

2. What is your professional role within MHC? Please mark one.

Physician

Nurse Practitioner (NP)

Certified Nurse Midwife (CNM)

Physicians Assistant (PA)

3. What is your specialty of practice as it applies to you? Please mark one.

Internal Medicine

Family Practice

Obstetrics and Gynecology

Pediatrics

Midwifery

4. How many years have you worked in healthcare in your current role? Please mark one.

Less than 1 year

More than 1 year, less than 5 years

More than 5 years, less than 10 years

More than 10 years, less than 15 years

Greater than 15 years

5. What percentage of your patient population is considered to be adolescent (ages 13-18)?

Less than 25%

Between 25 and 50%

Between 50 and 75%

Over 75%

6. Do you have experience counseling, prescribing and/or initiating intrauterine devices such as Mirena, Skyla, Liletta and/or ParaGarud?

Yes

No

7. Do you have experience counseling, prescribing and/or initiating intrauterine devices such as Mirena, Skyla, Liletta and/or ParaGarud in adolescent patients?

Yes

No

8. How long is typically spent providing contraceptive counseling?

Less than 10 minutes

More than 10 minutes, less than 15 minutes

More than 15 minutes, less than 20 minutes

20 minutes or more

9. Have you completed an IUD insertion training?

Yes

No

10. Approximately how many IUDs have you prescribed* for adolescents in the following calendar year? *Prescribing indicates counseling on and providing resources to have it placed or physically placing the device yourself.

Less than 5

More than 5, less than 10

More than 10, less than 20

20 or more

PRE-EDUCATIONAL SURVEY QUESTIONNAIRE

The following questions should be answered using either, 1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, 5 = strongly disagree. All questions are in reference to MHC Community Health Center unless stated otherwise. The term adolescent is in reference to all female patients over the age of 13 and younger than 18 unless otherwise stated.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1. IUDs are a safe and effective form of contraception for nulliparous adolescents	1	2	3	4	5
2. IUDs should be considered a first line form of contraception for adolescents	1	2	3	4	5
3. MHC has systems in place to ensure privacy for adolescents seeking contraceptive care	1	2	3	4	5
4. I feel confident that I have adequate training to counsel on and prescribe IUDs to adolescents	1	2	3	4	5
5. Adolescents are typically interested in IUDs as a form of contraception	1	2	3	4	5
6. Adolescents in my clinic have access to unbiased, factual information regarding IUDs as a form of contraception	1	2	3	4	5
7. Adolescents are at a higher risk for developing pelvic inflammatory disease due to high risk sexual behavior therefore IUDs should be avoided	1	2	3	4	5
8. The pain associated with IUD placement may be too intense for a nulliparous adolescent and therefore should be avoided	1	2	3	4	5
9. Adverse effects of IUD placement may result in future infertility	1	2	3	4	5
10. IUDs increase the chances of adolescent promiscuity due to a possible perceived lack of need for barrier contraception	1	2	3	4	5

11. Adolescents require increased counseling and educational material before placement of IUDs when compared to adult patients	1	2	3	4	5
12. I am reluctant to counsel on or prescribe IUDs to nulliparous adolescents due to safety concerns	1	2	3	4	5
13. Adolescents often discontinue IUDs after initiation, indicating they experience higher levels of dissatisfaction	1	2	3	4	5
14. An adolescent patient with a history of pelvic inflammatory disease in the last year is not a good candidate for IUD placement	1	2	3	4	5
15. All adolescents require STD screening and documentation of negative results before placement of IUDs	1	2	3	4	5
16. I would feel comfortable counseling on and inserting an IUD in an adolescent patient when parents are not present	1	2	3	4	5
17. I feel current policy and procedure adequately define who is and who is not a proper candidate for IUD placement	1	2	3	4	5
18. I feel I have enough time during patient appointments to safely counsel on and/or place an IUD in adolescent patients	1	2	3	4	5
19. Adolescents require closer follow up after insertion of IUD when compared to adults	1	2	3	4	5
20. Parental consent is required before placement of IUD in adolescents	1	2	3	4	5

POST-EDUCATIONAL QUESTIONNAIRE

The following questions should be answered using either, 1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, 5 = strongly disagree. All questions are in reference to MHC Community Health Center unless stated otherwise. The term adolescent is in reference to all female patients over the age of 13 and younger than 18 unless otherwise stated.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1. IUDs are a safe and effective form of contraception for nulliparous adolescents	1	2	3	4	5
2. IUDs should be considered a first line form of contraception for adolescents	1	2	3	4	5
3. MHC has systems in place to ensure privacy for adolescents seeking contraceptive care	1	2	3	4	5
4. I feel confident that I have adequate training to counsel on and prescribe IUDs to adolescents	1	2	3	4	5
5. Adolescents are typically interested in IUDs as a form of contraception	1	2	3	4	5
6. Adolescents in my clinic have access to unbiased, factual information regarding IUDs as a form of contraception	1	2	3	4	5
7. Adolescents are at a higher risk for developing pelvic inflammatory disease due to high risk sexual behavior therefore IUDs should be avoided	1	2	3	4	5
8. The pain associated with IUD placement may be too intense for a nulliparous adolescent and therefore should be avoided	1	2	3	4	5
9. Adverse effects of IUD placement may result in future infertility	1	2	3	4	5

10. IUDs increase the chances of adolescent promiscuity due to a possible perceived lack of need for barrier contraception	1	2	3	4	5
11. Adolescents require increased counseling and educational material before placement of IUDs when compared to adult patients	1	2	3	4	5
12. I am reluctant to counsel on or prescribe IUDs to nulliparous adolescents due to safety concerns	1	2	3	4	5
13. Adolescents often discontinue IUDs after initiation, indicating they experience higher levels of dissatisfaction	1	2	3	4	5
14. An adolescent patient with a history of pelvic inflammatory disease in the last year is not a good candidate for IUD placement	1	2	3	4	5
15. All adolescents require STD screening and documentation of negative results before placement of IUDs	1	2	3	4	5
16. I would feel comfortable counseling on and inserting an IUD in an adolescent patient when parents are not present	1	2	3	4	5
17. I feel current policy and procedure adequately define who is and who is not a proper candidate for IUD placement	1	2	3	4	5
18. I feel I have enough time during patient appointments to safely counsel on and/or place an IUD in adolescent patients	1	2	3	4	5
19. Adolescents require closer follow up after insertion of IUD when compared to adults	1	2	3	4	5
20. Parental consent is required before placement of IUD in adolescents	1	2	3	4	5

APPENDIX E:
EDUCATIONAL TOOL

CURRENT CLINICAL PRACTICE GUIDELINES FOR IUD PLACEMENT IN NULLIPAROUS ADOLESCENT PATIENTS

Whitney Pettijohn, BSN, RN
DNP/FNP Candidate
College of Nursing
The University of Arizona



SUMMARY

- Unintended pregnancy (UP) background and significance
 - National level
 - Local level
- Intrauterine device (IUD) background and significance
- Current guideline recommendations
 - Common misperceptions
 - Barriers to access
 - Safety and efficacy
 - Selecting a candidate
 - Counseling
 - Prescribing
 - Patient follow up
- Take home points
- Conclusion

UNINTENDED PREGNANCY

- Unintended pregnancy (UP)
 - Mistimed or unwanted
 - Personal and societal burden
 - Preventable
- 49% of all pregnancies are considered to be unintended across all
 - Ethnic groups
 - Ages
 - Financial statuses
 - Levels of education

(CDC, 2015; Guttmacher, 2016a)

BACKGROUND & SIGNIFICANCE LOCAL

- Arizona
 - 51% of all pregnancies in 2010 were considered UP ages 15-44 which resulted in:
 - 61% live births
 - 23% elective abortions
 - Adolescent UP
 - 56 out of 1,000 births in women ages 15-19
 - Higher than the national average of 52 out of 1,000
 - Estimated \$670.9 million of federal and state government funding allocated to UPs and childbirth in 2010

(Guttmacher, 2016a)

INTRAUTERINE DEVICES

- Long acting reversible contraception (LARC)
 - 1st-tier contraceptive methods
 - Highly efficacious, safe and reversible
- Intrauterine Device (IUD) are one form of LARC
 - 99% effectiveness rate at preventing UP
 - Hormonal or non-hormonal uterine implant
 - Copper T380A IUD device made of polyethylene wrapped with copper wire around the stem and arms commonly known as Paragard
 - There are several Levonorgestrel (LNG) containing IUDs including
 - 20mcg/day - Mirena
 - 19.5mcg/day - Kyleena
 - 18.6mcg/day - Liletta
 - 13.6mcg/day - Skyla

(ACOG, 2017b; Lotke, 2011)

COMMON MISPERCEPTIONS & MYTHS

- Adverse events related to IUD insertion are common
- IUDs cause tubal infertility
- IUDs cause pelvic inflammatory disease (PID)
- IUDs increase risk for ectopic pregnancy
- IUDs are unsafe and too painful for nulliparous women
- Adolescents are not interested in IUD contraception
- Adolescents are too promiscuous for IUD leading to increased risk for sexually transmitted infections (STI) and PID
- There are higher rates of device expulsion with adolescents when compared to adult women

PATIENT BARRIERS

There are several well-known and well-documented barriers to patients receiving highly effective IUD contraception counseling and provision

- | | |
|---|--|
| <p>Patient</p> <ul style="list-style-type: none"> • Cost • Lack of knowledge • Misinformation • Lack of access to medically accurate and unbiased information • Distrust in provider confidentiality • Fear of insertion process/pain • Fear of risk for future infertility | <p>Provider</p> <ul style="list-style-type: none"> • Lack of training • Lack of confidence in ability to counsel on and administer IUD • Misinformation/ belief in outdated information • Perceived lack of organizational support • Perceived lack of adequate appointment time |
|---|--|

(Kavanaugh et al., 2013; Murphy et al., 2016; Stubbs & Schamp, 2008)

SAFETY & EFFICACY

The American Academy of Family Physicians, American Academy of Pediatrics (AAP), American Congress of Obstetricians and Gynecologists (ACOG) and the Centers for Disease Control (CDC) all endorse the use of IUDs in nulliparous, adolescent women

- Accumulating evidence of previous commonly assumed complications such as uterine perforation, ectopic pregnancy and PID are uncommon in all users
- No evidence exists that supports the claims that adolescents are at an increased risk for IUD expulsion, PID or subsequent infertility

(ACOG, 2017b)

CANDIDATE SELECTION

- Contraindications to IUD candidate selection and placement are limited
 - Current purulent cervicitis
 - Current infection with gonorrhea, chlamydia
 - Current, diagnosed PID
- Past PID is not a contraindication to IUD placement
- HIV infection and immunosuppression are not contraindications for IUD initiation

(AAP, 2014; Curtis, 2016)

COUNSELING

Regardless of patient's age or sexual history, a patient-centered assessment of reproductive needs, including contraception should occur routinely

- Virginal patients may not have immediate contraceptive needs, but discussion should begin early, ideally between ages 13 and 15
 - By grade 12, more than half of adolescent females report having had sexual intercourse
 - Discussion should include
 - Contraceptive choices
 - STI prevention
 - Preventive medicine services such as HPV vaccine
 - Availability of follow-up should be explained and documented
 - Confidentiality
 - Essential component for adolescent reproductive counseling
 - Lack may lead to unnecessary barriers to access
 - Must be discussed during initial visit to establish rapport
 - Reproductive coercion
 - All patients, including adolescents, have the right to refuse and discontinue contraceptive methods at any time
 - At no point should an adolescent patient be forced to use a method chosen by anyone other than herself including parents, guardian, partner or health care provider
- The content, format, medium and method of delivery of contraceptive counseling should be evidence-based and free of personal bias. Through this method, more patients will have the resources needed to make informed decisions and adhere to contraceptive treatment plans!**

(ACOG, 2017a; Gavinet et al., 2014)

PRESCRIBING

Once appropriate candidate selection and counseling has occurred, there are few examinations or testing that need to occur prior to initiation

- Physical exam
 - Bimanual examination and cervical inspection required for safe insertion
- Laboratory testing
 - High risk sexual activity with no symptoms should be tested for STI at the time of IUD insertion
 - ****This should not delay insertion as treatment can occur with IUD in place once results are confirmed positive****
 - Very high risk sexual behavior (recent sexual activity with partner with known gonorrhea), and/or purulent cervicitis, insertion should be delayed until treated

(AAP, 2014; Hardeman & Weiss, 2014)

PATIENT FOLLOW-UP

- Frequent follow-up is important to maximize adherence
- Post-initiation follow up is important to assessing adherence and satisfaction with all forms of contraception and can occur via
 - In-person appointments
 - Over the telephone
 - Electronic communication (Patient Portal)
- Follow-up communication also provides the opportunity for
 - Adolescents to voice concerns and/or problems and may lead to decreased numbers of discontinuation
 - Continual reassessment of sexual concerns, behaviors, prevention strategies and STD screening

(AAP, 2014; ACOG, 2017a)

TAKE HOME POINTS

- IUDs are safe, efficacious and reversible forms of contraception for women of all ages
- According to AAP, AAFP, ACOG and the CDC, IUDs are safe for nulliparous, adolescent women
- IUDs do not increase the risk for PID or future infertility in adolescents
- During contraceptive counseling, all providers caring for adolescents should inform clients of the most effective methods available, including IUDs
- It is likely that through increased counseling on IUD efficacy, safety and availability, communities such as ours may see a substantial reduction in teen pregnancy

CONCLUSION

- Thank you for reviewing this educational PowerPoint
- All information presented is based on current evidence-based clinical practice guidelines
- Please complete the post-education survey at your convenience
 - LTRK
- If you have any questions or concerns please contact me at
 - wpettjohn@email.arizona.edu

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APPENDIX F:
REMINDER E-MAIL

This is a reminder e-mail that if you would like to participate in a study to assess provider perceptions and knowledge of current clinical practice guidelines related to prescribing intrauterine devices (IUD) to nulliparous adolescent women please complete the following survey within in the next week.

Please answer the survey questions based on your current practice behaviors and beliefs when counseling on and/or prescribing IUDs to adolescent females.

The information derived from these survey tools are anonymous and to be used only for the purposes of this project. By continuing you are giving me permission to utilize the information in the study.

The surveys should take approximately 20 minutes and can be found at the following link:
https://uarizona.co1.qualtrics.com/jfe/form/SV_9FR9xeJHcN2BShb

For any questions or concerns you can reach me at wpettijohn@email.arizona.edu or my project chair, Dr. Judith Berg at jaberg@email.arizona.edu

Thank you for your time and participation,
Whitney Pettijohn, DNP/FNP candidate
The University of Arizona

APPENDIX G:
THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL
LETTER



Human Subjects
Protection Program

1618 E. Helen St.
P.O. Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
<http://rgw.arizona.edu/compliance/home>

Date: March 22, 2018
Principal Investigator: Whitney Elaine Pettijohn

Protocol Number: 1803395692
Protocol Title: DESCRIBING CONTEMPORARY USE OF INTRAUTERINE
 DEVICE CLINICAL PRACTICE GUIDELINES FOR
 ADOLESCENTS IN SOUTHERN ARIZONA

Determination: Human Subjects Review not Required

Documents Reviewed Concurrently:

Data Collection Tools: *Questionnaires.docx*
 HSPP Forms/Correspondence: *Advisor Signature.pdf*
 HSPP Forms/Correspondence: *Pettijohn_determination_2-1_v2018.pdf*
 Informed Consent/PHI Forms: *Disclosure Form.docx*
 Other Approvals and Authorizations: *Siteauthorization.pdf*
 Participant Material: *Pettijohn_IUDEDUCATION_Final.pptx*
 Participant Material: *Reminder Email.docx*

Regulatory Determinations/Comments:

- Not Research as defined by 45 CFR 46.102(d): As presented, the activities described above do not meet the definition of research cited in the regulations issued by U.S. Department of Health and Human Services which state that "research means a systematic investigation, including research development, testing and evaluation, designed to contribute to generalizable knowledge."

The project listed above does not require oversight by the University of Arizona.

If the nature of the project changes, submit a new determination form to the Human Subjects Protection Program (HSPP) for reassessment. Changes include addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the study activity. Please contact the HSPP to consult on whether the proposed changes need further review.

The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).

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