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IDENTIFYING BARRIERS TO LONG-ACTING REVERSIBLE CONTRACEPTION USAGE
AMONG ADOLESCENTS

A MASTER'S PROJECT
SUBMITTED TO THE GRADUATE FACULTY
OF THE GRADUATE SCHOOL
BETHEL UNIVERSITY

BY
EMILY DAVIS
VIKTORYIA PETRUSEVICH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF SCIENCE IN NURSE-MIDWIFERY

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BETHEL UNIVERSITY

Identifying Barriers to Long-Acting Reversible Contraception Usage
Among Adolescents

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May 2018

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To our families and friends, we thank you for all of your love and support as we journeyed through this rigorous program. The understanding you have shown and the sacrifices you have made do not go unnoticed; it was this love, support and sacrifice that played a pivotal role in the achievement of goals which are finally being realized. We dedicate this project to all adolescents and young women with hope that future research and health promotion efforts increase accessibility of LARC methods and give women a greater sense of control over their reproductive life plans.

We would also like to thank our capstone advisor Katrina Wu, MSN, CNM of the Bethel University Nurse-Midwifery faculty. The kind support and encouragement you extended throughout this process was exactly what we needed to persevere and create a work that we have both become so proud of. In addition, we would like to acknowledge Dr. Jane Wrede of the Bethel University Nurse-Midwifery faculty for your time and commitment to this capstone project; we are so grateful for the expert-level insight you provided this project.

Emily Davis and Viktoryia Petrusovich

Abstract

Background/Purpose: Although LARC methods including IUDs and implants are highly effective in preventing pregnancies and both the American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP) recommend it for adolescents as a first-line choice given their efficacy, safety, and ease of use, its utilization by sexually active adolescents remains low. The purpose of this critical literature review was to identify what barriers to LARC impact utilization and continuation rates among adolescents and young women.

Theoretical Framework: The Modeling and Role Modeling Theory can be used as a foundation for the promotion of LARC methods in the adolescent and young adult population. This theory emphasizes the importance of building trust, promoting patient control, emphasizing patient strengths, promoting positive sense of self and creating shared health goals (Nursing Theory, 2016). Implementation of this theory can aid providers to better understand individual motivators for LARC utilization, allowing for more individualized counseling.

Results/Findings: Several barriers including providers' knowledge and philosophy, adolescent and young adult perceptions, access to care, and cost were identified. These barriers significantly impact an adolescent's decision to initiate and to continue utilization of LARC methods.

Implications for Research and Practice: Nurse-midwives' commitment to patient education and their approach to individualized patient care, presence in family planning clinics, and participation in care of pregnancy and the postpartum period, make them well positioned to address barriers to LARC and improve awareness of these methods.

Keywords: LARC, adolescents, barriers

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Chapter One: Introduction

Approximately 50% of pregnancies in the United States are unplanned (Centers for Disease Control and Prevention [CDC], 2017). Adolescents and young women under the age of 25 years have the highest rate of unintended pregnancies compared to women of all other reproductive ages; these rates are disproportionately higher among individuals of racial and ethnic minority groups (Brown et al., 2013). In the United States, almost half of adolescents aged 15-19 years have had sexual intercourse and over 70% of pregnancies to adolescents are unintended at the time of conception (Usinger, Gola, Weis, & Smaldone, 2016). It is a serious public health concern due to increased risk of immediate and long-term adverse social, economic, and physical health outcomes. Teen pregnancy and childbirth account for billions of dollars in costs to U.S. taxpayers, due to increased health and foster care costs, increased incarceration rates among children of teenage parents, and loss of revenue because of lower education level and lower income among teen mothers. Children of teen mothers have more health problems, are more likely to drop out from high school, be incarcerated at some point in adolescence, and give birth as a teenager (CDC, 2017).

Unintended pregnancies have been associated with a low knowledge level about contraception and its use, fear of side effects, ambivalence regarding pregnancy, and mistrust of government-supported family planning services (Fontenot & Fantasia, 2015). Even though the United States has seen a significant decline in adolescent pregnancy rates with a record low birth rate of 22.3 per 1000 women aged 15-19 years in 2015, the teen pregnancy rate remains substantially higher than in other western industrialized countries (CDC, 2017). Some of the reasons for this decline are that more teens are abstaining from sexual activity and more teens that are sexually active are using birth control. The most commonly used methods of

contraception by adolescents and young women are condoms, withdrawal, oral contraceptive (OC) pills and Depo-Provera hormonal injection (DMPA). These methods as well as other short-acting contraceptive methods including the transdermal patch and the vaginal ring are often used inconsistently and have higher failure rates with typical use (9% for OC, patch, and ring, 6% for DMPA) compared to long-acting reversible contraceptive (LARC) methods such as intrauterine device (IUD) (0.2%-0.8%) and subdermal etonogestrel implant (0.05%) (Usinger, Gola, Weis, & Smaldone, 2016). As a result of these findings, it is evident that identifying and eliminating barriers to LARC use in adolescents should be an integral part of the strategic plan to reducing rates of unplanned pregnancy in this population. This paper will provide a critical review of the literature to identify barriers to LARC utilization and continuation rates among adolescents and young women.

Statement of Purpose

The purpose of this paper is to identify barriers to LARC utilization and continuation rates among adolescents and young women. Specific areas of focus as identified while conducting the literature review include the following barriers: cost, access to care, provider knowledge and philosophy, perceptions of adolescents, concerns regarding insertion/discontinuation and side effects. Identifying and exploring these barriers will aid in the identification of strategies to improve utilization rates among this patient population. Central tenets of The Modeling and Role Modeling Theory will be applied and explored in relation to the identified barriers to LARC utilization (Nursing Theory, 2016). This theory emphasizes the importance of understanding the patient's perspective by attempting to view the world through their lens (Hertz, n.d.).

Evidence Demonstrating Need

LARCs are known to be highly effective in preventing pregnancy. These methods do not require regularly scheduled adherence and have a high continuation rate. In 2012, the American College of Obstetricians and Gynecologists (ACOG) recommended LARCs including intrauterine devices (IUDs) and contraceptive implants as top-tier contraceptives based on their effectiveness, with pregnancy rates of less than 1% per year for perfect and typical use (ACOG, 2012). They also highlighted that these methods are safe and appropriate contraceptive methods for most women including adolescents (ACOG, 2012). In 2014, the American Academy of Pediatrics (AAP) also endorsed these recommendations stating that for adolescents, LARC methods should be the first-line choice given their efficacy, safety, and ease of use (AAP, 2014).

In 2016, ACOG reaffirmed the recommendations of LARCs as first-line contraceptive methods among adolescents, with the addition of immediate postpartum and post-abortal insertion recommendations. These recommendations include immediate postpartum IUD or implant insertion to ensure reliable contraception for adolescents when they are already at the hospital and are highly motivated to prevent another pregnancy.

The reduction of pregnancies conceived within 18 months of a previous birth is one of the objectives of the Department of Health and Human Services' Healthy People 2020 (Office of Disease Prevention and Health Promotion, 2018). 35% of pregnancies in the United States are conceived within 18 months of a previous birth (Soper, 2016). Adolescent mothers are at increased risk for having a rapid repeat pregnancy and 20% give birth again within two years (Baldwin & Edelman, 2013). Short interpregnancy intervals are associated with preterm birth, low birth weight, and preeclampsia (Soper, 2016).

Despite ACOG's (2012) position statement on LARC and their recommendation for LARC counseling at all health visits with sexually active adolescents, utilization rates remain low at 4.5% (Kaunitz, 2018). Current utilization rates warrant critical review of the literature to uncover and more thoroughly understand barriers to LARC utilization within this population.

Significance to Nurse-Midwifery

The scope of practice for nurse-midwives includes reproductive health care of adolescents, as well as women throughout the lifespan. As a result, nurse-midwives play an essential role in partnering with adolescents and young women to explore effective contraceptive options. Based on the midwifery model of care that emphasizes education and family-centered care for women of all ages, nurse-midwives are ideal care providers for adolescents and young women (the American College of Nurse-Midwives [ACNM], 2016). As highlighted by the ACNM (2012) *Hallmarks of Midwifery*, midwives seek to empower women as partners in health care, promote public health care perspectives, advocate for informed choice and shared decision-making, and value skillful communication and counseling. Some of the position statements from the ACNM on adolescent health include the provision of confidential services among adolescents, practice of evidence-based adolescent health care, opposition to any limitations on access to essential services including family planning, emergency contraception, and sexual health education (ACNM, 2016).

Advanced practice registered nurses are in a unique position to serve adolescents and young women, especially given their strong presence in family planning clinics nationwide. Additionally, they have the opportunity to begin contraceptive counseling throughout pregnancy and into the postpartum period, with opportunities to build trusting relationships and debunk commonly held misbeliefs surrounding LARC usage. The profession's emphasis on health

promotion makes LARC an excellent option for adolescents and young women, as these methods give women the opportunity to be more intentional with their reproductive life plans. Nurse-midwives are in an excellent position to educate adolescents on the effectiveness of all birth control methods, including LARC, clarify misconceptions, support the decisions of their patients as well as provide them with their contraceptive methods of choice.

Theoretical Framework

The Modeling and Role Modeling Theory was developed by Helen Erickson, Evelyn Tomlins, and Mary Anne Swain and first appeared in their book *Modeling and Role Modeling: A Theory and Paradigm for Nursing* in 1983 (Nursing Theory, 2016). Some of the main goals of the Modeling and Role Modeling Theory include building trust, promoting patient control, emphasizing patient strengths, promoting positive sense of self, as well as establishing shared health goals (Nursing Theory, 2016).

The theory emphasizes the importance of the nurse viewing situations through the lens of their client; this aspect of the theory is especially important when considering appropriate interventions for the adolescent population. Erik Erikson highlights the main developmental stage for adolescents as ego identity vs. role confusion (McLeod, 2017). It is important for health care providers to recognize the different developmental stages to understand the varying perceptions among patients they are working with. During the adolescent period, there is a strong focus on re-examining and re-defining self which can often lead to feelings of confusion, self-doubt, ambivalence, or discomfort (McLeod, 2017). All of these factors make the Modeling and Role Modeling Theory all the more relevant as it emphasizes the need to “care for and nurture each patient with an awareness of and respect for individual uniqueness,” (Nursing Theory, 2016).

Kelley-Walsh, Vandenbosch, and Boehm (1989) expand on the Modeling and Role Modeling Theory stating that a few keys to carrying out this model include providing unconditional acceptance and positive regard for patients, acknowledging and prioritizing the patient's concerns before the provider's concerns, and facilitating a patient experience that allows for nurturing to take place. They also highlight the theory's focus on Maslow's Hierarchy of Needs, pointing out that safety and security must first be met before patients will truly be interested in addressing other factors related to health (Kelley-Walsh, Vandenbosch, & Boehm, 1989). The above mentioned are pivotal in approaching the health counseling of adolescents in a way that is not only developmentally appropriate, but builds on the patient-provider relationship developing rapport, trust, and respect. Approaching adolescent reproductive health utilizing this model allows for personalized assessment and the unique tailoring of interventions.

Working with the adolescent population calls for an even higher level of personal engagement, we must enter into their world and view situations through their lens, in order to provide counseling that will be developmentally relevant. Richards and Sheeder (2014) found that conventional motivators for contraception may not be relevant when counseling adolescents. Therefore, when counseling this population on LARC, providers must recognize that what they view as motivators to utilization of LARC may not actually reign true for the patients they are counseling. By implementing the Modeling and Role Modeling Theory the provider can seek to better understand individual motivators for LARC utilization and use these findings to better inform their counseling. The Modeling and Role Modeling Theory requires a great deal of dedication as well as a fair amount of vulnerability on the side of the practitioner. Recognizing the importance of being approachable and unconditional are central to providing effective, reproductive health care to adolescents.

Summary

In the United States, 70% of adolescents are sexually active by age 19 years, however only one third of them use a reliable form of contraception (Baldwin & Edelman, 2013). Adolescents are at the highest risk for unintended pregnancies due to inconsistent, less effective, or lack of contraceptive use. LARCs are safe and the most effective, reversible methods of contraception for all women including adolescents and young women. Many studies show high continuation rates of all LARC methods including IUD and implant. LARCs have been endorsed as a first-line contraceptive method by ACOG and the AAP, yet these methods are underutilized by adolescents. In order to decrease the rate of unintended pregnancies among adolescents and its burden on society, it is imperative to look at and critically review the barriers to LARC utilization among this population.

Chapter II: Methods

The purpose of this chapter is to review the processes used to critically appraise literature addressing the barriers to LARC use among adolescents. It includes search strategies, inclusion and exclusion criteria, a summary of the number and types of research selected for review and criteria for evaluating research studies. Studies addressing the following barriers to LARC methods were included: cost, access to care, provider knowledge and philosophy, perception and concerns of adolescents regarding insertion, and side effects. The studies were then analyzed based on their purpose, setting, study sample, results, conclusions, and recommendations. Additionally, the references within the research studies were examined to gain additional information for review.

Search Strategies

The goal of this literature appraisal is to identify and critically examine barriers to LARC methods among adolescents and young women. It identifies barriers to LARC utilization and continuation rates among adolescents and young women. An initial search was conducted using the Cumulative Index to Nursing and Allied Health Literature (CINAHL), using the search terms “long-acting reversible contraception”, “adolescent”, and “barriers”; this search yielded 21 articles from CINAHL. Additional searches were conducted via Science Direct using the same search terms, yielding 199 articles published between 2013 and 2017; the search was limited to research articles only. Finally, the Scopus search engine was used, resulting in 58 articles. After removing duplicates, the research studies relevant to LARC barriers among adolescents and young women were evaluated.

Criteria for Inclusion and Exclusion of Research Studies

Inclusion criteria for the literature review matrix required research studies that addressed barriers to LARC provision, utilization, and continuation by adolescents and young women. Included research studies addressed barriers to LARC methods among adolescents that were published between the years of 2011 through 2017. There were no restrictions on study design. Also included in the matrix were studies that looked at adolescents and young women LARC initiation rates if cost was removed as a barrier, LARC continuation rates in adolescents, and providers' LARC provision to adolescents.

Exclusion criteria were studies that included women of all ages and did not stratify findings according to age groups. Studies that reported duplicate data from another included study were also excluded. Additionally, studies were excluded if they were in a language other than English, were conducted in countries other than the United States, or if the full-text article was not available.

Summary of Selected Studies

The abstracts of 278 articles were reviewed to determine degree of relevance to the chosen topic. After careful review, 21 research studies published between 2011 and 2017 were selected for inclusion in this review. The articles considered in this review include two randomized controlled trials, two prospective cohort studies, three retrospective cohort studies, twelve qualitative descriptive studies, one cross-sectional study, and one observational study. All of these research studies were conducted in the United States.

Evaluation Criteria

The strength and quality of articles included in this review were evaluated utilizing The Johns Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2012). The 21 articles

selected were graded on a scale of I-III. Randomized controlled trials (RCTs) and systematic reviews of RCTs are considered level I evidence (Dearholt & Dang, 2012). Research conducted as a quasi-experimental study or systematic reviews which include a combination of RCTs and quasi-experimental studies are considered level II evidence (Dearholt & Dang, 2012). Level III evidence includes research conducted as quantitative non-experimental studies, qualitative studies, or systematic reviews which include a combination of RCTs, quasi-experimental, and non-experimental studies (Dearholt & Dang, 2012). As a result of the nature of the chosen topic, the majority of research articles selected were considered level III evidence.

Once the level of evidence was determined, articles were critically examined to determine overall quality. Classifications of quality as stated by Dearholt and Dang (2012) include low, good, or high. Determination of quality is based on the following factors: ability to generalize results to the greater population, consistency of results when compared to other studies, adequacy of sample sizes, demonstration of study control, degree of definitive conclusions drawn, as well as consistency of recommendations based on scientific evidence (Dearholt & Dang, 2012).

Of the 21 research articles analyzed, two are classified as level I evidence and nineteen are classified as level III evidence; twelve articles met criteria for being high quality, and the remaining nine met criteria for being good quality. Given the nature of the topic being explored, level I and II evidence is much more difficult to obtain as study designs are limited. Therefore, the majority of studies compiled for this review contain level III evidence.

Summary

The literature search utilized the library system at Bethel University to identify articles relevant to the chosen topic. Inclusion and exclusion criteria along with determination of

strength and quality were utilized to narrow down search results to the remaining 21 articles.

The literature review matrix contains several research studies that look at the possible barriers to provision and utilization of LARC methods. Analysis of research articles included determining the level and quality of the research as defined by the Johns Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2012).

Chapter III: Literature Review and Analysis

Synthesis of Matrix

A matrix format was used to organize the research studies and to find common themes among them. The matrix includes two randomized controlled trials, two prospective cohort studies, three retrospective cohort studies, twelve qualitative studies, one cross-sectional study and one observational study. The level of evidence and quality of each research study was appraised using the Johns Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2012). The matrix includes the study design, descriptions of the samples, pertinent findings, implications for practice, and the level of evidence and quality assigned to each article. The matrix is displayed with the first two level I evidence studies first, followed by level III evidence organized alphabetically by author. The purpose, design, and pertinent findings of the studies were evaluated and the synthesis of that data is presented in chapter three.

Synthesis of Major Findings

The barriers to LARC provision and uptake were evaluated. The 21 scholarly articles appraised in this review identified several barriers to LARC usage among the adolescent and young adult populations. Several themes emerged highlighting commonly encountered barriers; eight studies exploring provider knowledge and philosophy were analyzed, followed by nine studies examining adolescent and young adult perceptions, three studies addressing access to care, and one study looking at cost as a barrier to LARC. A few of the articles addressed provider knowledge and patient perceptions within the same article. The synthesis of major findings will address the following barriers to LARC use: provider knowledge and philosophy, adolescent and young adult perceptions, access to care, and cost.

Provider Knowledge/Philosophy.

Providers' knowledge, attitudes, and training concerning LARC methods use in adolescents and nulliparous women can present as barriers to counseling these groups of women on the full range of methods available for their use. Eight of the reviewed studies addressed these types of barriers and will be discussed throughout the following paragraphs.

Pediatricians are one group of providers that may provide contraception counseling to adolescents. Berlan, Pritt, and Norris (2017) looked at pediatricians' attitudes and beliefs which may affect their counseling practices on LARC methods (n=23). With the use of qualitative interviews, they found that very few pediatricians had favorable views. Their "personal feelings" were not data driven nor evidence-based on adolescent IUD use. Most did not include IUDs in contraception counseling, with ENG implants being viewed as more favorable (Berlan, Pritt, & Norris, 2017). However, some pediatricians focused on more familiar and readily available methods like injections and oral contraceptives. A cross-sectional study (n=5363) by Bodurtha et al. (2017) found that family practice physicians were more likely to recommend LARC methods to adolescents than were pediatricians.

Family planning provider years of experience and training on LARC methods, both in school and continuing education, is also associated with more evidence-based practices and higher provision of these methods. According to an exploratory study conducted by Philliber et al. (2014), the more years of experience clinicians have, the less likely it is that they have any specific training for implant or IUD insertion. Of the clinicians with less than ten years of experience, 88% received training in IUD insertion and 74% were trained to insert a single rod implant. Among clinicians with over 20 years of experience, 79% received training on IUD insertion but only 50% were trained to insert the implant. These findings were reinforced by a

cross-sectional study (n=5363) by Bodurtha et al. (2017) which found that adolescent patients receiving care from resident physicians were more likely to utilize LARC methods; these findings were statistically significant (OR, 1.73, 95% CI, 1.07-2.81).

Philliber et al. (2014) also looked at providers' perceptions on suitability and safety of LARCs within different patient groups. Those who practiced longest were the least likely to believe that LARCs were suitable and safe for all 11 groups of women which ACOG has labeled as good candidates for these methods, including the use of IUDs by the teenagers and nulliparous women, as clinicians with more years of practice did not believe that it was suitable and safe for these groups of women (86% of clinicians with over 20 years of experience vs. 97% of clinicians with 1-9 years of experience); while a trend was identified, results were not statistically significant ($p = .296$) (Philliber, 2014). However, the longest practicing clinicians who received training on IUD insertion were more comfortable inserting them and expressed less concern regarding uterine perforation and the history of the Dalkon Shield. Bodurtha et al. (2017) reached similar conclusions, finding that younger physicians felt more comfortable with LARC and were therefore more likely to recommend it to adolescent patients.

Providers' personal beliefs, attitude, and confidence in LARC also present as a barrier to LARC access. A qualitative study of providers' self-reported attitudes and practices (n=16) by Murphy et al. (2016) identified the context-specific barriers experienced by pediatricians, family medicine physicians, and advanced practicing nurses to providing adolescents with LARC. The three essential components of providing LARC to adolescents who are eligible for LARC and are interested in learning about these methods are provider confidence in LARC insertion, patient-centered counseling, and instrumental support for LARC insertion. The supportive clinical culture with expanded access to LARC devices and provider training on LARC insertion are the

key components to increased LARC utilization by adolescents (Murphy, Stoffel, Nolan, & Haider, 2016).

A cluster randomized trial conducted by Gibbs et al. (2016) confirmed that a clinic-wide training intervention can impact rates of LARC initiation. This clinic-wide training intervention ensured accurate knowledge of providers about medical eligibility for LARC use, in turn helping to build counseling and clinical skills (Gibbs et al., 2016). The intervention included an evidence-based half-day training on updated indications of LARC methods, medical eligibility, and case studies. The materials included information on young adults and current available research for this population. Hands-on training was available to providers. The clinics participating in the intervention also showed the educational videos on LARC methods in the waiting room. The adolescents and young adults in the intervention clinics were more likely to be counseled on LARC methods (66% vs. 33% for adolescents and 73% vs. 41% for young adults) and more likely to initiate a LARC method (27% vs. 12% for adolescents and 28% vs. 18% for young adults) compared to control clinics (Gibbs et al., 2016). When looking at nulliparous and parous women, those in the intervention group were more likely to receive counseling about LARC methods (69% vs. 34% for nulliparous and 76% vs. 51% for parous) and more likely to initiate one (22% vs. 12% for nulliparous and 46% vs. 27% for parous) when compared to the control group (Gibbs et al., 2016).

Adolescent and Young Adult Perceptions.

Satisfaction and Knowledge of LARC methods.

Perceptions of LARC methods play a role in whether individual are likely to utilize them. Nine articles were examined to better understand common perceptions regarding LARC methods among the adolescent and young adult populations. In a prospective cohort study (n=79)

conducted by Friedman (2015), factors influencing the satisfaction of adolescent and young women using IUDs were examined. Results of the study indicated that 73.4% of participants chose a levonogestrel IUD while 26.6% opted for a copper IUD; follow up surveys post-insertion indicated higher satisfaction scores in those women using levonogestrel IUDs, these results were statistically significant ($p=0.41$). A history of previous pregnancy was significant for predicting higher IUD satisfaction rates ($p=0.42$), as was the absence of vaginal bleeding three months post-insertion ($p=.01$) (Friedman, 2015).

Hall et al. (2016) conducted a study ($n=1982$) to assess knowledge and perceptions of LARC methods among young women. Results of a campus internet survey revealed very little knowledge of LARC methods among women in this age group. Only 22% indicated that they had heard of LARC and 79% indicated little or no knowledge of LARC (Hall et al., 2016). The above findings were also confirmed by Payne, Sundstrom, and DeMaria (2016). As part of the larger women's health research study, they explored women's beliefs ($n=53$) concerning IUDs and the choices women make about their contraceptive methods. The authors identified that participants' lack of knowledge and familiarity with IUDs was a significant barrier to IUD initiation. Lack of support from a health care provider contributed to lack of familiarity with IUDs. Thus, because adolescents and young adults have a significant knowledge deficit regarding LARC methods, health care providers have a responsibility to initiate education when counseling young women on IUDs. Some of the themes that should be addressed are LARC methods effects on menstruation and fertility (Payne, Sundstrom, & DeMaria, 2016).

As part of the same women's health research study Sundstom, Baker-Whitcomb, and DeMaria (2015) investigated young women's knowledge, perception, and use of LARC methods. They identified three main themes as barriers to LARC with several sub-themes. With the false

choice theme, the participants were seeking positive side effects of OCP including menstrual cycle regulation, cramp reduction, and acne control. The participants also described medical resistance or physician strong recommendations of OCP. The cost and affordability of care were also included in this theme with OCP perceived as as a less expensive or even a free option. In the rumors and misunderstandings theme, participants saw LARC methods as “serious and intense” birth control. Even though many participants struggled with filling a prescription and taking a daily pill, they did not consider switching to LARC. The participants overestimated the risk of LARC and underestimated the risk of OCP. They also had concerns about fertility with IUD use and believed that IUDs were only recommended for parous women. In the timing and control theme, most of the participants believed in the myth of perfect use of OCP and did not appeal to the long-lasting nature of LARC (Sundstom, Baker-Whitcomb, & DeMaria, 2015). One of the strategies to provide a true choice of contraceptive methods is the discussion by providers of LARC methods as the most effective and ideal methods for all women, including adolescents (Sundstom, Baker-Whitcomb, & DeMaria, 2015).

Brown et al. (2013) conducted a qualitative study (n=20) to examine the decision-making process of adolescents considering IUD use. The semi-structured interviews revealed a general lack of awareness about IUDs, indicating their providers had never counseled them on these methods (Brown et al., 2013). Initial reactions upon learning about IUD methods were negative (Brown et al., 2013). Brown et al. (2013) found that a strong desire to prevent pregnancy, as well as a desire for a long-acting method with high efficacy and lower doses of hormones positively influenced one’s acceptance of LARC methods. Findings in Potter et al. (2014) also support adolescents’ interest in the length of use and high efficacy rates associated with LARC methods.

A descriptive study (n=84) by Richards et al. (2014) examined motivators and decision-making processes of high-risk adolescents who were considering contraception. Interestingly, results of the study indicated that 52% of respondents felt that having a child would not affect one's ability to pursue higher education with 30% of these respondents indicating that it would positively impact their education (Richards et al., 2014). The study results revealed no correlation between one's views on the importance of education and career attainment and feeling motivated to utilize effective contraception (Richards et al., 2014). Although this study does not specifically address LARC methods, the results suggest that conventional motivators for contraception may not be relevant when counseling high-risk adolescents (Richards et al., 2014). Some of the key strategies to improve LARC methods uptake by adolescent women are adolescent-based counseling approaches that consider women's family planning goals, social needs, and contraceptive preferences while providing information on different contraceptive methods.

A qualitative study of one-on-one interviews conducted by Hoopes et al. (2016) (n=30) investigated young women's attitudes and experiences regarding contraception and pregnancy to discover LARC counseling strategies beneficial to the primary care setting. Five central themes were identified; the mnemonic PRIME (Preferences, References, Information, Motivations, and Environment) was created to help providers address domains important to adolescents (Hoopes et al., 2016). Method preferences included discussion of side effects, duration of use, privacy of method, and non-contraceptive benefits (such as improved acne, reduced dysmenorrhea, stabilized mood, etc.). References covered anecdotes from social references and previous information from healthcare providers. Information gaps addressed knowledge deficits about mechanism of action, placement, and removal. Motivating factors included personal plans and

desires to delay childbearing. Additional barriers were identified which included lack of parental support concerning contraception, social norms, and lack of a supportive school-based health environment (Hoopes et al., 2016).

Melo et al. (2015) used the Transtheoretical Model of Behavior Change as a foundation of their qualitative study (n=21). This model states that a decision making process includes contemplation, preparation, action and maintenance stages. They identified influences that affect adolescents' and young women's choices about contraceptive methods. In the contemplative stage, women are first motivated to avoid pregnancy. In the preparation stage they gather information based on the personal reproductive health concerns, effectiveness, duration, convenience, pain at the time of insertion, reversibility, cost, and side effect of the method. Other concerns included desire to control the menstrual cycle, desire for "forgetability," and desire to avoid follow-up. In the action stage, participants made personal decision without peer input. In maintenance stage, even though they shared the information about their method with peers, they emphasized the selection of the "best method for me." Based on these results, the authors suggest that providers should address individual concerns and provide patient-specific education that resonates with young patients (Melo et al., 2015).

Kavanaugh et al. (2013) explored and compared provider and patient perspectives about LARC methods for young women. Even though 75% of patients viewed LARC methods suitable for their lifestyle, a majority of staff members at the facilities that provided family planning believed that IUDs were not suitable for teenagers, nulliparous women, and non-monogamous women mainly because of teenage behaviors and having multiple partners (Kavanaugh et al., 2013). Patients and providers identified advantages and disadvantages of LARC methods, ranking them from most important to least important. Patients identified LARC advantages as

forgettable, effective, and long-lasting with beneficial side effects. Health care providers identified forgettable, long-lasting, beneficial side effects, and provider control as important advantages to LARC use. The disadvantages for patients from most problematic to least were foreign object, possible painful insertion/removal, side effects, and others could feel implant. For staff side effects, possible painful insertion/removal, reduced condom use and cost were the ranked order of disadvantages. The authors also identified some of the challenges to providing LARC to young women including cost issues due to low reimbursement, lack of patient knowledge, extra time needed for counseling, patients' impatience with side effects, more than one visit to obtain the LARC, and clinical staff resistance to changes. Considering that many young women have several misconceptions of LARC methods, the authors recommend youth-friendly educational programs about IUDs and implants. Provider familiarity with updated guidelines and improved staff training are other keys to patient education and increased LARC utilization. Efforts to increase funding and support for LARC services could help with cost factors (Kavanaugh et al., 2013).

Concerns regarding insertion, discontinuation, and side effects.

According to the World Health Organization (2009), the benefits of IUDs in the adolescent population generally outweigh risks associated with the method. In spite of LARC methods being the most effective for pregnancy prevention, many women of reproductive age continue to use less effective methods. While other forms of contraception have far from perfect results, ENG implants have a failure rate of 0% while the LNG-IUS has a low failure rate of 0.2% in the first year of use (Berenson, Tan, & Hirth, 2015). According to a retrospective study by Berenson, Tan, and Hirth (2015), the proportion of total ENG implants significantly increased from 2007 through 2011, from 6.4% to 34.5%, and more than 60% of ENG implants were placed

in women ≤ 24 years old. Even though there has been an increase in the use of LARC methods including IUD and implant, this type of contraception is prescribed to less than 5% of adolescents (Berenson, Tan, & Hirth, 2015). Among the reasons for the low rate of LARC utilization are concerns of side effects, infection, specifically pelvic inflammatory disease (PID) and future fertility. These concerns are some of the reasons that providers do not recommend these methods to teenagers and nulliparous women. The same study by Berenson, Tan, & Hirth (2015) showed that serious complications among women using ENG implant or LNG-IUS are very rare, with less than 1% of women getting PID. Women of all age groups who had ENG implant inserted were more likely to experience metrorrhagia and irregular menstrual bleeding within one year of insertion compared to LNG-IUS users (Berenson, Tan, & Hirth, 2015). Women over the age of 20 were more likely to discontinue the ENG implant than the LNG-IUS, while there was no significant difference of discontinuing either LARC method by teenage girls ages 15-19 years old. This study also showed that the continuation rate of young women ages 15-19 years old who used either ENG implants and LNG-IUS was 88% at 12 months.

A longitudinal, retrospective study (n=233) by Alton et al. (2013) also looked at the safety and continuation rates of LARC among the adolescent population. In a sample at high risk for sexually transmitted infection, 7.7% were reported to have infection following IUD insertion; five of these IUDs were removed, while two were treated for pelvic inflammatory disease (PID) (Alton et al., 2013). Results suggested that the levonogestrel IUD may have protective effects against STI, as typical reinfection rates in adolescent populations have been recorded as high as 33%-53% in some studies. The study also found difficulty with insertion noted in 1.3%, no cases of uterine perforation, but nulliparous women did have 2.9 times the risk of IUD removal or expulsion ($p < 0.001$) (Alton et al., 2013). These findings suggest that many

providers' fears regarding IUD insertion and use in adolescent populations are not based on evidence (Alton et al., 2013).

While examining young women's (n=1982) perceptions of LARC, Hall et al. (2016) reported the following barriers as a result of survey responses: 44% feared LARC methods due to the presence of a foreign object in the body, 42% feared a lack of control over their bodies, 30% indicated a fear of pain, 28% were concerned with possible side effects, and 27% feared developing health problems as a result of LARC placement. A qualitative study (n=21) by Potter et al. (2014) examined attitudes and beliefs surrounding IUD use among a group of urban, minority adolescents. Although this study consisted of a small sample size, the qualitative data collected suggest fear to be the most common theme preventing IUD usage (Potter et al., 2014). 85% of respondents indicated fears including: pain upon insertion and removal, expulsion, physical harm, the presence of a foreign body and feeling lack of control (Potter et al., 2014). The study also found that only 23% had heard about LARC methods through their health care providers, 23% from media sources, 38% from family and friends, and 14% from health class (Potter et al., 2014).

Access to Care.

Providing convenient access to LARC is an important strategy to improve utilization. For this critical review, three research articles addressing access to care were examined. One of the articles suggested that a way to improve access to LARC is by making sure it is available at convenient time frames. The randomized controlled trial (n=96) conducted by Bryant et al. (2016) examined how immediate postpartum insertion of LARC might improve utilization rates among adolescents. 100% of adolescents assigned to the immediate postpartum insertion group received their LARC method compared to only 67% who were assigned to the group receiving

their method at the six week postpartum visits. Results indicated that of those adolescents who had LARC inserted immediately postpartum, 81% still had the device in place 12 months later, and said they would recommend LARC use to a friend (Bryant et al., 2016).

A qualitative study (n=1982) conducted by Hall et al. (2016) indicated that only 19% of college-aged women knew they could access LARC methods at their campus health center, highlighting lack of knowledge as a significant barrier to access. In addition, only 19% indicated there was a positive attitude towards LARC methods on campus (Hall et al., 2016).

The number of providers able to provide LARC methods also presents as a barrier to LARC access. Greenberg, Makino, and Coles (2013) analyzed data from an online survey that evaluated adolescents' medical providers (N=430) on LARC provision. They found that only 32% of all providers offered either form of LARC. Of those who offered LARC, 88% of obstetrician/gynecologists and family medicine providers reported providing some form of LARC, compared with 26% of internal medicine and pediatric providers (Greenberg, Makino, & Coles, 2013). The authors concluded that exposure to procedural women's health training was the strongest predictor of LARC provision. While insertion of IUD requires specialized skill and equipment, which present real barriers to providers, contraceptive implants require minimal instructions beyond mandatory training by manufacturer and instructions provided with the device itself.

Cost.

The costs associated with LARC methods are mentioned frequently throughout the literature and are recognized as a significant barrier to utilization. A retrospective study (n=571) conducted by Broecker et al. (2016) examined cost alone, as a barrier to LARC. The study looked at out-of-pocket expenses to determine if financial figures impacted utilization rates.

Results were statistically significant ($p < .001$) indicating that if out-of-pocket costs were less than \$200, LARC utilization rates were 86.6%. For those with out-of-pocket costs greater than \$200, usage rates dropped to 27.8% and for each additional \$100 out-of-pocket expense, the likelihood of utilizing LARC decreased substantially. The study also looked at Medicaid placement rates where there were no out-of-pocket expenses with result indicating a 78% placement rate (Broecker et al., 2016).

An observational cohort study entitled the CHOICE Project ($n=2108$) looked at women initiating a new birth control method. Medstad et al. (2011) confirmed that when cost is removed and evidence-based contraceptive counseling including safety, effectiveness, risks, and benefits of LARC methods is provided, adolescents have higher interest in LARC methods (62% selected LARC method). Younger adolescents ages 14-17 preferred the implant (63%) and older adolescents ages 18-20 chose an IUD. These findings suggest that adolescent women are interested in LARC methods that are safe and effective forms of contraception. Unfortunately, if the providers are not trained to insert the implant, adolescent patients do not have access to one of the safest and most effective contraceptive methods (Mestad et al, 2011).

Critique of Strengths and Weaknesses

The first strength of this review of the research articles is that it looks at many different barriers to adolescent LARC provision and utilization. Even though most of the studies included in this review are qualitative studies, it provides in depth review of the provider knowledge, attitudes, and characteristics as well as patients' perceptions and experiences with LARC methods. Most of the studies were of high and good quality. While the number of participants in some of the studies was small, the nature of the qualitative study allowed saturation of the results and common themes were identified. Most of the studies' samples were teenage women or

young adults with several studies having multiple age subgroups including adolescents and young women. All of the studies were limited to the last five years, providing the most current information. Besides identifying barriers to LARC utilization by adolescents, many studies provided the key strategies to improve adolescents LARC initiation including providers' and patients' education, cost reduction, and access to care. Several studies identified consistent results which makes these findings reliable.

The qualitative nature of the studies is also one of the weaknesses of this research article review. Due to the nature of qualitative studies, it is hard to analyze and measure causal relationships between variables in terms of quantity, intensity, frequency, and amount. Another weakness is the small sample sizes of several of those qualitative studies. These weaknesses make it difficult to generalize results to the population at large. Because this review looked at many different barriers to LARC provision some of the major findings like cost and access to care consisted of only two or three studies.

Summary

Several barriers were identified and addressed by multiple studies. These included provider knowledge, attitude, and skills, adolescent and young women perception, access to care, and cost. In relation to providers' knowledge and philosophy, it was found that very few pediatricians had favorable views of IUD use in adolescents and most did not include IUDs in contraception counseling (Berlan, Pritt, & Norris, 2017). Family physicians were more likely to recommend IUDs to adolescents than pediatricians (Bodurtha et al., 2017). The number of years of experience and training on LARC methods were associated with LARC provision. The studies conducted by Philliber et al. (2014) and Bodurtha et al. (2017) found that the providers with the least years of experience were more likely to have training in IUD and implant insertion. They

were also more likely to recommend it to adolescent and nulliparous women. A qualitative study by Murphy et al. (2016) identified three essential components of providing LARC to adolescents by pediatricians, family medicine physicians, and advanced practicing nurses that include provider confidence in LARC insertion, patient-centered counseling, and instrumental support.

In relation to adolescent and young adults' perception, it was found that lack of knowledge and familiarity with IUDs was a significant barrier to IUD initiation (Hall et al., 2016; Payne, Sundstrom, & DeMaria, 2016). Additionally, lack of familiarity with LARC methods contributed to the lack of support exercised by providers (Payne, Sundstrom, & DeMaria, 2016). However, once LARC methods are initiated, adolescents and young women using IUDs and implants showed high satisfaction rates, validated by an 88% continuation rate at 12 months (Friedman, 2015; Berenson, Tan, & Hirth, 2015). Convenient access to care, immediate postpartum insertion, and cost reduction are associated with increased LARC utilization (Broecker et al., 2016; Bryant et al., 2016).

Several strategies to reduce these barriers were also examined. A clinic-wide training intervention for providers that includes updated indications and medical eligibility for LARC, plus hands-on experience has a positive effect on the rates of LARC methods counseling and on initiation by adolescent and nulliparous women (Gibbs et al., 2016). Provider and staff training, updated guidelines, and individualized patient education that is specific to young populations are some of the strategies suggested by authors of several studies (Sundstrom, Baker-Whitcomb, & DeMaria, 2015; Murphy, Stoffel, Nolan, & Haider, 2016; Hoopes et al., 2016; Melo, Peters, Teal, & Guiahi, 2015; Kavanaugh et al., 2013). Some of the identified themes that could help providers with LARC counseling include adolescents' strong desire to avoid pregnancies, high

efficacy, lower doses of hormones, being forgetful, and beneficial side effect profiles (Brown et al., 2013; Potter et al., 2014; Kavanaugh et al., 2013).

Chapter four will address implications for nurse-midwifery practice, examine recommendations and directions for future research studies, as well as integrate the Modeling and Role Modeling Theory regarding LARC utilization in adolescents and young women.

Chapter IV: Discussion, Implications and Conclusions

The purpose of this review was to uncover barriers which prevent greater LARC utilization among adolescents and young women. There were 21 pertinent, scholarly articles chosen for critical analysis using the Johns Hopkins Research Evidence Appraisal Tool. After completing the research appraisal, implications for nurse-midwifery as well as limitations within the existing literature were identified. Throughout chapter four the implications for future nurse-midwifery practice as well as opportunities for future research will be discussed. The chapter will conclude with the integration of the Modeling and Role Modeling theory with discussion of how application of this theory among providers could positively impact LARC utilization rates among adolescents and young women.

Literature Synthesis

The research question which served as the foundation and guided this critical review asked, “what barriers influence LARC utilization and continuation rates among adolescents and young women?” LARCs including IUDs and implants are the most effective methods of reversible contraception for women including adolescents and young adults. Due to its effectiveness, safety, and high continuation rates, it has been endorsed by ACOG and AAP as a first-line contraception method for adolescents. However, the research shows that only a small percentage of women are using these forms of contraception. Several barriers that prevent LARC utilization by adolescents have been uncovered including provider knowledge/philosophy, adolescent and young adult perceptions, access to care, and cost.

Trends and Gaps in the Literature

The safety and efficacy of LARC methods has been shown by many studies. Berenson, Tan, and Hirth (2015) in their study compared complications and continuation rates of LNG-

IUS and ENG implant and found that both methods are well tolerated by women of all ages with most ENG implants being placed in women under the age of 24 years old.

Provider Knowledge/Philosophy.

Some of the common themes among providers' knowledge were providers' lack of awareness of evidence-based information regarding updated indications and medical eligibility for LARC methods, specifically for adolescents and young nulliparous women. Gibbs et al. (2015) in their randomized controlled study showed that a half-day of provider training on LARC methods including hands-on training increases counseling, selection, and initiation of LARC methods among adolescents and young women. Greenberg, Makino, and Coles (2013) found that providers' exposure to procedural training was the strongest predictor of LARC provision. Thus, providers hands-on training especially procedural skills for implant insertion, improves LARC access by adolescents.

Providers' attitude toward LARC methods use among adolescents has been found to be a barrier as well. Few pediatricians had favorable views of IUD use among adolescents and most did not include it when counseling on contraception (Berlan, Pritt & Norris, 2017). Unexpectedly, the younger the provider, the more open and likely they would be to recommend LARC to adolescents (Bodurtha et al., 2017). Younger providers were also more likely to have developed and maintained skills for insertion and removal when compared to providers who had been practicing for many years (Bodurtha et al., 2017). These findings speak to the lack of availability of continuing education and/or a lack of acceptance or openness to providing these options.

Adolescent and Young Adult Perceptions.

While examining adolescent and young adult perceptions of LARC, some of the main themes that emerged were lack of knowledge, fear, unfavorable side effects, and feeling a lack of control; all of these themes were identified as barriers to LARC use among this patient population (Hall et al., 2016; Potter et al., 2014; Friedman et al., 2015; Payne, Sundstrom, & DeMaria, 2016; Sundstrom, Baker-Whitcomb, & DeMaria, 2015). Interestingly, the barrier which seemed to be the most prevalent was lack of knowledge about LARC methods. This finding speaks to the influential role that providers can play in increasing utilization of LARC options. Melo et al. (2015) discussed that even though it appears that peers have an influence on adolescent contraceptive choice, providers are needed to address individual concerns to provide patient-specific education, and to clarify misconceptions. Several other studies also discuss the need for unique approaches when counseling adolescents on contraception use. Thus, as providers counsel on contraceptive choices they may emphasize different points making the counseling less effective. The authors suggested that providers should use open-ended counseling styles without making assumptions regarding what an adolescent or young woman is looking for in contraceptive method (Kavanaugh et al., 2013). Hoopes et al. (2016) developed a mnemonic PRIME (Preferences, References, Information, Motivations, and Environment) to assist providers with adolescent counseling and acceptability of LARC methods. There remain gaps in knowledge regarding true motivators for contraceptive use and whether these motivators differ among various subgroups of adolescents; additional research into these areas would provide greater insight to counseling strategies.

Access to Care.

An essential component of increased access to care for adolescents that was identified is a supportive clinical culture, with providers who have training and access to LARC devices (Murphy et al., 2016). Lack of counseling time on LARC methods was also viewed as a barrier which decreased access to LARC by adolescents (Gibbs et al., 2015).

An additional topic that emerged was access to LARC methods immediately postpartum, revealing that placing intrauterine devices and implants immediately postpartum might increase utilization of LARC, especially among those women who are lost to follow up. Despite the convenience of on-campus health centers, little research was available on how LARC being offered through on-campus health centers may increase utilization and satisfaction rates.

Cost.

A trend that was identified while looking at cost as a barrier was the fact that LARC methods are costly; although covered 100% by Medicaid, private insurance plans will often result in out-of-pocket expense to the patient (Broecker et al., 2016). When cost is removed, the participants of the Contraceptive CHOICE Project that included adolescents and young women, preferred LARC methods over other options (Mestad et al., 2011). However, there appeared to be very little research available focusing on cost as a barrier to these options. Additional research is necessary to determine not only cost as a barrier, but the financial implications of LARC methods in general.

Implication for Midwifery Practice

Despite a recent decrease in the rate of unintended pregnancies among adolescents in the United States, it continues to remain high compared to other developed nations. Unintended pregnancies are associated with a low knowledge of contraceptive methods and their use, fear of

side effects, and ambivalence regarding pregnancy (Fontenot & Fantasia, 2015). Although the LARC methods have been shown to be safe and effective for adolescents and young nulliparous women with high continuation rates, their use remains low among these groups of women. Nurse-midwives are well-positioned to provide education and to offer access to these forms of contraception. Promotion of LARC methods is consistent with the ACNM's Hallmarks of Midwifery (2012) including promotion of family- and women-centered care, promotion of the public health care perspective, incorporation of scientific evidence into the clinical practice, advocacy for informed choice, shared decision making, and the right to self-determination, and skillful communication guidance, and counseling.

Midwives are known to focus on education and teaching regarding women's choices. Young women may need more education and time spent with them to find the right choice of contraception that suits their lifestyle. As midwives focus on the person as a whole they may find better ways to connect with adolescents and provide education that is more acceptable and suitable for them regarding LARC methods.

Nurse-midwives are well trained and have the skills needed to insert IUDs. The manufacturer recommended training on insertion and removal of implants is a short educational session that easily can be done by midwives to offer this type of contraception. Another way to increase access to LARC methods is being flexible and accepting same day referrals from other providers who are unable to provide these services.

Recommendations for Future Research

Through the research appraisal process, several areas for future research were uncovered. These include conducting research in areas that would add to the knowledge base on this topic and research that would identify evidence-based strategies for increasing LARC utilization.

When examining the research that focused on adolescent perceptions and knowledge, it was suggested that conducting additional research on why some adolescents are more likely to be satisfied with IUDs than others is warranted. The research that is available consists of smaller sample sizes; larger sample sizes would allow us to draw more reliable conclusions when examining the barriers. Additionally, studies conducted prospectively would add value, as the majority of research in this area was conducted retrospectively.

Research conducted by Hall et al. (2016) suggests that adolescents' perceptions of LARC may have a greater influence on utilization than actual knowledge about LARC; further research examining adolescent perceptions and how these perceptions develop is indicated. Richards et al. (2014) findings suggest that conventional motivators for contraception may not be relevant when counseling high-risk adolescents. Future research should be conducted to determine relevant motivators for contraceptive use in this population. Due to adolescents' unique counseling needs regarding contraception and LARC methods, Hoopes et al. (2016) suggest that further research is needed to evaluate LARC inclusive approaches like PRIME to assist providers on adolescent counseling and acceptability of these methods. Alton et al. (2013) suggest future research on the safety and continuation rates of intrauterine devices among adolescents be conducted non-retrospectively to yield stronger conclusions. In addition, their study also found a correlation between intrauterine device use and lowered STI rates; further research may provide additional insight to the protective benefits of intrauterine devices against STIs (Alton et al., 2013).

In order to improve access to LARC, on-campus health centers should be a locus for research to determine if on-campus access could improve utilization and continuation rates of LARC methods. Collectively, there appears to be very little research addressing cost as a barrier

to LARC use. Given financial implications can deeply influence decision-making, more thorough examination of how cost impacts utilization rates is indicated.

Integration of the Modeling and Role Modeling Theory

The Modeling and Role Modeling Theory, developed by Helen Erickson, Evelyn Tomlins, and Mary Anne Swain in 1983 identified the following goals: building trust, promoting patient control, emphasizing patient strengths, promoting sense of self, and establishing shared health goals (Nursing Theory, 2016). The Modeling and Role Modeling Theory offers insight to the patient provider relationship, and how this relationship may need to be adapted to accommodate an adolescent's stage of development. Erik Erikson highlights the main developmental stage for adolescents as ego identity vs. role confusion (McLeod, 2017). It is important for health care providers to recognize the different developmental stages to understand the varying perceptions among patients with whom they are working with. During the adolescent period, there is a strong focus on re-examining and re-defining self which can often lead to feelings of confusion, self-doubt, ambivalence, or discomfort (McLeod, 2017).

Brown et al. (2013) highlights the important role that providers play in the decision-making process of adolescent women considering IUDs. Their findings suggest that young women especially appreciate learning with the help of visuals and anatomical models, would like to be counseled on side effect profiles, and prefer to be reassured that discontinuation is an option at any time (Brown et al., 2013). These preferences highlight the importance of individualization in a provider's counseling, especially when working with the adolescent population. Providers must recognize and appreciate the patient's right to self-determination and autonomy; acknowledgement of this gives adolescents a sense of control, a feeling that is necessary for decision-making at this stage in development. Richards and Sheeder (2014) found

that conventional motivators for contraception may not be relevant when counseling adolescents. Therefore, when counseling this population on LARC, providers must recognize that what they view as motivators to utilization of LARC may not actually reign true for the patients they are counseling. The Modeling and Role Modeling Theory challenges the provider to step into the shoes of the patient to identify relevant motivators to contraception. The ability to see through a different lens and appreciate this new perspective will guide the provider in their approach to counseling.

Conclusion

The pertinent findings of this critical review included the identification of the following barriers: provider knowledge/philosophy, adolescent and young adult perceptions, access to care, and cost. All of these barriers have been suggestive of significantly impacting an adolescent's decision to initiate and continue to utilize a LARC method. 21 scholarly articles were reviewed using The Johns Hopkins Research Evidence Appraisal Tool with statistically significant results for provider knowledge/philosophy, adolescent and young adult perceptions, access to care and cost as being influential barriers to LARC utilization. Provider knowledge and philosophy impacts the degree to which a provider will offer or recommend LARC methods to adolescents. Adolescent and young adult perceptions impact openness to learning about LARC methods, willingness to access LARC and decision-making about utilization of LARC methods. Access to care influences the ability to obtain LARC methods in a timely manner, while cost impacts the degree to which LARC methods are available to any and all women who hope to utilize them.

Nurse-midwives are in an excellent position to minimize barriers to LARC for adolescents and young women. Nurse-midwives' commitment to patient education and their approach to individualized patient care, presence in family planning clinics, and participation in

care of pregnancy and the postpartum period, make them well positioned to address barriers to LARC and improve awareness of these methods. Application of the Modeling and Role Modeling Theory will enhance the patient/provider relationship and allow nurse-midwives to more thoroughly understand their patient's perspective, which in turn will guide counseling efforts. By staying up to date on current knowledge and recommendations concerning LARC, and by developing and maintaining skills necessary for insertion of these methods, nurse-midwives can impact the availability of LARC options to adolescents and young women.

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Appendix 1

| Citation/Level & Quality | Purpose of Study | Sample/Setting | Design | Results | Conclusion/ Recommendations |
|--|---|---|--|---|---|
| <p>Bryant, A.G., Bauer, A.E., Stuart, G.S., Levi, E.E., Zerden, M.L., Danvers, A. & Garrett, J.M. (2017). Etonogestrel-releasing contraceptive implant for postpartum adolescents: A randomized controlled trial. <i>Journal of Pediatric Adolescent Gynecology</i>, 30, 389-394. doi: 10.1016/j.jpag.2016.08.003</p> <p>Level: I</p> <p>Quality: High</p> | <p>Compare outcomes of contraceptive implant placement immediately postpartum to those placed at 6-week postpartum visit in adolescent and young women.</p> | <p>Sample: Postpartum adolescent and young women (n=96) who gave birth to a healthy infant, spoke English or Spanish, and desired use of contraceptive implant.</p> <p>Setting: University of North Carolina Women's Hospital between August 2012 and April 2014.</p> | <p>Non-blinded, randomized controlled trial approached adolescents and young women expressing interest in the implant or who were undecided on method of contraception postpartum.</p> <p>Randomization was conducted postpartum with participants being randomly assigned to receive the implant before hospital discharge (n=48) or at their 6-week postpartum visit (n=48).</p> <p>Further follow up was conducted at 3, 6, 9 and 12 months postpartum.</p> | <p>At 12 months postpartum data, 81% of those from the immediate group still had the implant in place. Of those from the 6-week group, 78% still had their implant in place ($P=.74$). 100% of women assigned to the immediate insertion group received their implant compared to 67% assigned to the 6-week group; 7 of these participants declined the implant at their follow up, 2 chose other contraceptive methods, 5 opted for no method, and 10 never returned for 6-week follow up. At 12 months, participants from both groups indicated they would recommend the use of the implant to a friend ($P = 0.2$).</p> | <p>Conclusion: There are benefits to placing contraceptive implants in the immediate postpartum period for adolescents and young women due to their being less likely to present for follow up. A secondary finding was that women who received the implant immediately were more likely to be breastfeeding at 3 and 6 months postpartum.</p> <p>Recommendations: A larger, multi-center research study would provide more generalizable findings on initiation rates, continuation rates at 12 months postpartum, and effects on breastfeeding.</p> |

| Citation/Level & Quality | Purpose | Sample/Setting | Design | Results | Conclusions/ Recommendations |
|---|--|--|--|---|---|
| <p>Gibbs, S. E., Rocca, C. H., Bednarek, P., Thompson, K. M. J., Darney, P. D., & Harper, C. C. (2016). Long-acting reversible contraception counseling and use for older adolescents and nulliparous women. <i>Journal of Adolescent Health, 59</i>(6), 703-709. doi://doi.org/10.1016/j.jadohealth.2016.07.018</p> <p>Level: I</p> <p>Quality: High</p> | <p>To examine the differences in long-acting reversible contraception (LARC) counseling, selection, and initiation by age and parity due to provider's LARC training intervention.</p> | <p>Sample: Sexually active women aged 18-25 years receiving contraceptive counseling (N=1500) enrolled at 20 interventions (n=802) and 20 control clinics (n=698) and followed for 12 months.</p> <p>Setting: 40 Planned Parenthood centers serving low-income, diverse population across the United States.</p> | <p>Randomized controlled trial. Clinics were randomly allocated to receive the intervention training or to serve as control sites. The intervention consisted of a half-day of the evidence-based training on updated indications of LARC methods, medical eligibility, and case studies. The providers had hands-on training. The intervention clinics showed an education video in the waiting room. Dependent variables: LARC counseling, selection of LARC method by age and parity, and LARC use over 1 year after intervention compared to control sites</p> | <p>LARC counseling (66% vs. 33% for adolescents and 73% vs. 41% for young adults), selection (27% vs. 12% for adolescents and 28% vs. 18% for young adults), and initiation (23/100 person-years [PY] vs. 14/100 PY for adolescents and 21/100 PY vs. 19/100 PY for young adults) were higher at intervention clinics compared to control clinics. Initiation of LARC method was higher for both nulliparous and parous women at intervention clinics compared to control clinics (19/100 PY vs. 13/100 PY for nulliparous $p=.12$ and 32/100 PY vs. 29/100 PY for parous $p=.52$).</p> | <p>Conclusions: Effective health care provider training increases access of adolescents to LARC.</p> <p>Recommendations: Efforts should be made to increase provider knowledge and improve counseling and access to LARC methods for nulliparous women of all ages.</p> |

| Citation/Level & Quality | Purpose of Study | Sample/Setting | Design | Results | Conclusions/ Recommendations |
|---|---|--|--|---|--|
| <p>Alton, T.M., Brock, G.N., Yang, D., Wilking, D.A., Hertweck, S.P. & Loveless, M.B. (2013). Retrospective review of intrauterine device in adolescent and young women. <i>Journal of Pediatric Adolescent Gynecology</i>, 25, 195-200. doi: 10.1016/j.jpag.2012.01.005</p> <p>Level: III</p> <p>Quality: High</p> | <p>Examine the safety and continuation rates of intrauterine devices among the adolescent population.</p> | <p>Sample: Young women and adolescents (n=233) age 21 years of age or less.</p> <p>Setting: University of Louisville, Pediatric and Adolescent Gynecology department and the Center for Adolescent Pregnancy Prevention (CAPP) between February 2003 and May 2010.</p> | <p>A longitudinal, retrospective study examining medical records indicating insertion of either a Mirena or ParaGard intrauterine device (IUD). Participants (n=222) received a levonogestrel IUD while (n=11) received a Copper IUD; 85% of participants were screened for sexually transmitted infection prior to insertion.</p> | <p>24% of participants indicated history of sexually transmitted infection (STI). There was a 7.7% infection rate following insertions, 5 IUDs were removed due to infection, <1% of cases were treated for pelvic inflammatory disease. Difficulty with insertion was noted in 1.3% of cases, dilation was utilized in 4.26% of cases; there were no cases of uterine perforation. Nulliparous women were 2.9 times more likely to experience IUD removal or expulsion ($P < 0.001$).</p> | <p>Conclusions: IUDs are a safe and effective form of long-acting contraception for adolescents and young women. A 7.7% infection rate among IUD users suggests protective effects against STIs as reinfection rates among this population have been recorded at 33%-53% in some studies. In nulliparous women there is a slightly higher rate of IUD expulsion. Higher rates of discontinuation are seen in adolescents <18 years of age.</p> <p>Recommendations: The retrospective nature of the study limits the research findings; future research conducted non-retrospectively would yield stronger conclusions. Research on the protective STI benefits of the levonogestrel IUD is warranted.</p> |

| Citation/Level & Quality | Purpose of Study | Sample/Setting | Design | Results | Conclusions/ Recommendations |
|---|--|---|--|---|--|
| <p>Berenson, A. B., Tan, A., & Hirth, J. M. (2015). Complications and continuation rates associated with 2 types of long-acting contraception. <i>American Journal of Obstetrics and Gynecology</i>, 212(6), 761.e1-761.e8. doi:10.1016/j.ajog.2014.12.028</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To compare complication and continuation rates of the levonorgestrel intrauterine system (LNG-IUS) with the subdermal etonogestrel (ENG) implant.</p> | <p>Sample: A cohort of women who had LNG-IUS (n=79,920) or ENG implants (n=7374) inserted during 2007 through 2011 across the United States and had insurance coverage for 12 months postinsertion.</p> <p>Setting: Health insurance claims from Clinformatics DataMart (OptumInsight Life Sciences Inc, Eden Prairie, MN).</p> | <p>The retrospective cohort study that used national database of the health insurance claims. LNG-IUS and ENG were compared by examining:</p> <ul style="list-style-type: none"> -Relative use trends over time -complication rates -continuation rates among teenagers 14-19 years of age vs women 20-24 years and 25-44 years of age. | <p>The proportion of total ENG implants significantly increased from 2007 through 2011. The proportion of LNG-IUS was relatively evenly distributed across each year. LNG-IUS were more commonly placed in women 25-44 years of age than \leq 24 years of age. Most ENG implants (60%) were placed in women \leq 24 years of age. Women who were 20-24 years old and 25-44 years old were more likely to discontinue the ENG implant within 1 year of insertion, while there were no significant differences in the discontinuation rate of either LARC method in the first year among 15- to 19-year old girls and women with continuation rate for both methods at 88%.</p> | <p>Conclusions: Both methods are tolerated well by women of all ages and have high continuation rates.</p> <p>Recommendations: The above findings are helpful for the healthcare providers in contraceptive counseling of both types of LARC, so they can help their patients chose the method that best fulfills their patients' needs.</p> |

| Citation/Level & Quality | Purpose | Sample/Setting | Design | Results | Conclusions/ Recommendations |
|---|---|--|--|---|--|
| <p>Berlan, E. D., Pritt, N. M., & Norris, A. H. (2017). Pediatricians' attitudes and beliefs about long-acting reversible contraceptives influence counseling. <i>Journal of Pediatric and Adolescent Gynecology</i>, 30(1), 47-52. doi://doi.org/10.1016/j.jpag.2016.09.001</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To obtain pediatrician's views and counseling practices about long-acting reversible contraception (LARC) including intrauterine devices (IUDs) and etonogestrel (ENG) implants.</p> | <p>Sample: Pediatricians that are affiliated with Nationwide Children's Hospital in a Midwestern city obtained by convenience sampling (N=23).</p> | <p>Qualitative interviews of approximately 30 minutes in duration, audio recorded, and conducted privately. Open ended questions were used covering the topics of provision of reproductive health care to adolescent patients, confidentiality and privacy, and provision of contraception.</p> | <p>Few pediatricians had favorable views on adolescent IUD use and most did not include IUDs in contraception counseling. Their beliefs and unfavorable attitudes related to IUDs were influenced by its side effects and adverse events. ENG implant was viewed as more favorable and was more often recommended to adolescents. Pediatrician focused on familiar and readily available methods. Counseling time on LARC was also found to be a barrier. Education and increased familiarity changed viewpoints.</p> | <p>Conclusion: Different beliefs and attitudes, as well as other factors like time and personal habits, influence pediatrician counseling practices on contraception.</p> <p>Recommendations: Addressing provider knowledge deficit, uninformed viewpoints, and unfavorable attitudes of pediatricians will increase adolescents' access to LARC, especially IUDs.</p> |

| Citation/Level & Quality | Purpose of Study | Sample/Setting | Design | Results | Conclusions/ Recommendations |
|--|--|---|--|--|---|
| <p>Bodurtha, A.J., Harney, K.F., Singh, T. & Gupta Hurwitz, A. (2017). Provider and health system factors associated with usage of long-acting reversible contraception in adolescents. <i>Journal of Pediatric Adolescent Gynecology</i>, 30, 609-614. doi: 10.1016/j.jpag.2017.05.001</p> <p>Level: III</p> <p>Quality: High</p> | <p>To explore the influence of providers and clinic characteristics on LARC usage among adolescents.</p> | <p>Sample: Female patients (n=5363) ages 15-21 utilizing primary care health services.</p> <p>Setting: Large health care system in Massachusetts in March 2015.</p> | <p>A cross-sectional study searched de-identified electronic medical records utilizing study sample inclusion criteria. These charts (n=5363) were then examined for associated LARC medication and procedural codes. LARC utilization rates were then analyzed against provider type (pediatrician, family medicine, nurse practitioner, physician assistant, medical resident). Type of clinic was also analyzed noting Title X funding, onsite LARC access and presence of OB/Gyn personnel.</p> <p>Electronic medical record, LARC associated procedural and medication codes, and public employee information database.</p> | <p>3.4% of study sample were either utilizing LARC or had in the past. Results indicated provider degree and gender do not influence likelihood of recommending LARC. They also indicated that family medicine physicians were more likely to recommend LARC than pediatricians. Adolescents who sought care from resident physicians were more likely to utilize LARC methods and these results were statistically significant (OR, 1.73, 95% CI, 1.07-2.81).</p> | <p>Conclusions: Younger providers may be more knowledgeable about LARC and therefore more likely to counsel adolescents and offer LARC insertion. Clinic characteristics which make LARC more accessible may not be increasing overall LARC utilization rates.</p> <p>Recommendations: LARC usage remains low even within health care systems that offer accessibility to this service. Offering continuing education on contraceptive counseling and insertion skills for adolescents may help increase LARC access.</p> |

| Citation/Level & Quality | Purpose of Study | Sample/Setting | Design | Results | Conclusions/ Recommendations |
|--|--|---|---|---|---|
| <p>Broecker, J., Jurich, J. & Fuchs, R. (2016). The relationship between long-acting reversible contraception and insurance coverage: a retrospective analysis. <i>Contraception, 93</i>, 266-272. doi: 10.1016/j.contraception.2015.11.006</p> <p>Level: III</p> <p>Quality: High</p> | <p>Examine the relationship between out-of-pocket expenses related to LARC insertion among women and adolescent females.</p> | <p>Sample: Female patients (n=571) ages 13-50 prescribed a LARC method.</p> <p>Setting: Athens Medical Associates Obstetrics and Gynecology in Appalachia, December 2011 through July 2013.</p> | <p>A retrospective study examined the charts of patients prescribed a LARC method. The data was also analyzed for out-of-pocket expenses and whether or not LARC methods were utilized after patients were informed of out-of-pocket costs.</p> <p>Electronic medical records were searched for the following data: age, education, race, ethnicity, relationship status, gravidity, live births, contraceptive method at time of visit, LARC method prescribed, insurance coverage status, total out-of-pocket costs and whether IUD was placed.</p> | <p>LARC insertion rates were significantly higher ($p < .001$) if out-of-pocket costs were $< \\$200$. Patients with private insurance utilized LARC at a rate of 86.6% if paying $< \\$200$ for placement; those paying $> \\$200$ had a 27.8% placement rate. Medicaid placement rates were 78.0% as the device was free. For every additional \$100 out-of-pocket expense, the likelihood of utilizing LARC decreased substantially.</p> | <p>Conclusions: When out-of-pocket costs are low, LARC methods are more likely to be utilized.</p> <p>Recommendations: Cost remains a barrier to LARC usage among privately insured patients whose out-of-pocket expenses exceed \$200.</p> |

| Citation/Level & Quality | Purpose of Study | Sample/Setting | Design | Results |
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| <p>Brown, M.K., Auerswald, C., Eyre, S.L., Deardorff, J. & Dehlendorf, C. (2013). Identifying counseling needs of nulliparous adolescent intrauterine contraceptive users: a qualitative approach. <i>Journal of Adolescent Health</i>, 52, 293-300. doi: 10.1016/j.adohealth.2012.07.004</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To examine the decision-making process for nulliparous adolescents considering IUD contraception and identify the provider's role in this process.</p> | <p>Sample: English-speaking, nulliparous adolescents and young women ages 15-24 years of age (n=20) with a history of IUD use for at least one month within the past two years.</p> <p>Setting: Adolescent family planning clinic in San Francisco, CA between November 2010 and June 2011.</p> | <p>A qualitative study conducting 1-hour in person semi-structured interviews covering topics: decision-making surrounding IUD contraception, experiences with provider counseling, and suggestions for provider counseling.</p> | <p>The decision making process involves the following stages:</p> <ul style="list-style-type: none"> -Awareness: the majority of participants indicated not knowing anything about IUDs; their providers never counseled them on this option. -Reaction: the majority of participants had a negative initial reaction to IUDs -Information gathering: the main sources for information gathering included providers, peers, and the Internet. Providers add value by addressing questions and concerns often arising from conversations with friends and family members -Adoption: A strong desire to prevent pregnancy influenced the adoption process. Desires to avoid high doses of hormones and a desire for convenient, long-acting methods also influenced adoption -Adjustment/reassessment: this phase is most influenced by level of preparedness felt by those getting the IUD, motivations for using it, alone with support from others. |

| Citation/Level & Quality | Purpose of Study | Sample/Setting | Design | Results | Conclusions/ Recommendations |
|--|---|---|--|---|--|
| <p>Friedman, J.O. (2015). Factors associated with contraceptive satisfaction in adolescent women using the IUD. <i>Journal of Pediatric Adolescent Gynecology</i>, 28, 38-42. doi: 10.1016/j.jpag.2014.02.015</p> <p>Level: III</p> <p>Quality: Good</p> | <p>Identify factors influencing the satisfaction of adolescent women using levonorgestrel-containing or copper intrauterine devices (IUDs).</p> | <p>Sample: Adolescent women aged 15-24 years (n=79) Who presented to clinic within one month of IUD insertion and were English speaking.</p> <p>Setting: Mount Sinai Adolescent Health Center in New York City.</p> | <p>Prospective cohort study utilizing baseline, three and six month post IUD insertion surveys to determine prior contraception use, obstetrical history, menstrual history, pain tolerance, cramping and bleeding post-procedure, and IUD satisfaction rating.</p> <p>Baseline survey included a Pain Catastrophizing Scale (PCS), a 13 item questionnaire assessing general pain tolerance.</p> <p>Three and six month follow up surveys included 10 point Likert scale assessing pain and cramping post-procedure and how satisfied they were with IUD (satisfied=greater than or equal to 8, not satisfied=less than 8).</p> | <p>Results: Mean age of participants 19.1 +/- 2 years. 52% indicated history of previous pregnancy, 73% indicated history of pregnancy termination. 73.4% chose a levonogestrel IUD while 26.6% chose a copper IUD; satisfaction scores higher in those using levonogestrel IUDs (P=0.41). Of 65 participants, 75% reported satisfaction of 8 or greater. Scores on PCS did not predict IUD satisfaction rates at 3 or 6 month follow up. History of prior pregnancy predicting higher satisfaction rates was statistically significant (P=0.42). Absence of menstrual bleeding 3 months post-insertion significantly predicted satisfaction (P=.01).</p> | <p>Conclusion: Adolescents report high satisfaction rates with IUD use. The most common reasons for IUD discontinuation include pain, cramps, and changes in bleeding patterns. Providers need to be intentional and detailed in their counseling on IUDs to help adolescents anticipate side effects. Efficacy, ease of use, and duration of use should be reviewed prior to insertion and at follow up appointments; this may help adolescents see that the benefits of IUD usage may outweigh any bothersome, likely temporary side effects.</p> <p>Recommendations: Conduct additional research to understand why some adolescents are more satisfied with IUD and more likely to continue using IUDs.</p> |

| Citation/Level & Quality | Purpose | Sample/Setting | Design | Results | Conclusions/ Recommendations |
|--|---|--|---|--|---|
| <p>Greenberg, K. B., Makino, K. K., & Coles, M. S. (2013). Factors associated with provision of long-acting reversible contraception among adolescent health care providers. <i>Journal of Adolescents Health, 52</i>(3), 372-373. doi:10.1016/j.jadohealth.2012.11.003</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To identify provider and practice characteristics predictive of adolescent LARC provision.</p> | <p>Sample: Medical provider members of the Society for Adolescent Health and Medicine (SAHM) (N=430) of those 77% pediatrics-trained (n=291), 5% medicine-trained (n=20), 6% medicine-pediatrics-trained (n=23), 10% family medicine-trained (n=36), and 2% obstetrics and gynecology-trained (n=8).</p> | <p>Analysis of online survey that evaluated adolescent medicine providers on a variety of reproductive health topics. Self-reported provision of either contraceptive implant or IUD insertion.</p> | <p>32% of all providers offered either form of LARC. 88% of obstetrics/ gynecology and family medicine (OB/FM)-trained group reported providing some form of LARC compared to 26% in the internal medicine pediatrics (IM/Peds) group.</p> | <p>Conclusions: Exposure to procedural women's health training was the strongest predictor of LARC provision.</p> <p>Recommendations: Implants require few procedural skills compared to IUDs. Increasing the number of providers offering the contraceptive implant would improve LARC access.</p> |

| Citation/Level & Quality | Purpose of Study | Sample/Setting | Design | Results | Conclusions/ Recommendations |
|--|---|---|--|---|--|
| <p>Hall, K.S., Ela, E., Zochowski, M.K., Caldwell, A., Moniz, M., McAndrew, L.,...Ernst, S. (2016). "I don't know enough to feel comfortable using them": Women's knowledge of and perceived barriers to long-acting reversible contraceptives on a college campus. <i>Contraception</i>, 93, 556-564. doi: 10.1016/j.contraception.2016.02.007</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To assess knowledge and perceptions of long-acting reversible contraception (LARC) among a sample of college-aged women.</p> | <p>Sample: Female, full-time undergraduate students (n=1982) who were 18 years of age or greater and spoke English.</p> <p>Setting: University of Michigan, Fall of 2013.</p> | <p>A 55-item internet survey containing questions addressing the following: knowledge, attitudes and experiences with LARC, experiences with campus reproductive health services, campus culture concerning reproductive health and contraception, reproductive health status and history, and socio-demographics.</p> | <p>22% had heard of LARC, 79% indicated little or no knowledge about IUDs; 88% indicated little or no knowledge on implants. 73% did not know they could access LARC at their campus health center. 19% indicated that there was a positive attitude towards LARC on campus. Common survey questions answered incorrectly included those on effectiveness, mechanism of action, and side effects. The most common barriers included: fear of a foreign object in the body (44%), lack of knowledge (42%), lack of control (42%), fear of pain (30%), side effects (28%), health problems (27%), and cost (27%).</p> | <p>Conclusions: Knowledge of LARC methods among undergraduate, female college students is low. The most common perceived barrier was "not knowing enough." Interestingly, women reported their perceived knowledge to be much lower than was suggested by the results of the true or false questions measuring actual knowledge.</p> <p>Recommendations: Perceptions of LARC may have a greater influence on utilization than actual knowledge about LARC.</p> |

| Citation/Level & Quality | Purpose | Sample/Setting | Design | Results | Conclusions/ Recommendations |
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| <p>Hoopes, A. J., Gilmore, K., Cady, J., Akers, A. Y., & Ahrens, K. R. (2016). A qualitative study of factors that influence contraceptive choice among adolescent school-based health center patients. <i>Journal of Pediatric and Adolescent Gynecology</i>, 29(3), 259-264. doi://doi.org/10.1016/j.jpag.2015.09.011</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To explore diverse population of female adolescents' attitudes and experiences regarding contraception and pregnancy to help with the development of long-acting reversible contraception (LARC) counseling strategies for use in primary care setting.</p> | <p>English-speaking female adolescents ages 14-18 years old from 2 urban school-based health centers (SBHCs) in Washington state (N=30).</p> <p>Setting: Washington State urban school-based health centers.</p> | <p>A qualitative analysis of one-on-one interviews. The interview was based on the principles of Social Cognitive Learning theory and prior studies and included the questions about the main influence (family, peers) on participants' contraceptive choices, reproductive life plan, previous experiences with contraception and LARC methods, and experiences with their SBHC. There were broad, open-ended questions followed by targeted questions for clarification.</p> | <p>Five central themes:</p> <ol style="list-style-type: none"> 1-preferences about device-specific characteristics of intrauterine devices (IUDs) and implants, 2-previous exposure to information from peers, family members, and health counseling sessions, 3- knowledge gaps is critical for informed decision, 4- salient experiences that might motivate a desire for effective and /or long-acting contraception, and 5-environmental constraints and supports that influence adolescents' access and initiation of LARC. <p>Based on these findings the mnemonic PRIME (Preferences, References, Information, Motivations, and Environment) was created to help providers address important domains.</p> | <p>Conclusions: Adolescents have unique counseling needs regarding contraception and LARC methods.</p> <p>Recommendations: Further research is needed to evaluate PRIME and other LARC-inclusive approaches to assist providers on adolescent counseling and acceptability of LARC methods.</p> |

| Citation/Level & Quality | Purpose | Sample/Setting | Design | Results | Conclusions/ Recommendations |
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| <p>Kavanaugh, M. L., Frohwirth, L., Jerman, J., Popkin, R., & Ethier, K. (2013). Long-acting reversible contraception for adolescents and young adults: Patient and provider perspectives. <i>Journal of Adolescent Health</i>, 52(2), 88-89. doi:10.1016/j.jpag.2012.10.006</p> <p>Level: III</p> <p>Quality: High</p> | <p>To explore and compare provider and patient perspective about long-acting reversible contraception (LARC) methods for young women and to examine and to identify strategies for addressing challenges in providing LARC methods for young women.</p> | <p>Sample: 20 administrative directors at publicly funding sites, 37 facility staff, and 48 clients 16-24 years of age.</p> <p>Setting: Title X Family Planning Program across the United States.</p> | <p>Qualitative study with data collection coming from 3 different sources including 20 semi-structured telephone interviews, 6 focus group discussions, and 48 semi-structured in-depth interviews. The most prevalent themes were identified following Miles and Huberman.</p> | <p>Prevalent themes are:</p> <ol style="list-style-type: none"> 1. Clients knowledge and experiences with LARC methods: most had some knowledge specifically potential side effects, insertion site and location, method durations, and effectiveness. 2. Attitudes about suitability for IUDs and implants: most of the staff believed that teens, non-monogamous women, and nulliparous were not eligible for IUDs. While, among clients only 25% perceived young age as ineligible criteria for IUD, few women identified that having given birth were necessary for IUD, and 75% mentioned a positive, lifestyle-related aspect to one of the two methods. Another popular incentive was a desire to avoid pregnancy. 3. Advantages of LARC- <ul style="list-style-type: none"> For clients: forgettable, effective, long-lasting, | <p>Conclusions: Programs to educate young women about IUDs and implants through youth-friendly approaches are recommended.</p> <p>Recommendations: Education methods for providers should include evidence regarding LARC trends and young women needs. It is necessary to increase awareness of providers through updated guidelines and improved training.</p> |

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| | | | | <p>beneficial side-effects. For staff: forgettable, long-lasting, beneficial side effects, doctor controlled.</p> <p>4. Disadvantages of LARC-</p> <p>For clients: foreign object, possible painful insertion/removal, side effects, others could feel implant. For staff: side effects, possible painful insertion/removal, reduced condom use, cost.</p> <p>5. Challenges to providing LARC to young women: cost issues including low reimbursement, lack of patient knowledge, extra time needed for counseling, patients' impatience with side effects, more than one visit to obtain the LARC, and clinical staff resistance to changes.</p> | |
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| Citation/Level & Quality | Purpose | Sample/Setting | Design | Results | Conclusions/ Recommendations |
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| <p>Melo, J., Peters, M., Teal, S., & Guiahi, M. (2015). Adolescent and young women's contraceptive decision-making processes: Choosing "the best method for her". <i>Journal of Pediatric and Adolescent Gynecology</i>, 28(4), 224-228. https://doi.org/10.1016/j.jpag.2014.08.001</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To evaluate influences affecting the choices about contraceptive methods made by adolescents and young women.</p> | <p>Sample: English-speaking adolescents and young women (aged 15-23) (N=21) who were initiating or switching contraception. Purposive sampling was used to ensure the participation of users of both long- and short-acting methods, and with women of varied ages and ethnicity.</p> <p>Setting: Children's Hospital Colorado Adolescent Family Planning Clinic that offers free and confidential contraceptive services to patients aged 12-24 years old.</p> | <p>Qualitative study with semi-structured interviews including questions about past contraception use, reasons for choosing or initiating new contraception, and outside sources that helped them make the decision. The conceptual framework was organized based on the transtheoretical model of behavior change with 4 stages that women go through including contemplation, preparation, action, and maintenance.</p> | <p>Contemplation: most of the participants had desire to avoid pregnancy as the main motivator for considering contraception. Preparation: gathering of the information was based on the personal reproductive health, concerns and effectiveness, duration, convenience, pain at the time of insertion, reversibility, cost, and side effect of the method. Other concerns included desire to control the cycle, desire for "forgetability", and desire to avoid follow-up. Action: most participants did not value peer contraceptive imitation and felt it was personal decision. Maintenance: even after being satisfied with their method, participants avoided advocating that as the 'best' method for their</p> | <p>Conclusions: Even though the participants valued the input from peers and healthcare providers, they made their choice of contraceptive method autonomously and based on their own reasons and needs. While peer influence is based on shared contraceptive goals, the providers provide education and myth clarification.</p> <p>Recommendations: As providers it is important to address individual concerns and provide patient-specific education that resonates with young patients.</p> |

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| | | | | peers and emphasized the selection of “best method for her”. Even though they provided information about their method to their peers they felt that they needed to get information about all types of contraception to make the decision. | |
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| Citation/Level & Quality | Purpose | Sample/Setting | Design | Results | Conclusions/ Recommendations |
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| <p>Mestad, R., Secura, G., Allsworth, J.E., Madden, T., Zhao, Q., Peipert, J.F. (2011). Acceptance of long-acting reversible contraceptive methods by adolescent participants in the Contraceptive CHOICE Project. <i>Contraception</i>, 84(5), 493-498. https://doi.org/10.1016/j.contraception.2011.03.001</p> <p>Level: III</p> <p>Quality: High</p> | <p>To evaluate the association of age and preference for a long-acting reversible contraception (LARC) vs. a non-LARC method among adolescent participants in the Contraceptive CHOICE Project and to analyze the association between those aged 14-17 years to adolescents aged 18-20 years and their choice of implant vs. the intrauterine device (IUD).</p> | <p>Sample: The participants of the Contraceptive CHOICE Project ages 14-20 years old (n=1054) and categorized into two groups: 14-17-years-old (n=214) and 18-20-years-old (n=840). Contraceptive counseling was provided to women prior to study enrollment.</p> <p>Setting: St. Louis, MO, enrolled from August 1, 2007 through December 31, 2009.</p> | <p>Cross-sectional analysis of baseline data obtained from the Contraceptive CHOICE Project, a longitudinal, observational study of women's choice, use and continuation of reversible contraception. It was designed to remove the cost barrier to effective contraception, promote the use of LARC, and evaluate use, satisfaction, and continuation of LARC and non-LARC methods in a cohort of 10,000 women ages 14-45 years. The baseline questionnaire that included participant demographics, medical and reproductive history including sexual and obstetric histories, and initial knowledge of contraception methods, its safety and effectiveness.</p> | <p>62% of adolescents aged 14-20 years (n=658) chose LARC methods. Of this group 69% (n=148) were of adolescents in age group 14-17- years-old and 61% (n=510) of adolescents in age group 18-20-years-old when LARC was offered and cost was removed as a barrier (relative risk [RR] =1.14, 95% confidence interval [CI] 1.03-1.26). The younger women ages 14-17- year-olds preferred the implant over IUD with 63% (n=93) choosing the implant, whereas only 29% (n=146) of the 18-20-year-olds chose the implant.</p> | <p>Conclusions: LARC is an acceptable choice and commonly used by adolescents enrolled in the Contraceptive CHOICE Project, with younger women being most interested in the implant.</p> <p>Recommendations: Healthcare providers should include discussion of IUDs and the contraceptive implants during contraceptive counseling for adolescents as these methods are acceptable, safe, and very effective.</p> |

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| <p>Murphy, M. K., Stoffel, C., Nolan, M., & Haider, S. (2016). Interdependent barriers to providing adolescents with long-acting reversible contraception: Qualitative insights from providers. <i>Journal of Pediatric and Adolescent Gynecology</i>, 29(5), 436-442. doi://doi.org/10.1016/j.jpag.2016.01.125</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To identify the context-specific barriers experienced by pediatricians, family medicine physicians, and advanced practice nurses to providing adolescents with long-acting reversible contraception (LARC).</p> | <p>Sample: Pediatricians, family medicine physicians, and advanced practice nurses (n=16) that see at least 3 adolescents on average per week and prescribe contraception to them. Purposive sampling was used by inviting participants via e-mail and in-person recruitment at a federally qualified health center.</p> <p>Setting: Chicago area.</p> | <p>Qualitative study of self-reported attitudes and practices regarding provision of LARC to adolescents were assessed by semi-structured qualitative interviews covering a variety of topics pertaining to LARC and adolescent contraceptive use. The data was analyzed by analytic techniques of coding, memo-writing, and development of conceptual models to identify themes and relationships indicated by the data.</p> | <p>The 3 essential components of providing LARC to adolescents who are eligible for LARC and are interested in learning about these methods are provider confidence in LARC, patient-centered counseling, and instrumental support for LAPRC insertion.</p> | <p>Conclusions: Increased adolescent intake of LARC can be done only with supportive clinical culture and providers that have training and access to LARC devices.</p> <p>Recommendations: Increased provider training on LARC insertion and expanded access to LARC devices at the clinics are essential components in support of increased adolescent LARC use.</p> |

| Citation/Level & Quality | Purpose | Sample/Setting | Design | Results | Conclusions/ Recommendations |
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| <p>Payne, J.B., Sundstrom, B., & DeMaria, A.L. (2016). A qualitative study of young women's beliefs about intrauterine devices: Fear of infertility. <i>Journal of Midwifery & Women's Health</i>, 61, 482–488. doi:10.1111/jmwh.12425</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To understand women's beliefs concerning IUDs and their contraceptive choice.</p> | <p>Sample: Young women aged 18-24 years (N=53) currently enrolled in a mid-sized, urban, public liberal arts and sciences university.</p> <p>Setting: Southeast region of the United States.</p> | <p>Part of a larger women's health research study. A qualitative study by in-depth interviews. Data was analyzed using grounded theory approach and common themes were identified.</p> | <p>Common themes included:</p> <ul style="list-style-type: none"> - negative beliefs about IUDs, - silence as participants have heard less positive testimonies and overemphasized negative outcomes, - clinician opposition, - identity as a fertile woman and having menstruation as a "natural event", -balancing desires – even though the participants desired high effectiveness in contraception, they were reluctant to try any contraceptive method that may influence future fertility, - negotiating risk; fear of infertility. | <p>Conclusions: Participants' lack of familiarity with IUDs is a significant barrier to its use.</p> <p>Recommendations: Health care providers should be more open and encouraging when counseling young women on IUDs. The specific information that needs to be addressed about LARC methods includes effects on menstruation and fertility.</p> |

| Citation/Level & Quality | Purpose | Sample/Setting | Design | Results | Conclusions/ Recommendations |
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| <p>Philliber, A. E., Hirsch, H., Mortillaro, L., Turner, R., Arons, A., & Philliber, S. (2014). Impact of years of clinical experience on perceived contraindications and barriers to the use of LARC: A survey of family planning providers. <i>Women's Health Issues, 24</i>(5), 503-509. doi://doi-org.ezproxy.bethel.edu/10.1016/j.whi.2014.06.001</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To identify if the length of clinician experience is related to their perceptions regarding the appropriateness of prescribing a long-term reversible contraception (LARC).</p> | <p>Sample: Providers that were eligible for inserting intrauterine devices (IUDs) and single rod implants insertion (N=95).</p> <p>Setting: Family planning clinics in Iowa and Colorado.</p> | <p>Analysis of a mixed-method study. Clinicians including physicians, physician's assistants, nurse practitioners, and nurse-midwives were surveyed in their individual settings. Survey asked about years of experience, training by years of experience, concerns regarding barriers to LARC, attitudes toward insertion of LARCs, and perceptions of suitability and safety of LARC by patient group.</p> | <p>Clinicians practicing the longest were less likely to be trained in LARC insertion. The longest practicing physicians were less likely to express concerns of uterine perforation with IUDs but were more likely to fear the lawsuit from LARC complications. Despite having less training, the longest practicing clinicians reported more comfort in inserting LARCs. Those that practiced longest were the least likely to believe that LARCs are suitable and safe for all 11 groups of women that ACOG have found are good candidates for these methods.</p> | <p>Conclusions: Provision and counseling on LARC methods depends on the clinician training, years in practice, and his/her personal views and concerns about these methods.</p> <p>Recommendations: Training around LARC needs need to be tailored specifically for providers who have been practicing for a long period of time, those who did not receive training in these methods during their original training, and those with the lowest comfort levels in providing these methods.</p> |

| Citation/Level & Quality | Purpose of Study | Sample/Setting | Design | Results | Conclusions/ Recommendations |
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| <p>Potter, J., Rubin, S.E., & Sherman, P. (2014). Fear of intrauterine contraception among adolescents in New York City. <i>Contraception</i>, 89(5), 446-450. doi: 10.1016/j.contracept.2014.01.011</p> <p>Level: III</p> <p>Quality: High</p> | <p>To examine the attitudes and beliefs surrounding IUD use among a group of urban, minority adolescents.</p> | <p>Sample: Adolescent females (n=21) ages 14-21 years of age who have heard of IUDs but have never used one.</p> <p>Setting: Two school-based health clinic and one community health center in Bronx, New York.</p> | <p>A qualitative study that utilized semi-structured interviews, audiotaping and transcribing findings. Findings were analyzed by two independent researchers to identify themes in data. Interview guide developed utilizing the Theory of Planned Behavior asked a multitude of questions regarding knowledge or IUD and perceptions of it.</p> | <p>Fear was the most common theme for IUD usage; fear of pain, expulsion, physical harm, presence of foreign, and lack of control during insertion process were all frequently noted. The most common fear appeared to be pain associated with insertion and removal. Half of all participants indicated they would utilize their school-based health clinic for IUD insertion.</p> | <p>Conclusions: Female adolescents have many concerns related to IUD usage. The majority have a fear of the device itself and how it will function and affect their bodies. Fear was the most common theme for IUD usage; fear of pain, expulsion, physical harm, presence of foreign, and lack of control during insertion process were all frequently noted. The most common fear appeared to be pain associated with insertion and removal. Half of all participants indicated they would utilize their school-based health clinic for IUD insertion.</p> |

| Citation/Level & Quality | Purpose of Study | Sample/Setting | Design | Results | Conclusions/ Recommendations |
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| <p>Richards, M.J. & Sheeder, J. (2014). Adolescents: their futures and their contraceptive decision. <i>Journal of Pediatric Adolescent Gynecology</i>, 27, 301-305. doi: 10.1016/j.pag.2013.12.009</p> <p>Level: III</p> <p>Quality: High</p> | <p>To examine motivators and decision-making processes of adolescent females when considering contraception.</p> | <p>Sample: High-risk, nulliparous adolescent females (n=84) who were sexually active, less than 22 years of age, English speaking, with a negative pregnancy test at time of encounter.</p> <p>Setting: An urban adolescent medicine clinic and an urban family planning clinic providing services to individuals <24 years of age.</p> | <p>A descriptive study utilizing a questionnaire containing questions related to success, childbearing expectations, future plans, and present lifestyle. All participants received counseling on contraceptive methods (OCPs), patch, vaginal ring, depot medroxyprogesterone acetate or LARC methods with the option to receive same-day contraception. Participants were then divided into two groups: those who planned to utilize an effective form of contraception and those who planned to abstain or use no method, condom, foam or diaphragm.</p> | <p>Survey participants defined a successful person as having attained higher education (73%) and/or having a good job (73%). In 3-5 years 70% of participants said they saw themselves finishing high school and 62% planned on attending college. Those participants who chose to leave the clinic with effective contraception didn't view education and career attainment as more important than those who did not choose an effective contraceptive method. 52% indicated that having a child would not affect their ability to pursue higher education and 30% indicated it would positively impact their education.</p> | <p>Conclusions: The goals and aspirations of high-risk, female adolescents do not appear to influence choice to use contraception versus not. The majority of participants indicated that education and career path was important but that childbearing would not pose challenges to educational attainment.</p> <p>Recommendations: This study suggests that conventional motivators for contraception may not be relevant when counseling high-risk adolescents. As a result, further research should be conducted to determine relevant motivators to contraceptive use.</p> |

| Citation/Level & Quality | Purpose | Sample/Setting | Design | Results | Conclusions/ Recommendations |
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| <p>Sundstrom, B., Baker-Whitcomb, A., & DeMaria, A. (2015). A qualitative analysis of long-acting reversible contraception. <i>Maternal & Child Health Journal, 19</i>(7), 1507-1514. doi:10.1007/s10995-014-1655-0</p> <p>Level: III</p> <p>Quality: Good</p> | <p>To investigate young women knowledge, perceptions, and use of long-acting reversible contraception (LARC) methods.</p> | <p>Sample: Young women aged 18-24 years (N=53) currently enrolled in a mid-sized, urban, public liberal arts and sciences university.</p> <p>Setting: Southeast region of the United States.</p> | <p>Part of a larger women's health research study. Qualitative research by in- depth semi-structured interviews between January and May 2013. In-person interviews at convenient on-campus locations were conducted until the properties of relevant concepts developed depth and variations, including theoretical saturation in the data.</p> | <p>3 prominent themes and sub-themes related to LARC were revealed including</p> <ul style="list-style-type: none"> • the false choice of contraception options (with sub-themes chasing side effects, medical resistance, and cost and affordable care), • rumors and misunderstanding (with sub-themes risky benefits and fertility), • timing and control (with sub-themes the myth of perfect use and contextualizing the lifespan). | <p>Conclusions: The barriers that construct a false choice of contraceptive method include the myth of perfect use, access, medical resistance, and cost.</p> <p>Recommendations: Health campaign planners and clinicians should focus on the increased effectiveness, safety, and desirable side effects of LARC methods.</p> |

