Prevention of Unintended Adolescent Pregnancies Through Greater Access to

Long Acting Reversible Contraceptives

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Abstract

Adolescent pregnancies have negative implications not only for the teen parent but also for society making unintended teen pregnancies an important public health issue. In the United States (US) adolescent females aged 15-19 years old had a birth rate of 24.2 births per 1000 women in the year 2014 (Romero, et al, 2015). Subsequently, women who enter into motherhood as teens have significantly lower high school graduation rates and higher rates of poverty. Only 50% of adolescent mothers receive a high school diploma compared to over 90% of adolescent girls who are not mothers (Centers for Disease Control and Prevention [CDC], 2015). A sordid history has caused long-acting reversible contraceptives (LARCs) to traditionally not be marketed to adolescents. Although almost half of US adolescents aged 15-19 are sexually active, less than 5% of adolescent’s report using a LARC (American College of Obstetricians and Gynecologists [ACOG], 2012). As of 2014, the ACOG and the American Academy of Pediatrics (AAP) recommend LARC for all women of childbearing age as the most effective form of birth control to prevent unintended pregnancies.

Despite these recommendations, adolescents continue to face barriers when attempting to obtain a LARC as a method of contraception. Lack of youth-friendly services, cost, provider perception of LARC use in adolescents, and gaps in LARC insertion and removal training, prevent adolescents from choosing to take advantage of a LARC to prevent unintended pregnancies (ACOG, 2012). This paper undertakes a review of policy regarding adolescents access, education and utilization of LARC and presents recommendations for policy changes and other approaches based on established research methods to eliminate barriers facing adolescents in their reproductive choices.
Introduction and Background

Unintended adolescent pregnancies in the US are a public health problem that causes significant harm for adolescent mothers and is extremely costly to the US healthcare system. Each year in the US over 615,000 adolescent females become pregnant with over 82% of those being unintended (Richards, 2016) and 31% ending in abortion (Rubin et al., 2013). Teenage pregnancies cost the US billions of dollars each year due to health expenditures and lost tax revenue (“Office of Adolescent Health National and State Facts”, 2016). Pregnancy rates in the US are at an all-time low but still represent a large public health issue. The adolescent birth rate has decreased continuously from 59.9 births per 1000 women in 1990 to 24.2 per 1,000 in 2014 (Ahern & Bramlett, 2016) as shown in Figure 1. Births do not consider the actual pregnancy rate which would include miscarriages, abortions, and stillbirths amongst adolescents and is likely a much higher figure than the reported birth rate (Ahern & Bramlett, 2016).

Figure 1. Birth rates per 1,000 females ages 15-19, by race/ethnicity, 1990-2014 (Martin, 2015)

Although adolescent pregnancy rates are at an all-time low (Ahern & Bramlett, 2016), the US continues to have pregnancy rates much higher than other developed countries throughout
the world (Danawi et al., 2016). A study was conducted by Guttmacher Institute in 2011 that analyzed adolescent pregnancy statistical data from 21 countries around the world utilizing data obtained from the United Nations Statistical Division. This study showed that the US had the highest rate of pregnancy of 15 to 17-year olds from the mid 1990’s to 2011 at 57 births per 1,000 adolescents (Sedgh et al., 2015).

One important way to further reduce unintended pregnancies is through the use of LARCs. LARCs are long acting contraceptive devices that are reversible to easily restore fertility in women. LARCs include both intrauterine devices (IUDs) and a rod implant. The IUD is a small plastic or copper device that is inserted directly into the cervix and an implant is inserted under the skin on the patient’s arm to provide hormonal contraception. Although slowly increasing in acceptance and use, ambivalence due to history in the US as well as misinformation prevents more women and adolescents from choosing a LARC for contraception. LARCs eliminate the possibility of user error and have been shown to be the most reliable method of contraception on the market (ACOG, 2012; American Health Consultants [AHC] Media, 2012; Branum & Jones, 2013). History of pelvic inflammatory disease and subsequent infertility due to the physical makeup of specific LARCs in the 1970’s, caused the popularity of LARCs to plummet (Luchowski et al., 2014). Public health practitioners recognize LARCs as the most effective method of contraception currently on the market to prevent unintended pregnancies and are concerned that the uptake of LARCs is still lagging behind other, less reliable contraception methods (Shoupe, 2016). Amongst adolescents, the barrier method of condom use is the most common type of contraception with over 60% of teens reporting using condoms with their last sexual encounter (Richards, 2016). The National Survey of Family Growth showed that in 2014, 18% of adolescents reporting using a birth control pill as their choice of contraception.
A prospective cohort study with over 9,000 female participants aged 14-45 showed that non-LARC methods of contraceptives had a failure rate 20 times higher than LARC methods over a three-year timeframe (Birgisson et al., 2015).

Practitioner groups and researchers such as Washington University and Association of Reproductive Health Professionals (ARHP) are initiating programs across the US that educate and remove contraception barriers for young patients nationwide. These efforts are targeted to increase LARC use amongst young women (Shoupe, 2016). The William and Flora Hewlett Foundation has taken a strong stance to continue education and programming to reduce and prevent unintended pregnancies in adolescents through provision of a generous grant to expand the national program entitled: The National Campaign to Prevent Teen and Unplanned Pregnancy (Association of Reproductive Health Professionals [ARHP], 2008). State and local initiatives have been enacted as well as federal regulation such as the Affordable Care Act (ACA), enacted in 2012, to address family planning but such policies have their limitations.

Title X of the Public Health Service Act provides grant funding for family planning services. In 2014, Title-X funded clinics served over 4.1 million Americans (Napili, 2016). Publicly funded facilities such as health departments, Planned Parenthood, and local health and community centers that provide family planning services in the US are vital to providing contraceptive and family planning services to adolescents. According to a 2006 Guttmacher institute study, adolescents made up 25% of the patients seeking contraceptives in publicly funded facilities that provide family planning services in the US (Kavanaugh et al., 2012). Providing youth-friendly services are important in reaching the adolescent community. The World Health Organization has a definition for youth-friendly services that includes services that are equitable, accessible, acceptable, appropriate, and effective for young people (Tylee &
Graham, 2007). A 2011 study by the Guttmacher Institute of 1,196 publicly funded facilities that provide family planning services in the US reported findings that the largest barriers to providing LARC specific services to adolescents are cost, staff concerns of LARC use in adolescents, and lack of LARC insertion training in providers (Kavanaugh et al., 2013).

This paper undertakes a review of policy regarding adolescents access, education and utilization of LARCs as well as recommendations for policy and provider behavior change based on established research methods to eliminate barriers facing adolescents in their reproductive choices.

**Review of Relevant Literature**

A search was performed of the English language literature for publications using the key words ADOLESCENTS, LONG ACTING REVERSIBLE CONTRACEPTION, CONTRACEPTION, COST, POLICY, US POLICIES, and BARRIERS as search terms utilizing PUBMED and JSTOR. The search produced 648 results and 72 were reviewed. Abstracts from all relevant articles were reviewed and screened by a single viewer (A.W.) prior to full text being reviewed for content. Additional articles were obtained by viewing the references of original search criteria material. Inclusion criteria were utilized to narrow the search to relevant articles within the scope of this policy review. The following criteria were used to select articles for inclusion in this policy review.

1.) Quantitative research studies with study designs that include randomized controlled trials (RCTs), non-randomized controlled trials, controlled before-after studies, controlled interrupted time series studies, cost-effectiveness analysis, and cost-benefit analysis.
2.) Populations of interest that include adolescent females and women of childbearing age.

3.) Primary health outcomes that include adolescent pregnancy prevention, a prevalence of contraceptives, and use of LARCs.

4.) Publication language in English.

An additional search of the Internet using Google Scholar with the key words ADOLESCENTS, POLICY and LARCS produced an additional 2,290 results including literature and websites including the Centers for Disease Control (CDC), National Institute of Health (NIH), and US Department of Public Health (DPH) and of these results, 23 were reviewed for content and inclusion criteria. These resources were able to provide current pregnancy rates, newly enacted policies, and historical trends used for US population data and statistics.

Contraceptive Use and Policy in the US

Historically, contraceptives and family planning for women, including adolescents, has been a highly politicized subject. Both federal and state policies have dictated contraception use amongst women in the US and birth trends throughout history correspond with the legality of contraception (Connell, 1999). During the 1700's and 1800's, it was illegal under federal and state laws in the US to counsel patients on contraceptives or family planning as well as receive access to reproductive health and family planning resources (Connell, 1999). All types of contraception were illegal across the US due to the federal Comstock Act enacted in 1873. In 1938 the federal ban was lifted due in part to the birth control movement led by Margaret Sanger (Thompson, 2013). Margaret Sanger and the birth control movement began to pave a path for modern day contraception, including LARCs, as well as policy initiatives and programs to
address family planning (Thompson, 2013). In 1946 Sanger helped to establish the International Committee on Planned Parenthood. Planned Parenthood later evolved into the world's largest non-governmental family planning organization and is still a pivotal organization today providing family planning services throughout the U.S. (Connell, 1999; Thompson, 2013). The 1965 supreme court case Griswold v. Connecticut allowed for married women to receive contraception legally while 26 states in the U.S. maintained regulations making contraception illegal for unmarried women, including adolescents (Thompson, 2013). In 1970, the Federal Public Health Service Act was passed, creating Title X. This created federally allocated funding to provide grant monies to publicly funded family planning clinics. Title X led to the Supreme Court decision in the case of Baird v. Eisenstadt in 1972 that allowed for all women to obtain contraception legally regardless of their marital status (Thompson, 2013). Further regulation and policy since that time have outlined and defined family planning policies at both the state and federal levels. Although highly regarded throughout the public health community, contraception continues to be highly politicized in today’s culture with religious organizations, funding, and policy initiatives.

**LARC history in the US**

The emergence of the LARC contraceptive intrauterine device (IUD) became widespread in the 1970’s and shaped the charge of modern contraception in the U.S. (CDC, 1999). Adolescent unintended pregnancies began to emerge as a national public health issue and beginner advocacy groups, such as one now called SHIFTNC in North Carolina began to emerge in the early 1980’s to combat adolescent pregnancy (“SHIFTNC History”, 2016). Policy and funding continued to grow for family planning services throughout the 1990’s into present time but LARC contraception has continued to face barriers and obstacles for women and adolescents.
Despite the recommendation by the ACOG and AAP for the use of a LARC, many women and providers remain skeptical of LARCs for use as a contraceptive. Much of this skepticism is due to the catastrophic failure of one particular type of LARC. Throughout the 1970’s there were 17 different types of LARC contraceptives on the market, all in the form of intrauterine devices or IUDs. In 1968, a type of IUD with the brand name Dalkon Shield was released to the market only to find out by the mid 1970’s that the physical construction of the IUD allowed for bacteria to enter the uterus, causing cases of pelvic inflammatory disease (PID) and subsequent infertility in women who utilized Dalkon Shield (Shoupe, 2015; Wellisch & Chor, 2013). Dalkon Shield was pulled from the market in the US, but the social impact and damage was done. By the mid 1980’s, all but one IUD previously marketed in the US was pulled from the market (Shoupe, 2015). Both women and providers remained skeptical of the IUD throughout the 80’s and 90’s, spanning into present time (Wellisch & Chor, 2013).

Research continued after the failure of the Dalkon Shield to find new forms of LARCs. An example of that was the implant. The implant made its emergence into the US with FDA approval in the early 1990’s. All implants were pulled from the market by 2002 due to insertion and removal issues and were not reintroduced in the US until 2006 (Shoupe, 2015). Despite new innovative LARCs currently available, because of the sordid history of LARCs in the US, many providers continue to maintain outdated recommendations affecting the education that is provided to their patients surrounding family planning options (Shoupe, 2015).

Current LARCs include three types of IUDs as well as a dermal implant. The IUDs include the Mirena which has been on the market in the US since 2000, Skyla which has been on the market since 2013, and Paraguard that has been available in the US since 1984 (Wellisch & Chor, 2013). Nexplanon is the only dermal implant currently on the market in the US. (Wellisch
All the mentioned LARCs are considered low maintenance and not user dependent (Secura et al., 2014; Wellisch & Chor, 2013). This means that the user does not need to do anything to receive continual protection from unintended pregnancy beyond getting the device initially inserted or implanted by a physician. Both the IUD and the implant have lengthy lifetimes before requiring replacement, ranging from 3-10 years depending on the device used (Wellisch & Chor, 2013). This is vital as nearly half of all unintended pregnancies in the US can be attributed to the incorrect or inconsistent use of contraception (Secura & McNicholas, 2013).

**LARC Utilization Policy**

Originally, due to the risk of PID associated with use of the Dalkon Shield in the 1970’s, IUDs were not recommended by the medical community to adolescent females or women who had not given birth to a child (AHC Media, 2012). PID was associated with tubal infertility for many women resulting in the medical community not recommending IUDs for women who had not already had a child. Users of the Dalkon Shield IUD had a 6.8 times greater in incidence of infertility compared to women who did use utilize and IUD for contraception (Daling, et. al., 1985). As many as 200,000 women throughout the 1970’s made claims to A.H. Robins company, the manufacturer of the Dalkon Shield, related to claims associated with PID (Roepke & Schaff, 2014). According to the Guide for Preventative Services Report released by the US Preventative Services Task Force in 1988, federal recommendations surrounding preventing unintended pregnancies and contraception listed IUDs as largely unavailable in the US and recommended oral contraception as the primary recommendation to prevent unintended pregnancy (English, 2014). The report also highlighted that LARCs, including IUDs, do not provide protection from sexually transmitted infections (STIs) and discussed provider reluctance to provide contraception to adolescents without parental consent despite federal regulation.
mandating confidential services for adolescents through Title X funded clinics (English, 2014). IUDs were once again promoted with the release of a new IUD in the late 1980’s, but were only targeted towards women who had given birth to previous children and were also involved in a committed relationship, once again eliminating much of the adolescent community (Luchowski et al., 2014; AHC Media, 2012).

Although LARCs slowly became the top recommended method of contraception to prevent unintended pregnancies in the late 1990’s, some providers felt they still need further permission to offer LARCs to adolescents (AHC Media, 2012). Research shows that providers have a great influence on women’s choice in contraceptives and patients tended to choose a LARC when presented with education informing them of a LARC as an option by their provider (Branum & Jones, 2015). Unfortunately, as shown by the Annual Clinical Meeting of ACOG in May 2012, many providers that were surveyed, held differing opinions surrounding LARCs and ideal candidates. These viewpoints surrounding ideal LARC candidates differed from current recommendations put forth by the medical community (AHC Media, 2012). The ARHP is an organization with distinguished reproductive health clinicians and committed experts in the field of reproductive health. The ARHP held two meetings in late 2007 to determine what barriers prevented providers from discussing sexual and reproductive health with adolescents and young adults. The number one barrier identified by providers was a lack of education on family planning and contraception for adolescents and teens (Brown et al., 2008)

Policy and Funding History

Policy and funding surrounding family planning and contraceptives, including LARC contraception has undergone drastic changes through the last century. Currently, Title X is the only domestic federal program devoted only to family planning and reproductive-related
preventive health services (Napili, 2016). Title X funded clinics have provided high quality family planning services, including contraception and LARCs to women and adolescents on a sliding scale fee since the 1970s. Original funding for Title X ended in 1985 but through appropriations bills through other federal departments year by year continues to be funded federally (Napili, 2016). Private insurance companies traditionally tended to cover LARCs as a contraceptive but patients continued to face out of pocket expenses in the form of coinsurance or copays for LARCs and their associated clinic visits until the passage of the Affordable Care Act (ACA) (Kiaser Foundation, 2015). The ACA, enacted in 2012 requires insurance companies to cover contraception and preventative services without cost sharing or out of pocket expense from the patient (Cartwright-Smith & Raseubaum, 2012). The Medicaid program, a federally funded program for those with low income is the most utilized public insurance currently and is required by federal law to cover family planning services and supplies but this coverage varies from state to state in the US (Kiaser Foundation, 2015). States have the allowance, through Medicaid, to restrict coverage to certain brands or certain types of contraception (Kiaser Foundation, 2015; Napili, 2016). Through the Medicaid expansion offered with ACA, there is the availability for states to expand family planning and contraceptive coverage for people receiving Medicaid nationwide.

Nationwide, many localized policies and programs as well as national organizations have begun targeting adolescents to reduce unintended pregnancies and provide LARC contraception. The National Family Planning and Reproductive Health Association and The Office of Adolescent Health along with programs such as Girlshealth.gov and the Nationalcampaign.org have been dedicated to providing programs and information to reduce unintended pregnancies and promote LARCs in adolescents. More recently, Title X funded facilities including Planned
Parenthood and local health departments have begun to establish outreach efforts to provide more youth-friendly services (Kavanaugh et al., 2013).

**Needs Assessment**

According to the 2015, National Survey of Family Growth (NSFC), LARC usage among American women between the ages of 15 to 44 has shown an overall increase from 1.5% in 2002 to 7.8% in 2013 due to greater education surrounding LARCs (Branum & Jones, 2015). Although this is encouraging for the prevention of unintended pregnancies in the US, adolescents and young women between the ages of 15 to 24 have only increased LARC usage to 5% in 2013 (Branum & Jones, 2015) with a 4.5% increase found for women aged 15 to 19 with the majority of those women 18 to 19 years old (Secura & McNicholas, 2013). The NSFC showed that women who have reported at least one birth continue to choose a LARC more often than women who have had no previous births and the difference continues to increase (Branum & Jones, 2015). A 2011 Guttmacher Institute study of 1,196 publicly funded facilities that provide family planning services showed that the lack of usage amongst adolescents could be attributed to providers believing adolescents are not suitable candidates therefore not providing education about LARCs to adolescent patients (Kavanaugh et al., 2013). An earlier 2006 Guttmacher study with focus groups of patients aged 15 to 24 years old conducted in six different public family planning clinics indicated that over 25% of patients perceived their young age as rendering them ineligible for a LARC and did not discuss LARCs as a contraception option (Kavanaugh et al., 2012). Figure 2 shows LARC usage trends from the 1980’s to 2013 and demonstrates a significantly lower usage of LARCs among the 12-24 age group over time. Secura provides a possible explanation for this trend by noting that adolescents continue to face barriers from
practitioners who are unwilling to educate on LARCs due to young age and the opinion of what constitutes a suitable candidate (Secura & Mc Nicholas, 2013).

Another concerning issue with unintended pregnancies is race and ethnic disparities surrounding receiving reliable contraception. African American and Hispanic women have unintended pregnancy rates of up to 91 per 1,000 women while white women have rates of 36 per 1,000 women (Wilder et al., 2014). A 2014 study by the Guttmacher Institute shows that African American, Hispanic, and low-income white women are more likely to be given options of sterilization or an oral contraceptive having a higher failure rate than middle to higher income white women (Wilder et al., 2014). The initial cost of contraceptives has been found to be a
contributing factor (Wilder et al., 2014). Figure 1 above also supports these findings; it shows overall birth rates for females age 15 to 19 years old including their ethnicity, with higher birth rates each year among Hispanic and Black women than among White women. Policy restrictions such as the requirement for legal immigrants to maintain a 5-year waiting period before being eligible for Medicaid services creates an obstacle for women to receive needed healthcare and family planning services (National Immigration Law, 2015). It can be assumed that disparities among races and ethnic groups exist relative to use of LARCs, but this is beyond the scope of this paper and should be a subject of further research or literature review.

*Challenges Facing Adolescents*

Social determinants including education, income, support system and environment are all factors that affect pregnancy rates amongst adolescents (Danawi et al., 2016). Adolescents who are born into a low-income household, with lower levels of education and a poor support system, are more likely than their counterparts to become pregnant during their teenage years (Danawi et al., 2016; Wilder et al., 2014). Over one-third of female high school dropouts cite pregnancy or parenting as the reason for not getting their high school diploma, while 26% of high school dropouts cite parenting as the sole reason for not completing their high school education (Shandhini & Bliss, 2015). Adolescents that do not complete receive their high school diploma are more likely to be unemployed as adults and obtain public assistance (Shandhini & Bliss, 2015; “Office of Adolescent Health National and State Facts”, 2016). With teen pregnancy rates on the decline, factors such as the use of more effective contraception and an increase in abstinence amongst teens are cited as potential reasons (Manlove et al., 2015).

Throughout history, teens have been having sex without avenues to openly discuss contraception or receive contraception education. In a 2002 study, conducted by the National
Survey of Family Growth (NSFH), over 2,200 15 to 19-year olds were surveyed regarding formal education surrounding contraception and abstinence. Of those surveyed, only 51% of males and 62% of female had received formal education in school or an organized program regarding contraception while 70% of males and 75% of males had received formal education regarding the importance of abstinence (Duberstein et al., 2006). Teens surveyed reported not feeling comfortable discussing different types of contraceptives and were most willing to use a contraceptive that they can obtain discreetly (Shandhini & Bliss, 2015). In a 2013 US report, 71% of teens reported having sex by the time they were 19 years old and 25% of adolescent females report not using any contraception with their last sexual encounter (Richards & Buyers, 2016). Data trends show that teens are utilizing contraceptives that have a higher failure rate and that they also face obstacles with user error (CDC, 2015). The barrier method of condom use is the most common type of contraception amongst teens, with over 60% of teens reporting using condoms with their last sexual encounter (Richards & Buyers, 2016). In one study, 78% of teens and young adults surveyed report using condoms primarily for pregnancy prevention rather than for disease protection (Williams & Fortenberry, 2013). In the 2014 National Survey of Family Growth, adolescent females report using other contraception such as the pill (19%) or other non-LARC method (4.7%) (Shandhini & Bliss, 2015). Condom usage has shown to have a failure rate of up to 18%, while oral contraceptives and other non-LARC methods have failure rates ranging from 6% to 9% (Shandhini & Bliss, 2015). A prospective cohort study with over 9,000 female participants aged 14-45 showed that non-LARC methods of contraceptives had a failure rate 20 times higher than LARC methods over a three-year timeframe (Birgisson et al., 2015).

A large barrier for women including adolescents seeking a LARC for contraception is provider knowledge and training. In a cross-sectional survey of medical residents in
Pennsylvania, over 93% of residents reported that contraception was a very important aspect of preventative health but only 54% of the residents had comprehensive contraception knowledge and 16% felt adept at inserting an IUD (Schreiber et al., 2006). A 2016 qualitative study that surveyed gynecologists, family practice practitioners, and nurse practitioners on providing LARCs to adolescents, indicated that the number one reported reason why the providers did not counsel adolescents on LARCs was their own lack of confidence surrounding LARC insertion in adolescents and lack of updated information on eligibility criteria (Murphy et al., 2016).

Serving over 4.1 million people in 2014 (Napalli, 2015), public funded clinics showed that adolescents made up 25% of their patients seeking contraceptive services during 2014 in the US (Kavanaugh et al., 2013). A 2011 Guttmacher Institute study evaluated the level of youth-friendly services provided by Title X funded clinics to determine gaps in providing LARC contraceptive services the to the adolescent community. The survey showed that the largest barriers to adolescents receiving LARCs are cost, providers not feeling that LARCs are appropriate for adolescents, and lack of provider training on insertion and removal of different LARC products (Kavanagh et al., 2013). The study also showed that in the 68% of clinics that primarily focused on family planning and received Title X funding, providers only discussed IUDs and implants 43% and 40% respectively with their adolescent patients due to their lack of knowledge regarding LARCs and use in adolescents (Kavanagh et al., 2013). A 2013 study conducted on pediatricians regarding LARC eligibility criteria, indicated that most pediatricians did not believe that adolescents were viable candidates for LARCs and subsequently did not counsel their patients on LARC options (Rubin et al., 2013).

The cost has been reported as a significant barrier to adolescents due to high initial costs and low reimbursement through federal programs such as Medicaid (Eisenburg et al., 2013). Through
the creation of Title X, women and adolescents have been able to obtain contraception at a more cost efficient rate (Hayes, 2016). Title X funded facilities operate on a sliding scale fee and are required by federal regulation to consider adolescents who are seeking contraception as having their own monetary means (Hayes, 2016). With most adolescents in school and without full-time employment thus a very low individual annual income, they are able to more easily obtain contraception, including LARCs at Title X funded clinics. However, lack of education provided by practitioners has shown to contribute to a lower the acceptance of LARC in the adolescent community (Kavanaugh et al, 2012).

Although more efforts have been made in recent years, clinics are not always a youth-friendly atmosphere. As discussed previously, the World Health Organization has a definition for youth-friendly services that includes services that are equitable, accessible, acceptable, appropriate, and effective for young people (Tylee & Graham, 2007). A 2011 Guttmacher Institute study of over 1,100 publicly funded health centers that 43% had teen-friendly décor (as reported by the facility), 27% used social media for outreach, and only 9% offered online appointment scheduling with Title X funded facilities offering these youth-friendly services, including maintaining LARCs on-site for same-day use, more often than their private counterparts (Kavanaugh et al., 2013). Through the same study, it was found that LARCs were discussed with adolescents up to 56% of the time while other methods of contraception including the pill, ring, and patch were discussed 100% with patients. Clinics that were considered youth-friendly reported that LARCs were discussed 100% of the time with their adolescent patients (Kavanaugh et al., 2013). Provider education surrounding LARCs to patients provides the patient with information to make an informed decision regarding their contraception choice and reproductive health options.
Policy and regulation have also provided barriers to adolescents in the US. Controversial policy regulations such as North Carolina's General Assembly passing an abstinence-only law in the mid-1990's provided challenges to adolescent sexual health information and education. This regulation required abstinence-only education in the public-school system throughout North Carolina and prevented adolescents from receiving medically accurate reproductive health information (“SHIFTNC History”, 2016). Formal education surrounding contraception and reproductive health is vital to making informed decisions throughout adolescence and into adulthood (“SHIFTNC History”, 2016).

Discussion

Policy and regulation have had a major impact on contraception access for women in the US going back to the 1700’s. Pregnancy trends in the US correlate with the availability and legality of contraception and reproductive health services throughout history (CDC, 2015). LARCs are recommended by both the ACOG and AAP as the most reliable, non-user dependent methods of contraception for both women and adolescents (CDC, 2015). Adolescent’s use of LARCs has increased in recent years, although there has been greater acceptance of LARCs in older age groups in comparison (Branum & Jones, 2015) primarily due to lack of provider education of adolescent patients (Kavanaugh et al., 2013; Schreiber et al., 2006). Youth-friendly atmospheres have contributed positively toward adolescent acceptance of LARC (Kavanaugh et al., 2013).

Several initiatives have been conducted in the US and have produced notable results in the uptake of LARCs and subsequent reduction of adolescent pregnancy. The CHOICE project, a prospective cohort study of over 9,000 women age 14 to 45 years showed that women aged 14 to 25 years old chose a LARC option 68% of the time when presented and educated on all types of
contraceptive methods (Birgisson et al., 2015). Participants were educated on all types of contraception beginning with the most reliable. They were given information such as ease of use, possible side effects, and effectiveness. Patients were then offered their preferred method of contraception at a same-day office visit free of charge (Secura & McNicholas, 2013). When presented with all options, teens overwhelmingly chose a LARC as their preferred method of contraception and teen births decreased by 80% compared to the national average for the same time frame (Secura & McNicholas, 2013). Of the participants, 82% aged 14 to 19 years old who chose a LARC were continuing to utilize a LARC one year later compared to 54% of non-LARC users (Birgisson et al., 2015). When adolescents are educated about their options, they are better equipped to make informed decisions surrounding their sexual health and preventing unintended pregnancies.

Another local initiative example is the Iowa Initiative. The 2007 Iowa initiative was a privately funded program that aimed to promote education and remove cost barriers of LARCs through funding Title X clinics, and through other components including, increased marketing. It had a substantial impact in reducing unintended pregnancies throughout the state of Iowa (Eisenberg et al, 2013). In a three-year timeframe, unintended pregnancies, as well as abortions, decreased in the Iowa area by 19% (Eisenberg et al, 2013). Through a benefit cost-savings analysis, it was found that the cost savings for young women aged 14-19 years old were $17.83 per dollar spent on contraception (Eisenberg et al., 2013).

In 2009 the Colorado Family Planning Initiative (CFPI) received private funding for 28 Title X funded facilities to aid in training providers and financing LARC method provision (Ricketts et al., 2014). This initiative lasted until 2011 and both pregnancy rates as well as LARC use was monitored throughout the initiative in the Colorado region. Within the first year of the initiative,
the number of patients seen rose from 52,000 to almost 70,000 patients with over half of their female patients in both 2008 and 2011 reported being under 25 years old (Ricketts et al., 2014). Throughout the initiative, results showed that LARC use quadrupled and unintended pregnancy rates reduced by 25% in patients showed that when the barriers of cost, access, and education are addressed, patients choose LARCs and unintended pregnancies reduce (Ricketts et al., 2014).

Throughout recent history, federal agencies and non-governmental groups have made an emergence, raising funds and initiating programs to combat adolescent pregnancies as well as advocate for LARC usage. The National Family Planning and Reproductive Association (NFPRHA) is a membership organization comprised of providers committed to helping people obtain family planning information and resources. The NFPRHA also advocates for Title X funding and expanded healthcare access (“NFPRHA Contraceptive Coverage”, 2016). The office of Adolescent Health has produced initiatives like the National Teen Pregnancy Prevention Program across the US (“Office of Adolescent Health National and State Facts”, 2016). The Office on Women’s Health has produced the educational website called girlshealth.org which educates girls and adolescents on sex, contraception, and reproductive health as well as other relevant public health issues like bullying and relationship safety (“Office on Women’s Health Birth Control Facts”, 2016). These initiatives have been in effort to reduce unintended adolescent pregnancies nationwide.

The ACA passed in 2012 has proven instrumental in access to contraception for both women and adolescents. Section 2713 of the Public Health Service Act, requires nonfederal public employer group health plans and state-regulated health insurance issuers to provide coverage without cost-sharing for certain preventive services (Cartwright-Smith & Rosenbaum, 2014). This is also extended to all employer group plans governed by the Employee Retirement Income
Security Act with an exception for religious entities (Cartwright-Smith & Rosenbaum, 2014).

The ACA mandate for providing contraception without cost sharing to the patient has expanded the affordability of contraceptives to millions of Americans but maintains gaps where the individual is not covered by either public or private insurance. Medicaid is governed state by state in the US and although required to provide family planning and contraception without cost sharing by ACA, contraception coverage varies widely from state to state (“State Medicaid and Chip Profiles”, 2016). ACA provides expansion opportunities which allows additional federal funding in addition to state funding to expand programs including family planning resources (“State Medicaid and Chip Profiles”, 2016). While many states have opted for Medicaid expansion, some states have not taken advantage of expansion opportunities, limiting in part contraception choices amongst brands and types for women and adolescents.

LARC expansion into the adolescent community as well as the prevention of unintended pregnancies has proven successful as a direct result of the interventions listed previously. All the listed initiatives considered the youth-friendly services echoed in the WHO definition of youth-friendly. Education, access, and cost were addressed which added to the success of the use of LARCs as well as the subsequent reduction in unintended pregnancies.

Many programs federally, locally, and privately have recognized that unintended pregnancies have costly repercussions to the healthcare system and have begun initiation efforts such as the girlshealth.org and The National Campaign, producing programs to lower unintended adolescent pregnancies in the US (“The National Campaign Unplanned Pregnancy”, 2016). Contraceptive use shows a healthcare savings over 19 Billion dollars in direct medical costs in the US each year (Eisenberg et al., 2013). The limitation of the discussed interventions is the local nature of the projects and the eventual ending of funds that lead to program cessation. The adolescent
pregnancy rates as well as LARC uptake amongst adolescents were both improved dramatically through the interventions when barriers were reduced but there has not been a nationwide effort to remove the same barriers of cost, education, and access to adolescents which is echoed in the still elevated adolescent pregnancy rates in the US, which remain the highest in the world (Sedgh et al., 2015). The key question that remains and which is central to this paper is what further steps need to be taken to increase LARC use and further reduce adolescent pregnancy rates in the US.

**Conclusion and Recommendations**

**Future Steps**

As literature shows, US adolescent unintended pregnancies will not be reduced to meet our worldwide counterparts without direct and purposeful engagement of the adolescent population. As shown through the 2011 Guttmacher Institute analysis of 21 countries around the world, the US has the highest rates of pregnancy in 15 to 19 year old’s at 57 pregnancies per 1,000 (Sedgh et al., 2015). The next closest country was New Zealand at 51 pregnancies per 1,000 followed by England and Wales with 47 pregnancies per 1,000 teens aged 15 to 17 years old (Sedgh et al., 2015). Countries around the world have shown to be able to reduce their unintended adolescent pregnancy rates and the US can follow suit. Moving forward, innovative approaches to targeting adolescents are vital to decreasing unintended pregnancies in teens. Reduction of unintended pregnancies must include education and the breaking down of barriers, including those that are directly linked to providers, that prohibit LARC contraceptives being presented as an option to adolescents as well as adolescent education surrounding reproductive health and proper use of LARCs.
**Recommendations for Action**

Youth-friendly atmospheres and clinics are vital to ensuring that adolescents have a place they can feel comfortable and ensure that their provider is knowledgeable and trained on adolescent contraception and LARC insertion procedures. Policy initiatives nationwide that address youth-friendly centers, cost, access, and provider training are essential to adolescents receiving services. As shown in the 2011 Guttmacher Institute study on publicly funded family planning facilities, facilities such as Planned Parenthood that maintained a central organization that provided guidelines using evidence-based protocols, uniform training regimens, and outreach to young women, had the highest levels of success in implementing the youth-friendly practices needed to engage adolescents (Kavanaugh et al., 2013). The model put forth by Planned Parenthood needs to be followed and that incentives, policies, and funding needs to be provided to encourage the adoption of these youth-friendly approaches.

Outdated beliefs surrounding ideal candidates, lack of continuing education about LARCs, and personal beliefs with regard to appropriate contraception for adolescents, all contribute to roadblocks that adolescents face from their providers when seeking contraception (Rubin et al., 2013). A policy that addresses all facility types and providers that provide reproductive care to women and adolescents regarding provider training is essential to the success of programs nationwide. National policy to mandate comprehensive provider training as well as continuing education surrounding the most recent contraceptives and eligible patients would benefit all women, especially adolescents seeking family planning services. Expanding contraceptive education during provider training as well as hands-on training on both implant and IUD insertion and removal has shown to be necessary to equipping providers with the tools needed to engage adolescents. As demonstrated by the 2013 study on pediatricians showing that
adolescents are not perceived as viable candidates, provider’s behavior must be addressed to increase LARC acceptance (Rubin et al, 2013). Providers who perceive their patients as not good candidates for LARCs tend to not educate their patients on LARC availability as an option for contraception (Kavanaugh et al., 2012). Per Gimble (2012), a social marketing approach used to better understand and change the behavior of clinicians providing contraceptive services is strongly recommended, and has been shown to be successful. Social marketing techniques could be utilized during medical education and continuing education to influence developing provider’s behaviors (Gimble et al., 2012). Utilizing social marketing techniques can also pose questions to providers such as their perceived barriers to providing a more youth-friendly environment. A social marketing approach to changing behavior would address provider’s knowledge of the LARC options and their perception surrounding ideal candidates as well as gain valuable information into the providers perceived barriers (Lee & Kotler, 2011).

Through the ACA, federal regulation was produced that has been instrumental in providing family planning resources and contraceptives to women and adolescents. ACA continues to maintain its limitations through employer exemption loop holes and state by state regulated programs, such as Medicaid, that only meet the minimum requirements of ACA, resulting in continued limited access for some women in the US (Cartwright-Smith & Rosenbaum, 2014). Expanding current policies within ACA and localized initiatives to a nationwide effort would prove to reduce unintended adolescent pregnancies and increase LARC usage amongst adolescents as it has been proved on a local scale in areas across the US.

An additional area to address young adolescents is with policy on sexual health education prior to the average age of first sexual encounter through public school based curricula. Policy changes including program modification in the public-school system would allow for adolescent
females to receive information regarding contraceptive options at a time when they are already receiving preliminary sexual education (Duberstein et al., 2006). Education beginning prior to the onset of the first sexual encounter will better equip adolescents to prevent unintended pregnancies before they happen. Abstinence only educational programs provided through schools, while well intended, have resulted in higher numbers of teen pregnancies than sexual education programs that involve contraception (Gabzydl, 2010). As many as 60% of adolescent females wait a full year between the onset of sexual activity and visiting their health provider to discuss contraception (Gabzydl, 2010). The ACOG recommends that adolescents have their reproductive health visit between the ages of 13 to 15 years old (Shandhini et al., 2016). The current research on sexual health education prior to age of first sexual encounter for preventing unintended pregnancy is limited and further research in developing policy to address sexual health education is recommended.

Finally, further research is recommended to better understand and address racial and ethnic disparities in LARC use. This would not only contribute to the evidence base it would also further strengthen the policy and social marketing approaches outlined above by ensuring that target sub-population needs are fully addressed.

In summary, reducing unintended adolescent pregnancies and thereby improving the ranking of the US in comparison to other developed countries will take commitment and effort from many different facets within the US health care system. Policy change, as well as additional research into new policies, are needed to close the loop holes women continue to encounter that prevents access to family planning and reproductive resources. Another area in need of expansion is policy and continuing education requirements for medical providers surrounding family planning and contraception. This would help to better educate providers on
contraception, including insertion and removal procedures, as well as help to keep providers current on recommendations and products available for use. Providers should be educated on best practices as well as the most current recommendations but should also be able to gain comprehensive knowledge on the products and their physical makeup through continuing education throughout their careers. Further research is needed into potential targeted social marketing methods to propel behavior change in providers who are currently continuing outdated beliefs which prevent more adolescents from having access to LARCs for contraception. Lastly, research into policy that provides uniform guidance for practitioners across both public and private employers regarding patient protocols and recommendations, as well as continuing education, is needed. Through the 2011 Guttmacher Institute study of family planning facilities, Planned Parenthood provided the largest number of reported youth-friendly facilities due in part to uniform policies for provider education and patient protocols surrounding contraception and family planning education (Kavanaugh et al., 2013). Through both local and national policy changes, informed by social marketing techniques, and further research and initiatives directed at reducing ethnic and racial disparities, the US can reduce unintended adolescent pregnancies through innovative adaptations and willingness to evolve to better understand and meet adolescents needs surrounding contraceptive choices.
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