

Long-Acting Reversible Contraception for Teens in the U.S.: A Critical Literature Review

by

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Abstract

Adolescent reproductive health remains a significant public health concern within the United States with high rates of unintended pregnancies among teens and young women under the age of 20. Despite a declining rate in teen pregnancies within the U.S., disparities still exist pertaining to access to contraceptive methods. Long-acting reversible contraception (LARC) is a promising method for reducing unintended teen pregnancies in the United States. Despite the effectiveness and increasing uptake of LARC, barriers persist such as disparities in healthcare access, Medicaid reimbursement policies, and misperceptions of LARC methods. This critical review examines the history, types, and efficacy of LARC methods, with a focus on IUDs and Implants, while also incorporating the interventions at hand that work to address barriers to LARC uptake.

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Preface

As I embarked on my journey of understanding factors associated with LARC uptake for teens and adolescents, I found myself entrapped in a complex web of social, cultural, and political factors that influence teens abilities to utilize contraceptive services. This essay stems from my eagerness to contribute to a deeper understanding of reproductive health for adolescents.

Drawing on synthesis of existing literature, this essay seeks to inform and inspire action for future policy reforms, community-based initiatives that center youth-friendly services, and healthcare initiatives. My hopes are that adolescents will be met with the respect and autonomy that their older peers may receive.

I extend my gratitude to all who have helped me and supported me along this tough journey. A special thank you goes out to my readers who were always efficient, helpful, and quick with their feedback and always welcoming with advice and insights. I also would like to thank my peers, who would always encourage me, even with our late-night study sessions.

1.0 Introduction

According to the American Pregnancy Association, a “teenage pregnancy is a pregnancy that occurs for a woman under the age of 20” (APA, 2017). This definition also includes young women 12 or under who experience pregnancy as well (APA, 2017). In the United States, the teen pregnancy rate continues to decrease over the years, but the US rate is still higher than others among Western industrialized nations (Centers for Disease Control and Prevention, 2023). Some scholars attribute this decline to abstinence; however, many researchers suggest that improved contraceptive use has been critical to the decline in teen pregnancies. The intention of this essay is to contribute to the ongoing discourse surrounding adolescent reproductive health and the desires for contraceptive options to provide a full array of choices in the early stages of reproductive lifespan. This essay will address what is already known about one highly effective form of contraception, long-acting reversible contraception (LARC), the services provided for adolescents in the US, and challenges in access and availability. This review will also identify previous interventions to improve access and uptake of LARCs for adolescents and discuss future directions for adolescent reproductive services providers.

1.1 Background and Rationale

In the United States, “almost half (49 percent) of all pregnancies and 80-90 percent among adolescent and young women ages 15–24, are unintended” (ACOG, 2015). Like many other health

problems, disparities are shown during pregnancy experiences. In 2019, the birth rates for Hispanic teens (25.3) and non-Hispanic Black teens (25.8) were more than two times higher than the rate for non-Hispanic White teens (11.4) (See Figure 1) (Centers for Disease Control and Prevention, 2023). While these numbers are alarming, the highest rate of birth among all race/ethnicities was for American Indian/Alaska Native teens (29.2) (Centers for Disease Control and Prevention, 2023). Low-income women and teens are also at a greater risk of experiencing disparities and have lower rates of contraceptive usage (ACOG, 2015). Among these disparities is the ability to access contraceptives since low-income people are less likely to be insured (ACOG, 2015).

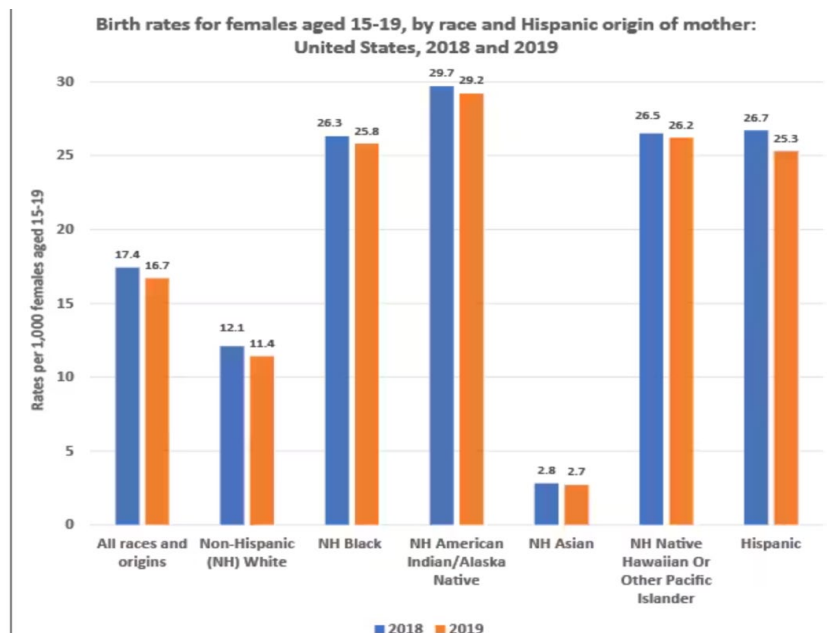


Figure 1: Birth Rates for females aged 15-19, by Race and Hispanic Origin of Mother, United States, 2018 and 2019

Data Source: Martin JA, Hamilton BE, Osterman MJK, Driscoll AK. Births: final data for 2019. Natl Vital Stat

Rep. 2021;70(2):1–50.

Teen pregnancy and childbearing also contributes to increased social and economic costs, high school dropout rates, health problems, incarceration rates, and health and foster care costs. As of 2019, 40.6% of teenagers reported ever having sex and 88.6% used some form of contraception the last time they had sex, with that number decreasing with grade level (Bardia, 2016). Many researchers and medical professionals recommend long-acting reversible contraceptive use for teens who are sexually active.

Long-acting reversible contraception (LARC) consists of forms of birth control that last for a long period of time. Within this category are intrauterine devices (IUDs) and the birth control implant (ACOG, 2015). Both birth control methods are more than 99% effective in preventing pregnancies and are the most effective forms of reversible birth control available (ACOG, 2015). During the first year of use, fewer than 1 in 100 women using LARC's will get pregnant (ACOG, 2015). Overtime, LARC methods are 20 times more effective than other methods of birth control such as the patch, the ring, or birth control pills (ACOG, 2015). Depending on which LARC is used, they last three to ten years and require no further action after insertion (ACOG, 2015).

The IUD is a small, t-shaped, plastic device that is inserted into and left inside of the uterus (ACOG, 2015). There are two different types of IUDs. The first type is a hormonal IUD that releases progestin into the uterus and depending on the brand, can last anywhere from three to eight years. If a hormonal IUD is inserted more than seven days after the start of one's period, one should wait seven days before engaging in sexual relations or use a backup method (ACOG, 2015). If a hormonal IUD is placed fewer than seven days after the start of a menstrual cycle, a backup method is not necessary (ACOG, 2015). The second type of IUD is a copper IUD which releases copper into the uterus and does not contain hormones. The copper IUD is approved for up to ten

years of use (ACOG, 2015). Copper IUDs are effective to protect against pregnancy right away (ACOG, 2015).

The birth control implant is a flexible, plastic rod approximately the size of a matchstick that is inserted just under the skin in the upper arm (ACOG, 2015). The area the implant is inserted into the arm will be numbed with a local pain medicine and then placed under the skin with a special inserter (ACOG, 2015). The implant releases progestin into the body and is approved for up to three years of use (ACOG, 2015). The progestin in the implant stops ovulation and thickens cervical mucus, making it harder for sperm to enter the uterus and reach the egg (ACOG, 2015). If the implant is placed within five days of the start of a menstrual period, it will be effective immediately (ACOG, 2015). If not, the implant will take approximately seven days to become effective (ACOG, 2015).

1.2 History of LARCs and Types

The first generation of IUDs was released in the US in 1968, but shortly after, the public developed a mistrust of the device due to poor outcomes (Durante et al., 2023). These outcomes developed after the braided string of the IUD was found to be more prone to infections (Durante et al., 2023). In 1974, the IUD was taken off the market, leaving not only a negative perception of long-acting reversible contraceptive devices that we still see today, but also a lack of usage (Durante et al., 2023).

In 1988, the copper IUD, ParaGard, was introduced and approved for 10 years of use and then in 2001, the Mirena device was created based on data from women who had previous

pregnancy experiences and approved for 5 years of use (Durante et al., 2023). As the years went on, and more research was conducted to test effectiveness and efficacy of these devices, the durability and use of the Mirena was extended to 8 years (Durante et al., 2023). Between the years of 2013-2016, three newer IUDs were approved; Skyla (3 years), Kyleena (5 years), and Liletta (8 years) (Durante et al., 2023). Certain IUDs, such as the Liletta, were notable for including adolescents aged 16 and 17 in their clinical trials, whereas other IUDs only included women 18 years and older (Durante et al., 2023)

1.3 Subdermal Implants and Injections

In 1991, the first subdermal implant, Norplant, was available in the US but like the first generation of the IUD, sales shortly stopped by 2002 (Durante et al., 2023). This stoppage of sales was due to unanticipated side effects and the harsh removal of the multiple rods associated with the implant (Durante et al., 2023). In addition to negative side-effects, Norplant was being used by some judges and policy makers to impose birth control on those of lower economic status, or those imprisoned (Durante et al., 2023). In several states, judges gave women convicted of child abuse or drug use during pregnancy the “choice” between using Norplant or serving time in jail (ACLU, 1994). At the time, legislators were trying to pass a bill to mandate this, along with a bill that would require women receiving public assistance to use Norplant or lose their benefits (ACLU, 1994).

The single-rod Nexplanon implant used today and introduced in 2010 has made progress and improvements when compared to the single rod implant that was introduced in 1998 (Durante et al., 2023). The main improvement made with the Nexplanon is an upgraded insertion device,

making for an easier, smooth insertion (Durante et al., 2023). The current version of the Nexplanon is approved for four years of use.

Of the literature included in this review, most studies include only IUDs and implants as LARC methods, leaving the depot medroxyprogesterone acetate (DMPA) injection out of most conversations. Exceptions include Davytan (2000), Durante et al., (2023), Itriyeva, (2018), and Morales et al., (2016). Similar to other LARC methods, the DMPA injection, commonly known as Depo-Provera or the depo shot, has a typical efficacy rate of 94% (Itriyeva, 2018). This method of contraception requires one intramuscular injection every three months when being used for pregnancy prevention efforts (Itriyeva, 2018). Although the DMPA injection offers a longer duration compared to shorter methods (Itriyeva, 2018), it falls short of the extended timeframe provided by longer methods, which may be a reason DMPA injections were found less frequently in literature.

2.0 Methods

To be considered for inclusion in this critical review, required studies had to: have a study population of adolescents that were ages 18 and under; OR have a study population of healthcare workers who provide contraceptive care; study Medicaid policies to determine LARC access (implant OR IUDs); Included outcomes such as: access or lack of access; adolescent pregnancy rates; risk behaviors.

Retrospective studies, records review studies, cross-sectional studies, randomized trials, and quasi-experimental studies were included as were qualitative mixed methods studies. Included studies had to have been primary studies published in research journals; comments, editorials, dissertations, conference proceedings, etc. were excluded. Only those articles published in English from 2000 through 2024 were considered for inclusion.

Medline (Ovid) was searched by a health sciences librarian with systematic review experience. The date of the last search was 7 March 2024. Limiters were added for language and geographic location. The initial Medline search was developed using a combination of Medical Subject Heading (MeSH) terms and title, abstract, and keywords. Search terms included: Medicaid, adolescents, LARC, IUDs, long-acting reversible contraception.

EndNote 20 (Clarivate) was used to store all citations found in the search process and to check for duplicates not found during the search process. Search strategies and results were tracked using an Excel workbook designed specifically for 1-person reviews (VonVille, 2024). The Excel workbook (VonVille, 2024) was used for study selection. After searches were completed, all unique citations were added to the appropriate worksheet. The author assessed each title and

abstract to determine if it should be excluded (with a single reason provided) or go to full text review. The full text of non-excluded articles was retrieved, and an exclude/include decision recorded in the Excel workbook.

Limitations

The systematic search of the OVID database served as the primary method for the literature review. This was done to ensure that publications from social sciences were included that otherwise might not have been. While this process was as in-depth as possible, it is important to acknowledge the limitations of this approach. Firstly, the reliance on one singular database may have introduced publication bias, leaving studies and other publications to be excluded from the search. Additionally, the decision to search exclusively English-language publications excluded relevant research conducted in other languages.

3.0 Literature Review

With LARC being one of the most effective methods of birth control, it would seemingly be a fitting option for teens/adolescents to use to prevent teen pregnancies. However, the cost of LARC can be a barrier to usage, especially to teens. LARC costs can exceed \$1000, which includes both the purchase of the contraceptive and administration by a provider (Fox & Barfield, 2016). If teens/adolescents were educated about the option, the use, and the cost of LARC, they may be more inclined to utilize this contraceptive method than others. For example, the CHOICE study, which was conducted from 2007-2011, found that 72% of 1404 adolescent girls aged 15 to 19 years old chose a LARC method when provided with contraception at no cost when compared to LARC usage rates among US teens in general (Fox & Barfield, 2016).

3.1 Teen Pregnancy in the U.S.

Although rates of teen pregnancy in the United States are declining (see Figure 2), they remain at a higher rate than other comparable countries. In the U.S. in 2020, the teen birth rate was down eight percent from 2019 and down 75 percent from the 1991 peak leaving the rate at 15.4 births for every 1,000 females aged 15-19 (Osterman et al, 2020). According to the World Bank, in Canada the teen birth rate for adolescents aged 15-19 was 7 births for every 1,000 females in 2021 (World Bank, 2023). This decline has drastically changed from the 1991 birth rate of 27 births per every 1,000 females aged 15-19. The decline in the national teen pregnancy rates have

been comparable to the decline in abortion rates as well in the United States. In 2017, an estimated 58% of pregnancies of girls 15-17 years old ended in a birth, while 28% ended in abortion. 62% of pregnancies of teens aged 18-19 ended in a birth while 23% ended in abortion (HHS Office of Population Affairs, 2020). Since abortion being legalized in 1973, the rate of abortion for 15–17-year-olds declined 88% and for 18–19-year-olds, 79% (HHS Office of Population Affairs, 2020).

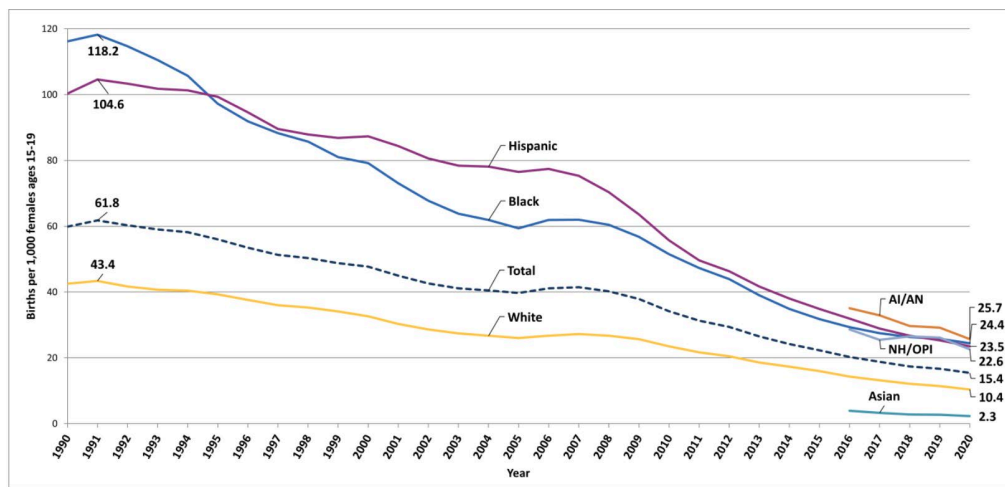


Figure 2: Births per 1,000 Females Aged 15-19, 1990-2020

Data Source: Trends in teen pregnancy and childbearing, HHS Office of Population Affairs. (2020).

<https://opa.hhs.gov/adolescent-health/reproductive-health-and-teen-pregnancy/trends-teen-pregnancy-and-childbearing>

Factors influencing teen pregnancy include familial or partner-level influences, individual influences, and cultural values. In a systematic review focused on the predictors of adolescent Latinas in the United States found that Latinas who lived with a stepparent were at a greater risk for early intercourse and less likely to use condoms (Morales-Aleman, 2016). The same study also found that partner communication about birth control contributed to contraceptive use among teens

(Morales-Aleman, 2016). Lastly, the study found that first-generation immigrant girls were at a greater risk than second-generation immigrant girls to engage in early sexual intercourse (Morales-Aleman, 2016). When comparing Latino adolescents who have a “stronger tie” to “Latino orientation” to adolescents who practice more US based cultures (English speaking and eating American food), Latinas who were more “Latino oriented” reported sex with fewer partners (Morales-Aleman, 2016).

Other influencers of teen pregnancy include binge drinking and depression. One study found that teens that experience depressive symptoms during adolescents was associated with having four or more lifetime sexual partners before adulthood (Lee and Hahm, 2010). The same study also found that binge drinking was associated with increased lifetime sexual partners and not using condoms during sexual intercourse (Lee and Hahm, 2010).

Unintended and teenage pregnancies do not come without risk. Potential risks include delayed prenatal care, fetal exposure to tobacco and alcohol, and poorer health outcomes for newborns (Fox & Barfield, 2016). Within the United States, approximately 2.8 million unintended pregnancies occur each year and more than 430,000 pregnancies occurred among adolescents aged 15 to 17 (Fox & Barfield, 2016). Furthermore, these rates were approximately 7 times higher than rates in other developed countries and the use of LARC remains low (Fox & Barfield, 2016).

Teens who experience pregnancy are at an increased physical risk of preeclampsia, preterm premature rupture of the membrane (PPROM), increased incidence of pregnancy-induced hypertension, anemia, sexually transmitted diseases, operative vaginal deliveries (forceps/vacuum), postpartum depression, and maternal deaths (Kawakita et al., 2016). On top of medical risks involved with teen pregnancy, adolescents are also at a higher risk from financial constraints, lack of education, and stigma from society (Govender et al., 2020).

The risks and potential outcomes of teen pregnancy can also be compared between mothers aged younger than 15 years and mothers aged 15-19 years old. Mothers aged younger than 15 years old experience higher rates of preterm delivery, fetal death, low birth weight, infant mortality, and late or no prenatal care (Smid et al., 2014). Among these disproportionate rates, mothers aged younger than 15 years also are associated with higher rates of stillbirth (Smid et al., 2014). On top of these statistics, women with pregnancies occurring before the age of 15 were less likely to attain a high school degree and less likely to report using contraception during their first sexual intercourse (Smid et al., 2014). Pregnancies occurring before the age of 15 years old were also associated with women being Hispanic or Black, when compared to non-Hispanic white women (Smid et al., 2014).

3.2 LARCs

3.2.1 LARC Usage

Declining rates of teen pregnancy can be attributed to decreases in adolescent sexual activity and increases in effective contraceptive use (Durante et al., 2023). Despite the introduction and increased use of LARC among teens and adolescents, overall uptake is still at an all-time low when compared to short-acting contraceptive methods (Durante et al., 2023). Data, however, differs on what these rates are and how many adolescents are using LARC methods.

The National Survey of Family Growth (NSFG), an interview-based survey of unmarried and married US men and women aged 15–49, found that there was an “increase in LARC use at

last intercourse among never-married adolescents aged 15–19 years from 3% in 2006–2010 to 15% in 2015–2019” (Lindberg & Firestein, 2021). After stratifying for the different methods of LARC, they found that 5% of adolescents used an IUD while 10% of adolescents used a version of the implant (Lindberg & Firestein, 2021). On the other hand, the National Youth Risk Behavior Survey (NYBS), a survey of US high-school students, “observed a smaller increase in current IUD and implant use among adolescents aged 15–19 than the NSFG, from 1.6% in 2013 to 4.8% in 2019” (Szucs et al., 2019).

While there is an uptake in adolescent LARC use, racial disparities persist in the US. There is higher usage of LARC among non-Hispanic White (6.7%) than non-Hispanic Black (2.0%) or Hispanic (1.6%) adolescents aged 15–19 (Szucs et al., 2019). This statistic is important to note because non-Hispanic Black and Hispanic adolescents experience pregnancy rates over twice as high as non-Hispanic White adolescents (CDC, 2019).

3.2.2 Common LARC Misconceptions

Misperceptions and fear about the use of LARCs often persuade adolescents and their parents to choose other forms of contraception. These misconceptions are typically broken down into seven different categories: about safety, effects on fertility, protection from STIs, mechanism of action, efficacy, eligibility, and insertion (Kirubarajan et al., 2022). Common misconceptions regarding safety include: risks of infection risk, cancer, permanent harm, and/or premature menopause, or physical damage to the reproductive tract; beliefs that subdermal implants move throughout the body or can dissolve; that copper IUDs can rust within the body, subdermal implants can stick out of the skin or “pop out”, IUDs can become permanently stuck within the

uterus, that lack of menstruation due to an IUD is unhealthy, and that IUD insertion can cause death (Kirubarajan et al., 2022).

Other common misconceptions include that LARCs offer protection against STIs, IUDs containing more hormones than oral contraceptive pills, IUDs are “sealing the uterus and ovaries”, being less effective than other methods (such as condoms), IUDs require surgery and anesthesia for insertion, and lastly, that the implant insertion can be used as a “tracking device” (Kirubarajan et al., 2022).

In addition to the fears and other misperceptions of LARCs, and despite failure rates of <0.5%, a “survey of over one thousand urban adolescents and young adults found that 11.5% reported knowing someone else who got pregnant on the IUD” (Hoopes et al., 2018). Many teens also frequently receive their information on the internet, and this may contribute to knowledge gaps and inaccurate perceptions of the risk of using LARCs as well (Harris et al., 2016).

3.3 Insurance Coverage

3.3.1 Medicaid

The Medicaid program funds approximately 75% of public family planning expenditures and provides preventive and pregnancy services to around 20 million people who are of child-bearing age (Fuerst et al, 2020). In 2010, the Affordable Care Act (ACA) was passed which permitted expansion of Medicaid eligibility to many low-income patients (Sumarsono et al, 2021). Within the ACA, specifications were made to provide multiple different preventive

services, including but not limited to, all FDA approved contraceptive methods at no cost to the user or with a limited co-pay (Sumarsono et al, 2021). Unfortunately, not all states decided to expand Medicaid, leaving many women and young adults vulnerable to becoming pregnant. As seen in Figure 3 and Table 1, 41 states have opted to expand Medicaid, including DC, while 10 states remain on previous Medicaid plans (Sobel, 2019).

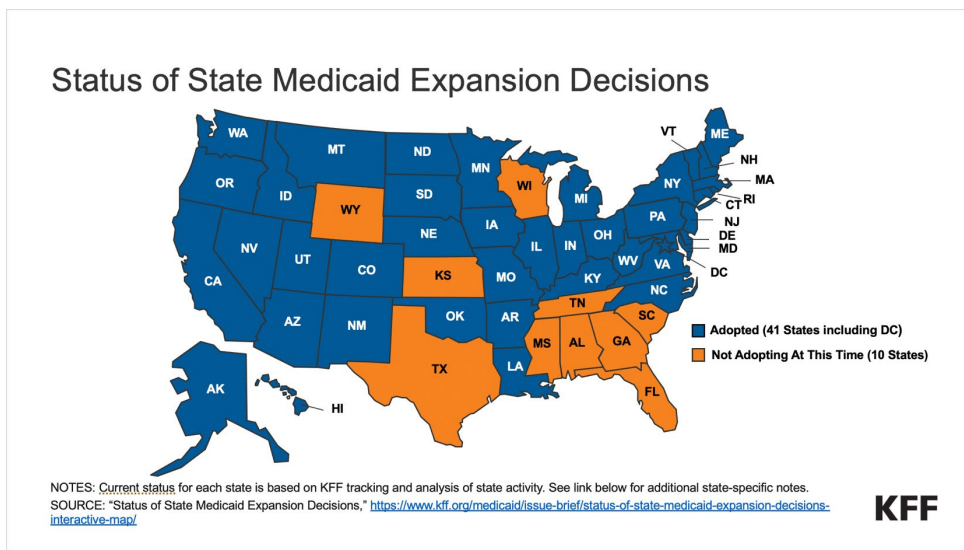


Figure 3: Status of State Medicaid Expansion

Data Source: Sobel, L., Beamesderfer, A., & Salganicoff, A. (2019, June 19). Private insurance coverage of contraception. KFF. <https://www.kff.org/womens-health-policy/issue-brief/private-insurance-coverage-of-contraception/>

Table 1: States that Expanded Medicaid by Year of Adoption

States that have not expanded:	Alabama, Florida, Georgia, Kansas, Mississippi, South Carolina, Tennessee, Texas, Wisconsin, Wyoming
States that have expanded, by year:	2014: Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Hawaii, Illinois, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Ohio, Oregon, Rhode Island, Vermont, Washington, West Virginia
	2015: Alaska, Indiana, Pennsylvania
	2016: Louisiana, Montana
	2019: Maine, Virginia
	2020: Idaho, Nebraska, Utah
	2021: Missouri, Oklahoma
	2023: North Carolina, South Dakota

The Centers for Medicare and Medicaid Services (CMS) encourages states to follow the family planning coverage standards for all Medicaid-enrolled women (Vela et al., 2017). States hypothetically should cover all FDA-approved contraceptive methods, however, the CMS has never mandated that coverage of less than all FDA-approved methods would be an unreasonable limit (Vela et al., 2017). While many Medicaid programs cover fee-for-service LARCs, there are still other barriers that exist. These barriers include the cost of LARC devices and cost of insertion, removal, and follow-up care (Vela et al., 2017). This lack of coverage often limits patients to LARC services in outpatient settings (Moniz et al., 2015). Most states cover the insertion procedure, but some states are more restrictive with their plans. For example, Texas limits family planning services to three covered methods per year, will only pay half of the amount of insertion

rates of an IUD, and will not reimburse for LARC removal if also completed on the same date of any other surgical procedure (Vela et al., 2017).

One study reviewed 37 insurance plans within PA in 2017. 13 were Medicaid, and 24 were commercial insurance plans. Out of the 37 plans, 100% failed to adhere to the ACA mandate that required contraceptive coverage by disregarding coverage of LARCs (35%), requiring a copay (16%), and/or failing to cover all contraceptive categories (97%) (Magoon et al, 2017). When compared with commercial coverage, Medicaid insurers covered LARCs 54% of the time and 38% of the time with no copay, while commercial insurers covered LARCs 71% of the time and 54% of the time with no copay (Magoon et al., 2017).

While lowering and/or removing the cost of LARC has increased usage, other barriers still exist. These barriers include limited availability, problematic policies regarding reimbursement, and a lack of general awareness and education about LARC devices (Fox & Barfield, 2016). Most plans are required to follow the ACA provisions; however, “traditional Medicaid plans, grandfathered private plans, and the US Department of Defense and Veterans Administration benefits packages are not required to provide the comprehensive coverages called for by the ACA” (Fox & Barfield, 2016).

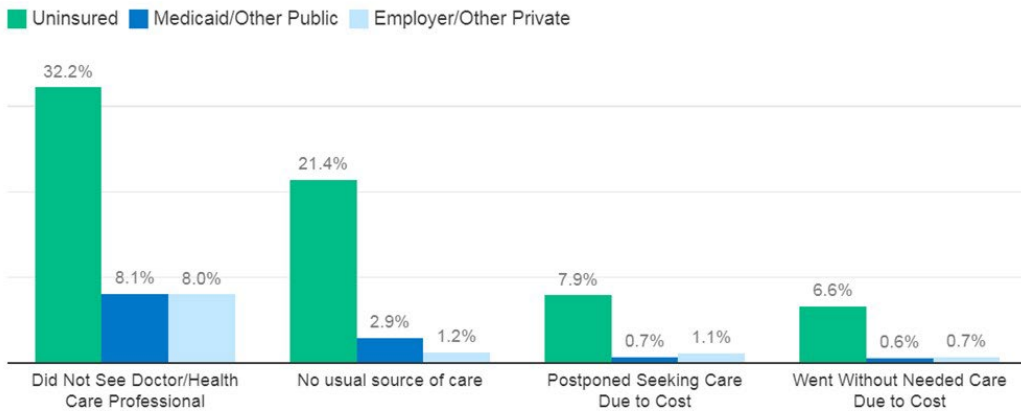
3.3.2 Private Insurance

Employer-provided health coverage, usually provided by parents or guardians, has different guidelines and requirements. As of 2022, the uninsured rate is as follows: white, non-Hispanic people (5.7%), Hispanic or Latino people (17.7%), American Indian and Alaska Native, non-Hispanic (18.8%) (Census Bureau, 2022). Those with private insurance ranged from 74% for

White, non-Hispanic people and 43% for American Indian and Alaska Native, non-Hispanic People (Census Bureau, 2022). Health plans sponsored by religious employers are not obliged to cover contraceptive methods and counseling (HealthCare.gov, n.d.). Similarly, non-profit religious organizations are not required to provide, pay, contract, or refer for any contraceptive coverage (HealthCare.gov, n.d.). In the *Burwell v. Hobby Lobby* ruling, the U.S. Supreme Court declared that the Patient Protection and Affordable Care Act violated the religious freedom of privately held, for-profit corporations' freedom of privately held, for-profit corporations (Gerais, 2017).

Recent evidence has shown that uninsured children receive fewer health care services than children who have insurance coverage (Edmunds & Coye, 1998) As seen in Figure 4, out of adolescents aged 0 to 17, those who were 32.2% of those uninsured did not see a doctor or health care provider compared to 8% of those who have private insurance. Likewise, 21.4% of uninsured children had no usual source of care, 7.9% postponed seeking care due to cost, and 6.6% went without needed care due to cost (Tolbert et al., 2023). On top of receiving fewer health care services, those who are uninsured are less likely to continue their follow-up care than those with insurance and less likely to obtain coverage for all recommended services (Tolbert et al., 2023).

Barriers to Health Care among Children by Insurance Status, 2021



NOTE: Includes children ages 0 to 17. Includes barriers experienced in the past 12 months. Respondents who said usual source of care was the emergency room were included among those not having a usual source of care. All Medicaid/Other Public and Employer/Other Private are statistically different from Uninsured at the $p < 0.05$ level.
 SOURCE: KFF analysis of 2021 National Interview Survey • PNG



Figure 4: Barriers to Health Care among Children by Insurance Status

Data Source: KFF analysis of 2022 National Health Interview Survey.

3.3.3 Additional Barriers to Insurance Coverage

Previously, young adults had the highest rates of uninsurance among all age groups (Goldman, 2013). When the Affordable Care Act (ACA) was passed, the act allowed for young adults to remain covered through their parent’s health insurance through the age of 16 (Sobel et al., 2023). This expansion of the ACA expanded coverage benefits for many, but scholars believe that there still may be additional barriers to contraceptive usage from teens (Sobel et al., 2023). Out of these barriers, confidentiality seems to remain a common concern for teens and adolescents (Sobel et al. 2023).

Among teens aged 15 to 18, the 2013 Kaiser Women’s Health Survey found that only 24% of teens were aware that providers send EOBs home (Sobel et al., 2023). To combat the concerns about confidentiality, some states have varied in their efforts to protect privacy of women and girls who are insured as dependents but are limited to plans that are regulated by the state. California,

for example, passed a law that became effective in January 2015 that required insurance companies to honor requests for confidential communication when individuals receive sensitive healthcare services or when disclosure could lead to danger (Sobel et al., 2023). Likewise, Washington amended regulations in 2013 that prohibited insurers from disclosing EOBs to policyholders, unless patients explicitly authorize disclosure (Sobel et al. 2023). In contrast, in 2014, Colorado required insurers to protect the privacy of only adult dependents, leaving minors unprotected from disclosures made about sensitive topics (Sobel et al., 2023).

3.4 Examples of Interventions to Improve LARC Uptake

Several intervention studies have examined the efficacy of programs that improve LARC availability and access in states across the U.S. These interventions encompass multiple different strategies such as increased accessibility and the removal of financial barriers. These interventions and their effects are reviewed below.

3.4.1 Colorado

In 2008, the Colorado Department of Public Health and Environment (CDPHE) received a generous donation from an anonymous donor to expand the Family Planning Program, which would ultimately provide “training, operational support, and low- or no-cost long-acting reversible contraceptives (LARCs) to low-income women statewide” (CDPHE, 2019). Within this expansion, they included IUDs and implants as LARC methods. While this intervention included

providing access to LARCS, they also provided training on Medicaid and insurance eligibility and enrollment, insurance coverage outreach and education materials to clients, one-on-one coaching with clinic staff, and developed a customized coding and billing manual for clinics. The success of this intervention was measured in a few different categories: LARC use, unintended pregnancy, birth rates, abortion rates, maternal health data, public awareness, and costs avoided. The CDPHE determined that between 2009 and 2014, birth and abortion rates both declined by nearly 50 percent among teens aged 15-19 (CDPHE, 2019). This new program was an extension of their previous Family Planning Program that has provided low-income women access to contraceptives for more than four decades (Health et al, 2015). Despite the efforts of the original program, 60 percent of all pregnancies among young women aged 15-24 remained unintended in 2007 (Health et al, 2015).

The Colorado Family Planning Initiative (CFPI) differed from the original program because it was set to “provide training, operational support and low- or no-cost long-acting reversible contraceptives (LARCs) to low-income women statewide” (Health et al, 2015). During the Colorado Family Planning Initiative, the unintended pregnancy rate dropped 40 percent from 35 per 1,000 teens in 2009 to 21 per 1,000 teens in 2014 (Health et al, 2015). Many scholars believe that this dramatic decline was attributed to better contraceptive use for teens and better access to affordable LARCs. Overall results of the study and implementation of the CFPI showed that: teen birth rate was nearly cut in half, teen abortion rate was nearly cut in half, average age of first birth increased by 1.2 years among all women, and costs avoided ranged from approximately \$66.1 to \$69.6 million (Health et al, 2015).

Postpartum LARC interventions have seemingly been effective in decreasing rates of unintended teen pregnancies. One study based on the Colorado Adolescent Maternity Program

included 396 (treatment $n=171$, control $n=225$) 14–24-year-olds who had an implant placed directly after giving birth (Toccee et al., 2012). This study found that among adolescents who had a LARC placed postpartum were less likely to experience a rapid repeat pregnancy, which is defined as a pregnancy within one year after giving birth, when compared to the control participants (Toccee et al., 2012).

3.4.2 Missouri

The Contraceptive CHOICE Project was a longitudinal, observational study of women’s choice, use, and continuation of LARC methods based in St. Louis, MO. The aim of the study was to “remove financial barriers to effective contraception, promote the use of long-acting reversible methods of contraception (LARC) and evaluate use, satisfaction and continuation across both LARC and non-LARC methods in a cohort of 10,000 women” (Mestad et al., 2011). Within this cohort, 648 participants were adolescents who, when given the opportunity and education on LARCs, chose a reversible contraceptive method (Mestad et al, 2011).

Between the years of 2008-2013, and out of the cohort size of 1404 teenage girls and women enrolled in CHOICE, 72% chose an intrauterine device or implant (LARC methods); the remaining 28% chose another method (Secura et al, n.d.). The study conducted 13 focus groups with a total of 36 participants who had an IUD placed from the age of 14-19. Users of a hormonal IUD noted that they continued use for multiple reasons; durability, not having to worry about pregnancy, and helps with period cramps/stopping the period all together. Participants that chose the non-hormonal IUD included similar reasonings: they did not want to get pregnant, the method lasted a long period of time, and they “did not have to worry about it”. During the same period,

the mean annual rates of pregnancy, birth, and abortion among CHOICE participants were “34.0, 19.4, and 9.7 per 1000 teens, respectively” and when compared to general rates of pregnancy, birth, and abortion among sexually active U.S. teens in the same time period were 158.5, 94.0, and 41.5 per 1000, respectively (Secura et al., n.d.).

3.4.3 Texas

Get It? a qualitative study conducted by the Baylor College of Medicine, objectively studied the effectiveness of peer narrative videos and adolescent LARC uptake. The study based its theories on the idea that teens heavily rely on peer influence in certain decision-making aspects of sexual activity (Patel et al., 2023). The study included four videos that were chosen by participants within focus groups that included “a basic description of the LARC devices, the ability to anonymously post personal stories about LARCs that can be shared with others, and the opportunity to email the primary investigator questions about LARCs” (Patel et al., 2023). While this study still requires evaluation, the peer narratives highlight the influence that their peers' perspectives play on their health status and keeps the door open for further research.

3.4.4 Georgia

In Georgia, a quality improvement pilot project aimed at “improving access to LARC for women of reproductive age and decreasing associated costs” was initiated in 2017 (DeBoer & Hensley, 2018). Fifteen women of reproductive age were included in this study, all of which were uninsured or underinsured, and who had LARC inserted during the duration of the program. The

results of this program showed that all women who had requested a LARC, received one and more than half of LARC insertions were provided the same day as requested (DeBoer & Hensley, 2018).

3.4.5 Interventions – Educating Providers and Adolescents by State

In addition to availability, the education of providers and adolescents alike is necessary to improve visibility and uptake. As reviewed below, education expansion was looked at distinctly between two groups: provider trainings and adolescent patient education. These methods and studies were reviewed below.

3.4.6 Education and Training Efforts

Even though pediatric primary care providers prescribe the majority of contraception to adolescents, they often are not educated or trained on long-acting reversible contraceptive methods (Smith et al, 2019). Pediatric providers' knowledge about LARC methods is typically low, with only 11% of pediatricians having LARC counseling training in 2013 (Rubin et al, 2013). Research suggests that provider counseling is a main focal point of an adolescent's decision and interest within LARC and other contraceptive use (Fleming et al, 2010). This lack of knowledge and training can contribute to low LARC usage among adolescents.

3.4.7 Massachusetts

A prospective cohort study of adolescents aged 15 to 21 in Massachusetts followed a trend of LARC usage in adolescents before and after pediatric provider education training in 2015

(Smith et al, 2019). Before the intervention, 3.4% to 3.8% of adolescents were using a LARC method, and LARC use was declining by 4 devices/10,000 adolescents per month (Smith et al, 2019). After the intervention, the number of adolescents using a LARC method increased at 3, 6, 9, and 12 months after the intervention (Smith et al, 2019). Researchers suggest that the introduction of the educational intervention to this health system reversed the trend of decreased LARC use in adolescents (Smith et al, 2019).

3.4.8 Pennsylvania

PolicyLab, a division of the Center to Bridge Research practice, suggests that expansion to medical professionals should include various aspects of LARC training within Pennsylvania. For example, they include providing training opportunities, “including Continuing Medical Education (CME)/Continuing Education Unit (CEU) credits for health care providers on counseling about and administering LARC devices for adolescents” (Bardia, 2023) They also suggest adding questions about LARCs to licensing exams to ensure providers are understanding the importance of LARCs (Bardia, 2023). Lastly, provider clinic staff should be trained to “create LARC-friendly health care environments that consider every step of the process” (Bardia, 2023). Staff members that receive this training include, but are not limited to, appointment schedulers to the front desk staff, medical coders, billing, and financial management teams (Bardia, 2023).

3.4.9 Texas

Lastly, a cross-sectional study based in West Texas along the border of the United States and Mexico, introduced short surveys consisting of demographic information, acculturation scale, and perceptions of LARC use postpartum for adolescents. These surveys were administered pre-educational materials and then again post- educational materials. Prior to participants receiving educational information, 34.5% of respondents indicated that they were planning on using immediate LARC methods postpartum (Cavanagh et al., 2022). Following the educational intervention, 74.5% of participants noted that would consider a postpartum LARC method (Cavanagh et al., 2022)

3.4.10 Legislative Efforts

In addition to preventive services, there has also been increasing legislative efforts around postpartum LARC methods as well. Immediate postpartum long-acting reversible contraception (IPP LARC) is an essential component to reducing unintended pregnancies (ACOG, 2023). On April 8, 2016 the Department of Human Services' Centers for Medicare and Medicaid Services (CMS), submitted an informational bulletin that discussed payment and policy methods intended to be used as a tool for states to understand and utilize the best options for access and use of long-acting reversible contraception (ACOG, 2023). Since this bulletin, 45 states including the District of Columbia, have published guidance on Medicaid Reimbursement of IPP LARC services (See Figure 5). Within IPP LARC reimbursement methods, states have three options: providing separate

reimbursement for the LARC device, providing separate reimbursement for insertion of the LARC device, or providing separate reimbursement for both services (ACOG, 2023). In Figure 5, the ‘Medicaid Reimbursement for Postpartum LARC in the Hospital Setting’ map details which states use which methods (ACOG, 2023).

Medicaid Reimbursement for Postpartum LARC in the Hospital Setting

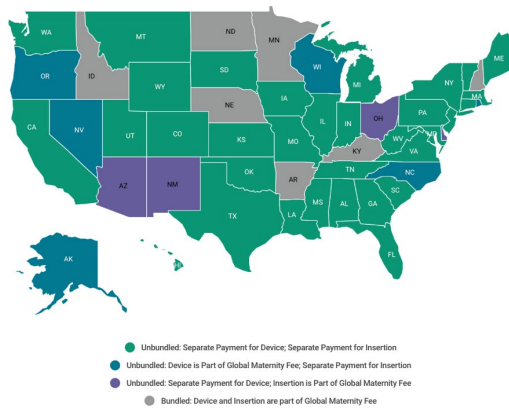


Figure 5: Medicaid Reimbursement for Postpartum LARC

Data Source: *Medicaid reimbursement for postpartum larc*. ACOG. (2023).

4.0 Discussion

The findings presented in this literature review underscore the complexity of factors that influence long-acting reversible contraceptive utilization among teens and adolescents. While LARCs offer a highly effective method of pregnancy prevention and utilization has been increasing over the years for teens and adolescents, uptake remains relatively low among certain groups. From previous interventions, we know that LARC uptake can be increased when given the access and accessibility to contraceptive methods. However, racial disparities in LARC utilization highlight the need for interventions that address systemic inequalities and promote equitable access to services that grant LARC use. Given the history of certain devices, such as the implant and the use of forced insertion, many communities may be less likely to trust their providers or the devices themselves. Because of this, institutions such as hospitals and prisons, need to build more trust with patients when alerting them of their options.

One key finding identified within the literature is the prevalence of myths and misconceptions surrounding LARCs. These factors contribute highly to the reluctance of adolescents and their use of LARC methods. To combat these misconceptions about LARCs, targeted reproductive health education and awareness campaigns should be implemented to ensure information about LARCs safety, efficacy, and potential benefits are accurate and reliable for adolescents and teens. The role of healthcare providers in education and training can also play a valuable role in promoting LARC usage in adolescents and teens. If educated properly, providers can be an important and relevant source of contraceptive counseling for adolescents within the United States (Kadivar et al, 2014). Provider education and training, as well as education and

training for the staff at clinics providing LARC methods, equip providers and staff with the knowledge and skills needed to efficiently counsel teens and adolescents about their options when deciding on a contraceptive method. Even more so, the ability to create more LARC-friendly healthcare environments will boost the ability to reduce barriers to access and improve quality of care in the reproductive health world for adolescents.

Along with educational awareness, policy interventions have seemed to be important in advocating for access to LARCs and other contraceptive methods. These interventions, such as mandating insurance coverage for contraceptive services, have played a crucial role in improving adolescents and teens' access to LARCs. However, in states where Medicaid expansion has not been adopted, challenges remain. The lack of adoption of Medicaid expansion, topped with the barriers of insurance reimbursement and coverage questions, leave many low-income adolescents and teens without access to affordable contraceptive methods.

States can play a major role in expanding coverage for teens and reducing unintended pregnancy. In 2014, California passed the Contraceptive Coverage Equity Act of 2014 which required plans to cover FDA-approved contraceptives for women without cost-sharing (Sobel et al., 2016). While the ACA only requires plans to cover Paragard and one singular hormonal IUD, the Contraceptive Coverage Equity Act of 2014 states that plans do not have to cover more than one “therapeutic equivalent” of a contraceptive drug, device, or product as long as at least one is covered without cost-sharing (Sobel et al., 2016). Therapeutic equivalent is defined as contraceptives having the same chemical formula and delivery mechanism (Sobel et al., 2016). In January 2016, plans in California were required to cover Paragard (copper IUD), and Mirena, Skyla, and Liletta (hormonal IUDs) due to all of these methods being therapeutically different (Sobel et al., 2016).

By leveraging peer support and social media, healthcare providers and educators can reach teens where they are most active: the internet. In the rise of a generation where influencers are prevalent, collaborating with prominent influencers can help debunk misconceptions, share their own personal stories, and open the conversation up for a typically taboo topic of sexual health. X, most commonly known as Twitter, can also be a useful tool in creating an online community that teens feel safe to open up to their peers or others experiencing the same health concerns. X allows people to make an account with the option of being anonymous, and on X, there are forums that are based on different topics, one currently being “Girl Talk” where people post relationship questions and/or advice. This forum could be used as a way for people to share experiences, and even a space where healthcare providers could provide accurate information on LARCs to teens.

In the future, research should focus on the effectiveness and feasibility of interventions that are aimed at promoting LARC uptake among adolescents and teens, with a focus on reproductive health equity. Reproductive health equity can be included in various forms in the process of utilizing LARC methods. This ranges from access to quality care, services, and information; affordability of these services; and community engagement and empowerment. Overall, I believe it is most important to ensure that teens voices are being heard throughout the process and including their voices in research.

Participants in the CHOICE Project described earlier, noted that the main reasons they chose IUDs were for the durability and feasibility of the devices. The results of this study are important because it gauges the willingness to choose and reasons behind adolescents choosing LARC methods. When given the opportunity, adolescents are seemingly choosing options that they “do not have to worry about”, which makes it easier to uphold preventative services.

5.0 Conclusion

In conclusion, the utilization of long-acting reversible contraceptive methods for adolescents and teens is a promising tool to be used in preventing teen pregnancy rates in the United States. The findings from this critical review underscore the importance of multifaceted approaches to addressing teen pregnancies and in turn, promoting reproductive health equity. As mentioned above, this includes targeted education and awareness campaigns for not only teens, but also healthcare providers and their staff as well. These training sessions will not only debunk myths and misconceptions about LARC methods, but also enhance the overall care given to patients when making decisions about their health and wellness.

Moving forward, it is imperative that stakeholders across healthcare, education, policy, and community partners collaborate to ensure interventions are being implemented that are evidence-based. Hopefully, using evidence-based strategies will enhance the focus on addressing the root cause of teen pregnancies, such as lack of access and lack of coverage, and promote health equity in a way that is beneficial to adolescents. In doing so, it is also important to center the voices and experiences of adolescents in our efforts, to ensure our work is benefiting the community we aim to serve.

In closing, there is still a lot of work to be done, but the literature reviewed offers valuable information and direction on what steps can be taken next. With this information in mind, we can continue to advance the field of adolescent reproductive health and continue to reduce teen pregnancy rates within the United States and Pennsylvania.

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