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Examining Barriers to Sexual and Reproductive Health Services for Adolescents and Young Adults in Nebraska

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**Examining Barriers to Sexual and Reproductive Health Services for
Adolescents and Young Adults in Nebraska**

by

Marisa S. Rosen

A DISSERTATION

Presented to the Faculty of
The University of Nebraska Graduate College
In Partial Fulfillment of the Requirements
For the Degree of Doctor of Philosophy

Health Promotion & Disease Prevention Research Graduate Program

Under the Supervision of Professor Melissa Tibbits

University of Nebraska Medical Center
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Abstract

Examining Barriers to Sexual and Reproductive Health Services for Adolescents and Young Adults in Nebraska

Marisa S. Rosen, Ph.D., MPH

University of Nebraska, 2018

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Despite recent declines in unintended pregnancy rates among adolescent and young adult women, barriers to family planning services and contraception continue to exist for young women living in the United States. Various initiatives have been implemented over the years from programmatic interventions to enactment of policies around family planning, yet more work needs to be done to help adolescent and young adult women successfully prevent unintended pregnancy. The Contraceptive Access Project (CAP) is a multi-component initiative in Nebraska to reduce unintended pregnancy among women aged 15-24. This dissertation comprises three separate studies each of which contributes to the overall objective of examining and understanding barriers to sexual and reproductive health (SRH) services for adolescents and young adults aged 15-24 in Nebraska and the role of the CAP in reducing those barriers. Results from the first study showed that racial and ethnic background, rather than age, of young women receiving CAP services (e.g. no-cost contraception) were predictive of whether a Tier 1 method of contraception (e.g. intrauterine device or subdermal implant) were obtained. The second study found that barriers to the adoption and implementation of quality family planning best practices continue to exist for Title X organizations across the state. The final study found that despite high knowledge about long-acting reversible contraceptives (LARCs) among clinical staff in Title X organizations across Nebraska, misconceptions about LARCs, as

well as attitudes and beliefs around LARCs for adolescents and young adults, continue to present as barriers to young people's access of contraception, particularly in rural parts of the state. Overall there are several strengths to this dissertation. First, this work adds to the overall literature on barriers to SRH services for young women, not only in Nebraska but across the U.S. Second, results from these studies can help other communities in the U.S. to implement initiatives around reducing barriers to SRH services. Finally, we have expanded upon the literature comparing adolescent women aged 15-19 to young adult women aged 20-24. Future studies can use this work to reduce barriers to SRH services for young people throughout the United States.

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List of Abbreviations

ACA	Affordable Care Act
ACOG	American College of Obstetricians and Gynecologists
AHP	Adolescent Health Project
APRN	Advanced Practice Registered Nurse
CAP	Contraceptive Access Project
CM	CAP Mentor
CMA	Certified Medical Assistant
CNA	Certified Nursing Assistant
CNC	Contract Nurse Clinician
CNM	Certified Nurse Midwife
FPNTC	Family Planning National Training center
IUC	Intrauterine Contraception
IUD	Intrauterine Device
LARC	Long-acting Reversible Contraceptive
LPN	Licensed Practical Nurse
MD	Medical Doctor
NP	Nurse Practitioner
PA	Physician Assistant
PRAMS	Pregnancy Risk Assessment Monitoring System
RN	Registered Nurse
SRH	Sexual and Reproductive Health
WFO	Women's Fund of Omaha

Chapter 1: Introduction

Trends in Adolescent and Young Adult Births and Unintended Pregnancy in the United States and Nebraska

In the United States (U.S.) there are over 63 million women of reproductive age (15 to 44 years old), of which 33% are adolescents and young adults between the ages of 15 and 24 (United States Census Bureau, 2017). The U.S. has seen the rate^a of adolescent and young adult births decline substantially between 1991 and 2016. Among females aged 15-19, the rate fell from 61.8 to 20.3 births per 1,000 females aged 15-19, while among young women aged 20-24 the birth rate fell from 115.3 to 73.8 births per 1,000 females aged 20-24 (Martin, Hamilton, Osterman, Driscoll, & Drake, 2018). Yet despite these declines, the birth rates within the teen and young adult population of women remains higher in the U.S. compared to other developed nations such as Canada and Germany (Martin et al., 2018; Sedgh, Finer, Bankole, Eilers, & Singh, 2015).

While overall birth rates among young women aged 15-24 in the U.S. have declined, there remain marked differences in the rates of births among non-Hispanic Black and Hispanic women compared to White women. From 1991 to 2014, the birth rates for non-Hispanic White women aged 15-19 decreased from 43.4 to 17.3 births per 1,000, while the birth rates of Hispanic women in this age group decreased from 104.6 to 38.0 births per 1,000 women and from 118.2 to 34.9 births per 1,000 for non-Hispanic Black women aged 15-19 (Hamilton, Martin, Osterman, Curtin, & Mathews, 2015). Similarly, among young women aged 20-24, birth rates among non-Hispanic White women declined from 95.7 in 1991 to 67.1 in 2014, while the

^aNote: All rates are the number of events per 1,000 women in the given age group.

birth rates of Hispanic women aged 20-24 declined from 184.6 to 104.5 and from 164.8 to 102.8 for non-Hispanic Black women (Hamilton et al., 2015).

Data from 2016 reveal racial and ethnic differences in birth rates among women aged 15-24 in the U.S. continue to exist (Martin et al., 2018). Among non-Hispanic White adolescents aged 15-19 the birth rate was 14.3 per 1,000 women, while the birth rate for non-Hispanic Black women and Hispanic women aged 15-19 was markedly higher at 29.3 and 31.9, respectively (Martin et al., 2018). The differences in birth rates between racial and ethnic groups was similar for young adult women aged 20-24; non-Hispanic White women had a much lower birth rate (62.4) compared to non-Hispanic Black women (95.8) and Hispanic women (98.4) (Martin et al., 2018). Not only are there differences in birth rates between different racial and ethnic groups, but data also shows there are differences in birth rates between rural and urban adolescents, with birth rates among women aged 15-19 highest in rural counties compared to large, medium, and small urban counties (Hamilton, Rossen, & Branum, 2016). For example, the birth rate among non-Hispanic White women aged 15-19 was 10.5 births per 1,000 women in large urban counties compared to 26.8 births per 1,000 women in rural counties (Hamilton et al., 2016).

In addition to declining birth rates among adolescent and young adult women in the U.S., the pregnancy rate for women aged 15 to 24 has steadily decreased over time (Curtin, Abma, & Kost, 2015). Between 1990 and 2013^b the pregnancy rate fell from 116.8 to 43.4 pregnancies per 1,000 women aged 15-19 (Kost et al., 2017), while between 1990 and 2010 the pregnancy rate fell from 198.5 to 144.6 pregnancies per 1,000 women aged 20-24 (Curtin et al., 2015). Despite the overall decline in the pregnancy rate for young women aged 15-19, recent

^bThe most current pregnancy rate data for young women aged 20-24 are from 2009 (Curtin, Abma, Ventura, & Henshaw, 2013), while pregnancy rate data for young women 15-19 are available from a study conducted in 2013 (Kost, Maddow-Zimet, & Arpaia, 2017).

data show the pregnancy rate for Hispanic and non-Hispanic Black adolescents remains almost twice as high as the pregnancy rate for non-Hispanic White adolescents (Curtin et al., 2013; Kost et al., 2017). From 2013 data, among non-Hispanic Black women aged 15-19 there were 75.1 pregnancies per 1,000 women aged 15-19 (Kost et al., 2017), while 2009 data for women aged 20-24 show a decrease from 250.7 pregnancies per 1,000 women (Curtin et al., 2013). Among Hispanic women, 2013 data show there were 60.8 pregnancies per 1,000 women aged 15-19 (Kost et al., 2017) and 208.2 pregnancies per 1,000 women aged 20-24 (Curtin et al., 2013). When comparing these rates to the rates among non-Hispanic White women (29.6 per 1,000 women aged 15-19 and 118.1 pregnancies per 1,000 women aged 20-24), there is a marked difference in the rate of pregnancies experienced between different racial and ethnic groups in the U.S. (Curtin et al., 2013; Kost et al., 2017). Regardless of race/ethnicity, there are substantially higher rates of pregnancy among young adults aged 20-24 compared to adolescents aged 15-19 highlighting that the needs of women aged 15-24 may be significantly different depending on their age and their racial/ethnic background.

There are presently no data available analyzing differences in pregnancy rates between rural and urban geographic locations in the U. S. However, there is evidence showing a difference in adolescent pregnancy rates between states, with higher rates of pregnancy in states located in the south and southwest U.S. (Kost et al., 2017). Additionally, other evidence shows that the percent of women aged 18-44 reporting their first sexual intercourse to be age 16 was higher in rural areas (51.1%) compared to urban areas (41.7%) indicating that teens in rural areas are at risk of becoming pregnant at a younger age compared to teens in urban areas (Daniels, Martinez, & Nugent, 2018).

Although overall rates of teen pregnancy and teen births declined in the U.S., there were statewide variations in the degree to which decline in these rates occurred. As of 2016, in

the state of Nebraska, the birth rate among young women aged 15-19 was only slightly lower (19.1 births per 1,000 women aged 15-19) compared to the overall birth rate among women aged 15-19 in the U.S. (20.3) and is almost the same for young women aged 20-24 in Nebraska as in the U.S. (73.7 and 73.8 births per 1,000 women aged 20-24, respectively) (Martin et al., 2018). According to the 2016 Nebraska State Health Assessment, the birth rate among White women aged 15-19 years was 9.1 per 1,000 women, while the birth rate was 26.5 and 29.6 for non-Hispanic Black and Hispanic women aged 15-19, respectively (Nebraska Department of Health and Human Services & Division of Public Health, September 2016). Similar to trends in the U.S., birth rates among women aged 15-19 years in Nebraska are higher for both non-Hispanic Black and Hispanic youth compared to non-Hispanic White youth. Additionally, data from the 2016 report show that the birth rate among women aged 15-19 years is the same in large urban and rural areas (11.6 births per 1,000 women aged 15-19), however, the birth rate in small urban areas is larger within this age group (17.4 birth per 1,000 women aged 15-19) (Nebraska Department of Health and Human Services & Division of Public Health, September 2016).

According to the most recent data available for Nebraska^c, the birth rates between non-Hispanic White and Hispanic women aged 20-24 were relatively similar (73.3 and 72.2 births per 1,000 women, respectively), and slightly higher among non-Hispanic Black women aged 20-24 (89.7), while at the national level the birth rate is much lower for non-Hispanic White women aged 20-24 compared to both non-Hispanic Black and Hispanic women of the same age group (Martin et al., 2018).

^c Birth rates of women aged 20-24 for the state of Nebraska were calculated using the Current Population Survey, Annual Social and Economic Supplement, 2017 provided by the Census Bureau (U.S. Census Bureau, 2017) and the 2016 natality data from the National Center for Health Statistics, Division of Vital Statistics (U.S. Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), & Division of Vital Statistics, 2018).

While there are small differences in the birth rates among young women aged 15-24 living in Nebraska versus the U.S., the pregnancy rates are lower in Nebraska compared to the U.S. For example, in Nebraska, among adolescent women aged 15-19, the pregnancy rate was 35 per 1,000 women compared to 43.3 pregnancies per 1,000 women in the U.S. (Kost et al., 2017). However, if we compare the pregnancy rate and birth rates in Nebraska within women aged 15-19, women aged 18-19 years old had higher pregnancy rates (61 per 1,000 women aged 15-19) compared to women aged 15-17 (21 per 1,000 women aged 15-19) (Kost et al., 2017). Unfortunately, only national-level data are available for the pregnancy rate of women aged 20-24 years. Additionally, there are no data available on the pregnancy rate of women aged 15-19 or 20-24 by racial or ethnic groups in Nebraska. Lack of evidence on the pregnancy rate for women in Nebraska could be due to the fact that the pregnancy rate takes into account the total birthrates, abortion rates, and fetal loss rates and can take additional time to gather sufficient evidence for each rate (Kost et al., 2017).

Unintended pregnancy, encompasses pregnancies that the woman deems either mistimed or unwanted^d (Santelli et al., 2003). Research shows unintended pregnancy during adolescence and young adulthood can have a variety of adverse economic and health outcomes for the mother, their families, and their children including higher rates of maternal depression, low-birthweight infants, poorer behavioral, mental and physical health in children, as well as lower educational attainment in mothers, fathers and children (D. Cheng, Schwarz, Douglas, & Horon, 2009; D'Angelo et al., 2007; Gipson, Koenig, & Hindin, 2008; Hellerstedt et al., 1998; Kost, Landry, & Darroch, 1998; Logan, Holcombe, Manlove, & Ryan, 2007; Parks & Peipert, 2016; Santelli et al., 2003; Shah et al., 2011). For example, research has shown that women who

^d A mistimed pregnancy is one in which the pregnancy “occurred earlier than desired” while an unwanted pregnancy is one in which the pregnancy “occurred when no children, or no more children, were desired” (Santelli et al., 2003).

experience an unintended pregnancy are less likely to initiate prenatal care early in the pregnancy (D'Angelo, Gilbert, Rochat, Santelli, & Herold, 2004; Pulley, Klerman, Tang, & Baker, 2002; Sable & Wilkinson, 1998) and are more likely to unintentionally engage in negative maternal behaviors such as using drugs and alcohol than women with an intended pregnancy (D'Angelo et al., 2004; Hellerstedt et al., 1998), which can negatively affect the health of the infant (Sampson, Bookstein, Barr, & Streissguth, 1994; Weissman, Warner, Wickramaratne, & Kandel, 1999; Zimmer-Gembeck & Helfand, 1996).

Furthermore, children who are the result of an unintended pregnancy are shown to experience poorer health outcomes, both physically and mentally, which can last through adolescence and adulthood (Logan et al., 2007). For instance, studies have shown that children are more likely to have low self-esteem (Axinn, Barber, & Thornton, 1998) and are less likely to behave appropriately and more likely to report depression as a young adult (David, 2006). Additionally, children resulting from an unintended pregnancy are less likely to have a healthy, supportive relationship with their mother than children born from intended pregnancies (Barber, Axinn, & Thornton, 1999; Ispa, Sable, Porter, & Csizmadia, 2007). Children born to adolescent mothers, in particular, have different childhood experiences than those children born to adult women and can experience less sensitive child-rearing, more discipline, and less co-parenting (Lewin, Mitchell, & Ronzio, 2013).

Unintended pregnancy can have adverse health outcomes for not only the child, but also the mother. One study found that the odds of a mother reported postpartum depression was significantly higher among mothers with unwanted or mistimed births were significantly compared to women who reported an intended pregnancy, even when adjusting for maternal age, race/ethnicity, education and marital status (D. Cheng et al., 2009).

Not only are there health outcomes associated with unintended pregnancy, but there is also an economic burden associated with pregnancies that are unwanted or mistimed at the individual and societal levels. For example, in 2006, researchers found that the percent of unintended births paid for by public insurance programs was almost twice as high than the percent of intended births paid for by public insurance programs (Sonfield, Kost, Gold, & Finer, 2011). Additionally, it was estimated that in 2006 the government spent \$11.1 billion on births from unintended pregnancies, which is over 50% of the total amount spent on births during the year (Sonfield et al., 2011). At the individual- and family-levels, unintended pregnancy, coupled with existing sociodemographic characteristics, can impact and be impacted by existing income inequality and the lack of economic mobility of future generations (Kearney & Levine, 2012; McLanahan & Percheski, 2008). In other words, unintended pregnancy during adolescence can be both the cause of income inequality and lack of economic mobility, as well as the consequence of income inequality and lack of economic mobility.

Between 2008 and 2011, the rate of unintended pregnancy among women of reproductive age declined, yet despite this decline, the unintended pregnancy rate is substantially higher among adolescent females aged 15-19 and young women aged 20-24 (Finer & Zolna, 2016; Santelli et al., 2003). For example, in 2011, of the 574,000 pregnancies to adolescent females aged 15-19, 75% were unintended, while among women aged 20-24, 59% of the 1.5 million pregnancies were unintended (Finer & Zolna, 2016).

Furthermore, disparities in the rate of unintended pregnancy among women of reproductive age persist in the U.S. In 2011, 64% of pregnancies to non-Hispanic Black women and 56% of pregnancies to Hispanic women were unintended compared to only 38% of pregnancies to non-Hispanic White women (Finer & Zolna, 2016). Economically disadvantaged women are also more likely to have an unintended pregnancy compared to higher-income

women (Finer & Zolna, 2011). In 2006, the unintended pregnancy rate of women <100% federal poverty level was 132 per 1,000 women aged 15-44 years compared to 24 per 1,000 women aged 15-44 years who identified as $\geq 200\%$ federal poverty level (Finer & Zolna, 2011). In the state of Nebraska, data collected through the Pregnancy Risk Assessment Monitoring System (PRAMS), show that 80% of births to women younger than 20 years old were unintended (Nebraska Department of Health and Human Services & Division of Public Health, September 2016).

Adolescent Sexual Behavior: Proximal and Distal Risk and Protective Factors

Factors associated with adolescent sexual behavior leading to unintended pregnancy are complex, often interconnected, and vary depending on the social, environmental, and cultural contexts in which teens live. A review of the literature found that there are over 500 risk and protective factors that are associated with an adolescents' sexual risk behavior (Kirby, 2007). Risk factors are considered factors that encourage behavior that could result in pregnancy or that discourage behavior that could prevent pregnancy, while protective factors discourage behavior that could lead to pregnancy and encourage behavior that prevents pregnancy (Kirby, 2007).

Risk and protective factors can be further categorized as proximal, which are linked both conceptually and logically to a related sexual behavior, or distal because of their indirect influence on sexual behavior (Kirby, 2007; Maness & Buhi, 2016; Sawyer et al., 2012; Viner et al., 2012). Proximal factors include both individual and interpersonal factors such as an adolescents' own sexual drive due to biological changes occurring during puberty, attitudes and skills concerning contraceptive methods, and their family and friend's values around sex (Kirby, 2007). For example, individual factors related to biological and psychosocial changes during adolescence including the onset of puberty and changes in both the prefrontal cortex, which is

the part of the brain that controls executive function, as well as the limbic system, which controls reward processing and pleasure seeking, can increase the likelihood of risk taking behaviors including engagement in sexual activity (Blakemore, Burnett, & Dahl, 2010; Casey, Jones, & Hare, 2008; Sawyer et al., 2012). One study found that the onset of sexual activity during adolescence is linked to when a young person begins puberty with those maturing at younger ages seeking out opportunities to engage in sexual activity earlier than those experiencing puberty at a later age (Negriiff, Susman, & Trickett, 2011). Interpersonal factors such as relationships with peers and family members can also influence a young person's sexual behavior positively or negatively. For example, young people with sexually experienced peers are more likely to be sexually experienced themselves and those who perceive their peer-group to be sexually active are more likely to engage in sexual activity (Kinsman, Romer, Furstenberg, & Schwarz, 1998; Rosenthal et al., 2001). Evidence also suggests that interpersonal factors such as family connectedness and parent-child communication influence the sexual behavior of young people (Markham et al., 2010; B. C. Miller, Benson, & Galbraith, 2001). In a review of the literature by Markham and colleagues (2010), study authors found that family connectedness, parent-adolescent general communication, parent-adolescent sexual communication, parental monitoring, partner connectedness for females and school connectedness delayed sexual initiation and protected against early sexual debut (Markham et al., 2010).

Distal factors, on the other hand, include adolescent's interaction with the social, cultural and economic factors, often referred to collectively as Social Determinants of Health (SDH) (Kirby, 2007; Maness & Buhi, 2016; Sawyer et al., 2012). First introduced by the World Health Organization's (WHO) Commission on Social Determinants of Health in 2008, SDH are defined as "the conditions in which people are born, grow, live, work and age" (Commission on Social Determinants of Health, 2008). For example, SDH can include systems that can promote

or inhibit opportunities for young people such as political and economic systems, wealth and its distribution within a country, the education system including access to education, employment opportunities for young people, health services access, poverty, migration and homelessness, war and conflict, climate change, as well as cultural factors such as sex and ethnic equality (Viner et al., 2012).

During the creation of Healthy People 2020, the U.S. Department of Health and Human Services created a social determinants of health framework that outlines the five key areas including economic stability, education, social and community context, health and health care, and neighborhood and build environment (Maness & Buih, 2016; U.S. Department of Health and Human Services (US DHHS) Office of Disease Prevention and Health Promotion, 2014). Studies have found that there is a connection between the different areas of SDH and adolescent sexual behavior leading to pregnancy such as socioeconomic status, community violence and exposure to incarceration (Blum et al., 2000; Gold, Kennedy, Connell, & Kawachi, 2002; Iseyemi, Zhao, McNicholas, & Peipert, 2017; E. Miller et al., 2012; Whalen & Loper, 2014). Specifically, one study found that in the United States, rates of teen pregnancy were associated directly with poverty status and indirectly with income inequality (Gold et al., 2002). Similarly, another study found that children from higher socioeconomic backgrounds were less likely to become pregnant during adolescence compared to children from lower socioeconomic background (Singh, Darroch, & Frost, 2001).

Relationship between Contraceptive Behavior and Unintended Pregnancy

Contraceptive behavior is one of several factors contributing to unintended pregnancy; specifically, the use of less effective methods, non-use of a contraceptive method, and misuse or failure of a contraceptive (Sonfield, Hasstedt, & Gold, 2014). In 2008, researchers found that of the 3.4 million unintended pregnancies, 5% of women used contraception consistently, whereas

41% used contraception inconsistently and 54% did not use contraception (Sonfield et al., 2014). According to data from the 2006-2010 National Survey of Family Growth (NSFG), non-Hispanic Black women and young women aged 15-24 were significantly less likely to use a contraceptive method at last sexual intercourse despite not wanting (more) children (Grady, Dehlendorf, Cohen, Schwarz, & Borrero, 2015). This trend was also found in analysis of the 2011-2013 NSFG, in which almost two-thirds (65%) of non-Hispanic White women were found to currently be using a contraceptive method compared to 57% of Hispanic women and 58% of non-Hispanic Black Women (Daniels, Daugherty, & Jones, 2014). Additionally, another study found that among adolescent females aged 15-19 reporting contraception use at time of conception, almost half (48%) reported having an unintended birth despite using contraception (Coles, Makino, & Stanwood, 2011).

However, in a 2016 study, researchers found that recent declines in risk of unintended pregnancy among adolescent women aged 15-19 were associated with a significant increase in the use of one or more methods at last sexual intercourse (78% to 86%) (Lindberg, Santelli, & Desai, 2016). For female adolescents reporting the use of multiple methods at last intercourse, the most common combination was the oral contraceptive pill and condom (Lindberg et al., 2016). Moreover, recent YRBS data reveal that the percent of sexually active female high school students using a prescription birth control method has increased since 2013 from 29.8% to 34.6% (Witwer, Jones, & Lindberg, 2018). Despite this increase, disparities continue to exist in use of contraceptives, specifically among youth and young adults. Data from the 2011-2015 NSFG show that 11% of non-Hispanic Black youth and 8% of Hispanic youth reported using a hormonal contraceptive and condom at last sexual intercourse compared to 29% of non-Hispanic White youth (Abma & Martinez, 2017). Moreover, data from the 2015 Youth Risk Behavioral Survey (YRBS) show that of sexually active female high school students, 39% of White

females used either a birth control pill, IUD or implant, or shot, patch, or birth control ring before last sexual intercourse compared to 20% of non-Hispanic Black females and 23% of Hispanic females (Kann et al., 2016). Recent YRBS data from 2017 show that among sexually active non-Hispanic Black and non-Hispanic White females aged 15-19, the percent using a prescription birth control method has increased since 2015 (20.5% to 23.7% and 39.2% to 43.9%, respectively), but has actually decreased among sexually active Hispanic females aged 15-19 from 39.2% to 43.9% (Witwer et al., 2018).

There are also differences in reported methods used before last sexual intercourse between racial and ethnic groups. For example, in 2015, 25% of non-Hispanic White females aged 15-19 who are sexually active report using the birth control pill compared to only 9% of non-Hispanic Black females and 15% of Hispanic females aged 15-19 who are sexually active (Kann et al., 2016). While the percent of females in both the non-Hispanic White and non-Hispanic Black groups using the pill has actually increased between 2015 and 2017 to 29.6% and 11.2%, respectively, there is a significant difference in use of the pill between non-Hispanic White and non-Hispanic Black females (Witwer et al., 2018). Moreover, despite increases in birth control pill use among non-Hispanic Black and non-Hispanic White females aged 15-19, the percent of Hispanic females reporting pill use decreased between 2015 and 2017 (15.4% to 12%, respectively) (Witwer et al., 2018).

Comparatively, reported use of the IUD has increased between 2015 and 2017 for sexually active female high school students in all racial/ethnic groups: among non-Hispanic White females the percent using IUDs or implants increased from 3.9% to 6.2%, while use among non-Hispanic Black females increased from 3.7% to 3.9% and from 4% to 4.4% among Hispanic females (Kann et al., 2016; Witwer et al., 2018). In 2015, non-Hispanic White females aged 15-19 had higher use of either the shot, patch or birth control ring at last sexual

intercourse compared to non-Hispanic Black and Hispanic females of the same age (8.9%, 7.8% and 3.7%, respectively) (Kann et al., 2016). In 2017, there was a slight increase in the percent of non-Hispanic Black and Hispanic females using one of these methods (8.6% and 3.9%, respectively), however, among non-Hispanic White females there was a decrease in the use of either the shot, patch, or birth control ring at last sexual intercourse (8.1%) (Witwer et al., 2018). In addition to racial and ethnic disparities, economically disadvantaged young women are less likely to use any contraception or to use a method that is less effective at preventing pregnancy, such as withdrawal (Dehlendorf, Rodriguez, Levy, Borrero, & Steinauer, 2010; Finer & Zolna, 2011; Garbers, Meserve, Kottke, Hatcher, & Chiasson, 2013; Mosher, Jones, & Abma, 2012). One study found that among sexually experienced young women, there were greater odds of using contraceptive services (e.g. method provision, check-ups, counseling, etc.) if a young woman was White, an older adolescent, college-educated, and insured (Hall, Moreau, & Trussell, 2012).

Barriers to Contraception and Contraceptive Use

Despite these increases in contraceptive use among adolescents and young adults at last sexual intercourse (Lindberg et al., 2016), barriers to contraception continue to exist for young women, which can stall this positive trend. Moreover, obstacles to obtaining contraception were reported twice as much in adolescents who reported having a mistimed or unwanted birth compared to adolescents who reported having a wanted birth (Coles et al., 2011). Evidence shows that contraceptive behavior among young women is directly tied to the barriers or facilitators associated with six predictors of contraceptive behavior including: knowledge, awareness, attitudes, accessibility, affordability, and quality (D. L. Eisenberg, McNicholas, & Peipert, 2013; M. Goodman, Onwumere, Milam, & Peipert, 2017; Kumar & Brown, 2016; Madden, Secura, Nease, Politi, & Peipert, 2015; Pritt, Norris, & Berlan, 2017; Tessler & Peipert, 1997). Additionally, within each of these factors there are different spheres of influences

including the individual themselves, the individual's immediate social network including their nuclear and extended family, peers, and providers such as the school nurse, community health workers, pediatrician, or family physician. Other influences include the community, socioeconomic, cultural, and political spheres.

Knowledge, Awareness & Attitudes

Lack of knowledge and awareness, lack of accurate information, and misconceptions about contraceptive methods can impact the contraceptive behavior of adolescents and young adults (Coles et al., 2011; Kelly & Kalichman, 1995; Khurana & Bleakley, 2015; Kirby, 2007; Rubin & Winrob, 2010; Suellentrop & Frost, 2009; Whitaker et al., 2008; Yee & Simon, 2010). In a 2014 study examining data from the 2009 National Survey of Reproductive and Contraceptive Knowledge, the majority of young adult women between the ages of 18 and 29 were aware of the most common forms of birth control methods including the injection (90%), birth control pills (98%), vaginal ring (92%), patch (95%), male condom (99%) and emergency contraception (95%) but were less aware of long-acting reversible contraceptive (LARC) methods such as the implant (52%) and IUD (87%) (Craig, Dehlendorf, Borrero, Harper, & Rocca, 2014). However, young women in this survey lacked *specific knowledge* about contraceptive methods overall; for example, only 22% knew that an IUD does not cause infertility (Craig et al., 2014).

Moreover, this same study found there were marked differences in the contraceptive knowledge, awareness, and attitudes by race and ethnicity (Craig et al., 2014). In terms of awareness, Hispanic and non-Hispanic Black women were least aware of methods such as male sterilization, the IUD, the ring, and the patch compared to non-Hispanic White females (Craig et al., 2014). Additionally, there was varying levels of specific knowledge of contraceptive methods between Hispanic and non-Hispanic Black females compared to non-Hispanic White females, such as how the ring is inserted, tampons can be used with IUDs, switching brands of the

hormonal birth control pill can help alleviate side effects, and whether it is acceptable to use Vaseline or petroleum jelly with a condom (Craig et al., 2014).

In a 2014 study analyzing data from the 2000 through 2005 Pregnancy Risk Assessment Monitoring System (PRAMS), among adolescents who had an unwanted birth, Black adolescents were more than seven times likely to report concerns about birth control side effects as the reason for not using contraception at time of conception (Coles et al., 2011). For teens younger than 16 years old, the risk of having a mistimed or unwanted birth increased twofold due to falsely perceived subfertility, which is defined as an individual's belief that they cannot become pregnant at the time of sexual intercourse, either because they are "too young" or they did not believe pregnancy could happen during their first experience with sexual intercourse (Coles et al., 2011). These misconceptions held by youth about reproduction and risk of pregnancy are tied to lack of overall knowledge about reproduction and contraception, which limit use of contraception during sexual intercourse as a result.

An individual's contraceptive behavior can also be influenced by the knowledge and attitudes about contraception held by peers, family, providers, community, and society in general (Khurana & Bleakley, 2015). Several studies have shown that contraceptive behavior in young women was related to the shared contraceptive experiences of those in their social networks (Anderson, Steinauer, Valente, Koblentz, & Dehlendorf, 2014; Yee & Simon, 2010). Young women who knew someone in their social network who had a positive or negative experience with a LARC were more or less likely to use LARCs as a result (Anderson et al., 2014; Benson, Perrucci, Drey, & Steinauer, 2012). Another study found that when youth perceive their peers to use condoms, they are more likely to use some form of contraception during sexual contact (Potard, Courtois, & Rusch, 2008). Other studies have shown that parent communication about sex and contraception, as well as partner support for use of contraception are influential

in contraceptive behavior among youth and young adults (Commendador, 2010; M. E. Eisenberg, Bearinger, Sieving, Swain, & Resnick, 2004; Hartman et al., 2013; Kirby, 2007). In a meta-analysis by Widman and colleagues (2016), study authors found that parent-adolescent communication about sexual health and sexual activity is positively associated with adolescents' contraceptive behavior (Widman, Choukas-Bradley, Noar, Nesi, & Garrett, 2016).

Moreover, studies have also found provider-patient relationships and communication can determine contraceptive behavior among youth and young adults (Dehlendorf, Levy, Kelley, Grumbach, & Steinauer, 2013; Dehlendorf, Tharayil, et al., 2014; Harper, Brown, Foster-Rosales, & Raine, 2010; Kirby, 2007). One study found that contraceptive knowledge was highest among young adults who frequently depended on doctors and/or nurses for their information about contraception (Khurana & Bleakley, 2015). However, other studies have found that lack of provider knowledge or communication and/or insertion skills can be barriers to youth and young adults using contraception (Dehlendorf, Tharayil, et al., 2014). Providers may not have the knowledge or skills because they were not trained specifically in reproductive health (Dehlendorf, Tharayil, et al., 2014; Espey & Ogburn, 2002; Greenberg, Makino, & Coles, 2013; Luchowski et al., 2014; A. E. Philliber et al., 2014). This is especially true for pediatricians or family medicine providers who may be unclear on the evidence-based best practices for contraception for youth and young adults (Kohn, Hacker, Rousselle, & Gold, 2012; Rubin, Davis, & McKee, 2013; Rubin & Winrob, 2010; Swanson, 2013).

Studies have also shown that provider attitudes can impact whether they prescribe contraception for a young person (Berlan, Pritt, & Norris, 2017; A. E. Philliber et al., 2014; Swanson, 2013). One study found that among pediatricians, there was a preconceived notion that LARCs should be reserved for only those patients perceived as being mature enough to handle this form of contraceptive method (Berlan et al., 2017). As a result of these challenges,

the American College of Obstetrics and Gynecologists and the American Academy of Pediatricians have released guidelines for providers to improve knowledge of which contraceptive methods are appropriate for youth and young adults to prevent pregnancy in America (Committee on Adolescence, 2014; Committee on Adolescent Health Care Long Acting Reversible Contraception Working Group & The American College of Obstetricians and Gynecologists, 2012).

Other barriers are adolescents' knowledge and awareness of confidentiality for family planning services and insurance coverage of contraception (Kumar & Brown, 2016; Pritt et al., 2017). Young people are primarily concerned with their parents learning about their use of sexual and reproductive health (SRH) services including their contraceptive method of choice (Copen, Dittus, & Leichter, 2016; Ford, English, & Sigman, 2004; Klein, Wilson, McNulty, Kapphahn, & Collins, 1999; O'Sullivan, McKee, Rubin, & Campos, 2010). One study found that of adolescents seeking services at a family planning clinic, over half (59%) would stop receiving services if parental notification was mandatory (Reddy, Fleming, & Swain, 2002). Additionally, lack of knowledge concerning federal and/or state laws regulating confidential reproductive health services can present barriers to youth and young adults accessing these services (Kumar & Brown, 2016; Pritt et al., 2017). While federal regulations stipulate that confidentiality of services is ensured to minors seeking care at a Title X clinic or to those minors who have Medicaid, state laws govern confidentiality concerns for private insurance holders and vary from state to state (R. K. Jones & Boonstra, 2004). This is significant since over half of young adults aged 19-25 are on their parents' private health insurance (Kirzinger, Cohen, & Gindi, 2013).

Additionally, adolescents may not understand their health insurance coverage and what may or may not be included in the care that they are seeking (Pritt et al., 2017). Several studies have found that young women may be unaware of whether or not their insurance plan covers

the cost of contraception, particularly LARCs, and as a result to do not request these forms of contraception (Chuang et al., 2015; Pace, Dusetzina, Fendrick, Keating, & Dalton, 2013).

Accessibility, Affordability and Quality

Cost is one of the major barriers that continues to persist in terms of inhibiting adolescents and young adults from affording the contraceptive method of their choice, particularly LARCs which have some of the highest upfront costs (Kavanaugh, Jerman, Ethier, & Moskosky, 2013; Peipert, Madden, Allsworth, & Secura, 2012; Ricketts, Klingler, & Schwalberg, 2014). Studies have shown that these high up-front costs can deter clinic administrators and providers from stocking all methods (Kavanaugh, Jerman, et al., 2013; Teal & Romer, 2013). Additionally, clinic administrators and providers may not stock all contraceptive methods because insurance companies may not reimburse for the cost of the method or the time it took the provider to insert a LARC method (Kavanaugh, Frohwirth, Jerman, Popkin, & Ethier, 2013; A. E. Philliber et al., 2014). Other insurance policies may require an IUD to be inserted over the course of two days, which puts additional burdens on young women (Bergin, Tristan, Terplan, Gilliam, & Whitaker, 2012; Maslyanskaya, Coupey, Chhabra, & Khan, 2016).

High upfront costs for LARCs can also deter adolescents and young adults from using these forms of contraception (D. L. Eisenberg et al., 2013; Mestad et al., 2011). While the Affordable Care Act (ACA) expanded insurance coverage of FDA-approved methods, some older plans without coverage were grandfathered in and recent legislation granted religious-based exemptions for employer insurance programs. Currently, there are only 28 states that mandate coverage of FDA-approved contraception and only 17 of those states require coverage of outpatient related services for provision of contraception (Bearak, Finer, Jerman, & Kavanaugh, 2016; Kumar & Brown, 2016). Several initiatives over the past decade have shown that when cost is no longer an issue for accessing contraceptive methods, uptake of contraception is

greatly increased, particularly LARCs (Birgisson, Zhao, Secura, Madden, & Peipert, 2015; D. L. Eisenberg et al., 2013; Mestad et al., 2011; Peipert et al., 2012; Secura, Adams, Buckel, Zhao, & Peipert, 2014; Secura, Allsworth, Madden, Mullersman, & Peipert, 2010; Secura, Madden, et al., 2014).

In addition to cost, accessibility to clinics providing family planning and reproductive health services, as well as providers that are trained in family planning and adolescent care are also barriers to adolescents and young adults' contraceptive use. Transportation plays a key role in whether youth and young adults can access the care that they need. One study of publicly insured adolescents and their parents found that one of the barriers to accessing services was not having the means to get to a clinic and having to find transportation (Coker et al., 2010). Additionally, convenient times for youth and young adults to come to the clinic can also be barriers to access (Kumar & Brown, 2016). One study on publicly funded family planning clinics found that the most common challenge to providing services to youth are inconvenient hours (Kavanaugh, Jerman, et al., 2013).

Access to providers that are trained in family planning and reproductive health specialties such as gynecology or obstetrics, or in adolescent medicine also continues to be a barrier to accessing contraception for young people (Kumar & Brown, 2016; Pritt et al., 2017). For example, in terms of provision of LARCs, a 2009 study found that provision of an IUD or implant was more likely if the provider had additional training in obstetrics and gynecology such as through a fellowship (Bartz, Tang, Maurer, & Janiak, 2013). Moreover, lack of specific knowledge about provision of LARCs within the adolescent population among providers can be a hindrance to providing these forms of contraception. A 2014 study of obstetricians and gynecologists found that the just over half (52%) disagreed with the idea that IUDs and implants

should be the first method of birth control offered to and used by adolescents and nulliparous women (Luchowski et al., 2014).

Overcoming Barriers: Past Programs and Policies

Over the past several decades, there have been many programs developed and implemented to help young people delay pregnancy, many of which have tried to bolster protective factors and reduce barriers to decrease sexual risk behavior associated with unintended pregnancy. In a review of the literature, several programs were categorized as individual-level initiatives occurring through school-based curriculums and positive youth development programs aimed at increasing knowledge and awareness of sex and contraception, improving skills to use contraception, and changing attitudes towards contraception, to name a few (Goesling, Colman, Trenholm, Terzian, & Moore, 2014; Kirby, 2007; Lopez, Bernholc, Chen, & Tolley, 2016; Suellentrop, 2010).

Evaluations of school-based efforts have found that over two-thirds of comprehensive sex education programs have had positive influences on adolescent behavior such as delaying sexual initiation, reducing unprotected sex, and increasing contraceptive use (Advocates for Youth, 2009; Hauser, 2004, 2008; Kirby, 2007; Trenholm et al., 2007). For example, the program Healthy Futures, a school-based comprehensive sex education program for middle school students, showed that adolescent females were less likely to report ever having vaginal sex after participating in the program (Calise, Chow, & Doré, 2015; Lugo-Gil et al., 2016). The Children's Aid Society (CAS) – Carrera program, developed in 1984, is an example of a multi-component, year-round youth development program for minority adolescents that has been replicated and adapted in multiple communities across the country to prevent teen pregnancy (Lugo-Gil et al., 2016; S. Philliber, Kaye, Herrling, & West, 2002; Tucker & Langley, 2016).

In addition to school-based programs, initiatives have also focused on sex education for parents and their teens tend to promote increasing parents' comfort in talking about sex with their teen as well as increasing the occurrence of communication about sex between parents and their teens (Akers, Holland, & Bost, 2011; Kirby, 2007). In one review of interventions to improve parents' ability to communicate with their adolescents about sex, researchers found that interventions did have targeted-effects including improvements in frequency, quality, intentions, comfort and self-efficacy of parents (Akers et al., 2011).

Clinic-based programs promote training of reproductive health providers and staff in order to improve providers' communication with adolescents around sexual health topics such as sex, pregnancy, contraception, and sexuality (Kirby, 2007). Research has also shown that school-based and school-linked clinics, and school condom-availability programs are important models for providing comprehensive reproductive health services to adolescents, with some programs showing improved contraception use and declines in pregnancy rates within the schools with school-based health centers (Bearss, Santelli, & Papa, 1995; Blake et al., 2003; Keeton, Soleimanpour, & Brindis, 2012; Kirby, 2007; Kisker & Brown, 1996; Ricketts & Guernsey, 2006; Soleimanpour, Geierstanger, Kaller, McCarter, & Brindis, 2010).

In 2010, the Obama administration created the Office of Adolescent Health (OAH) to oversee the new Teen Pregnancy Prevention Program (Boonstra, 2010). The new TPP would then fund programs that either: 1) replicated evidence-based pregnancy prevention programs to further build the evidence around impacts on sexual behavior outcomes; or 2) design and implement innovative interventions to reduce unintended pregnancy (Boonstra, 2010). In 2017, the Office of Adolescent Health reported that the 84 grantees in the current grant cycle (July 1, 2015 – June 30, 2018) reached over 200,000 participants, which is almost three times the number reached in 2016 (Office of Adolescent Health, 2017). Moreover, of these participants,

42% were aged 13-14, 52% were female, and 37% identified as Hispanic (Office of Adolescent Health, 2017).

Several community-wide initiatives to reduce unintended pregnancy among adolescents using evidence-based practices have been funded through OAH's TPP such as the South Carolina Campaign to Prevent Teen Pregnancy's Accelerating Progress initiative, SHIFT NC, Hartford Teen Pregnancy Prevention Initiative, and the Massachusetts Alliance on Teen Pregnancy's Youth First program (Bhuiya et al., 2017; House, Tevendale, & Martinez-Garcia, 2017; Kappeler & Farb, 2014; T. Mueller et al., 2017; Rose, Prince, Taylor, Alton, & Johnson, 2014; Sotolongo, House, Swanson, & Davis, 2017). The SHIFT NC program, for example, worked to decrease teen pregnancy in Gaston, NC through a combination of different strategies including implementing evidence-based programs in different community settings, improving health care quality and access, increasing community engagement and working with diverse communities (Sotolongo et al., 2017). As a result of the multi-component approach, the number of adolescents receiving at least one type reproductive health services increased by 12.5% from the previous year, while the number receiving family planning services specifically increased 3.8% from the previous year (Sotolongo et al., 2017). The increase in numbers indicates that a multi-component approach can be beneficial to increasing access to reproductive health services for adolescents and young adults in a community.

In addition to the OAH TPP funded programs, two initiatives within the past decade, the Colorado Family Planning Initiative and the Contraceptive CHOICE Project in St. Louis, have worked specifically to address barriers to contraception and SRH services for women at risk of unintended pregnancy (Peipert et al., 2012; Ricketts et al., 2014; Secura et al., 2010). The Contraceptive CHOICE Project worked to remove financial barriers as well as lack of patient awareness about LARC methods, while the Colorado Family Planning Initiative offered LARC

methods at no cost and other birth control options on a sliding fee scale (Ricketts et al., 2014; Secura et al., 2010). Both programs found that by eliminating cost as a barrier to contraception, more effective methods such as the IUD and implant were adopted by young women; 70% of young women aged 14-20 chose a LARC method as a result of the CHOICE project (Mestad et al., 2011), while the percent of young women aged 15-24 who chose a LARC method increased from 5% to 19% during the Colorado Family Planning Initiative (Ricketts et al., 2014).

Along with programmatic interventions to reduce unintended pregnancy, there have been several policies enacted through the federal and state governments, as well as through adolescent-focused medical and public health organizations to help young people prevent pregnancy. One of the most well-known and influential pieces of legislation to impact the reproductive health of adolescents and adults has been Title X, also known as the Public Health Service Act, which was passed by Congress in 1970 (Sonfield et al., 2014). This legislation created a network of federally-funded healthcare clinics that focus specifically on providing family planning services to men and women. In 2013, it was reported that 71% of the 8.3 million women who were served by a publicly funded provider received their care at a Title X facility (Frost, Zolna, & Frohwirth, 2013). Moreover, Title X-funded clinics have helped meet the contraceptive needs of women, which in 2013 resulted in 1 million unintended pregnancies being avoided (Frost et al., 2013).

Another important piece of legislation has been the ACA, passed in 2010 and enacted in 2012. The ACA mandates that contraception and associated family planning services should be considered a component of preventive services and covered with no cost sharing imposed on any woman (Becker & Polsky, 2015). This is significant because, historically insurance companies could charge clients for preventive services rendered and did not have to cover the cost of contraception nor treat contraception as a preventive service. For adolescent and young adult

women, the ACA also ensures that they can be included on their parents' insurance coverage until they are 26 years old, allowing young women more accessibility to reproductive health services and contraception, despite not all plans covering all contraceptive methods (Becker & Polsky, 2015).

In addition to these policy measures to reduce barriers to accessibility and cost of contraception, efforts have been made in the past few years to provide recommendations around young women's eligibility for contraception and to improve the quality of reproductive health services for all women, and specifically for young women. In 2010, the CDC adapted the World Health Organization's recommendations around contraceptive eligibility and released the *Medical Eligibility Criteria for Contraceptive Use* (MEC), which includes specific guidance on types of contraception that can be used for adolescent women (Curtis, Jamieson, Peterson, & Marchbanks, 2010; Kottke & Hailstorks, 2017). In 2007, the American College of Obstetricians and Gynecologists (ACOG) released a Committee Opinion on the acceptability of LARCs for adolescents, which has since been updated (Committee on Adolescent Health Care Long Acting Reversible Contraception Working Group & The American College of Obstetricians and Gynecologists, 2012). In 2014, the American Academy of Pediatrics also released recommendations for pediatricians that endorses incorporating sexual health screenings and contraception counseling into visits with adolescents (Committee on Adolescence, 2014). ACOG, AAP and the Society of Adolescent Health and Medicine have also released recommendations supporting confidential reproductive health and contraceptive services for adolescents (Ott & Sucato, 2014).

Additionally, during this time Centers for Disease Control and Prevention's (CDC) Division of Reproductive Health and the U.S. Department of Health and Human Services (DHHS) Office of Population Affairs (OPA) created a set of guidelines for providers of family planning

services to help these providers deliver quality reproductive and preventive health care. These guidelines, known as the Quality Family Planning (QFP) recommendations, aim to help providers by “defining a core set of family planning services for women and men, describing how to provide contraceptive and other clinical services, serve adolescents, and perform quality improvements, and encouraging the use of the family planning visit to provide selected preventive health services for women,” as recommended by the Institute of Medicine (IOM) (Gavin et al., 2014). As a result, by improving the quality of family planning services, there will be an improvement in reproductive health outcomes for both men and women (Gavin et al., 2014). In creating the recommendations, experts wanted to ensure that providers received the most comprehensive guidelines in providing family planning services and preventive services such as screenings for cancer (proximally related SRH) and screening for nutritional diet (distally related to SRH).

Nebraska Initiative: Adolescent Health Project

Implemented beginning in 2015, the Adolescent Health Project (AHP) is a community-wide, multi-pronged approach to reduce teen pregnancy and sexually transmitted infections (STIs) in Nebraska, and specifically in Douglas County, NE. While a particular theoretical framework was not used to develop the overall project, three frameworks were used to design an environmental scan, conducted in the Fall of 2013 by Dr. Melissa Tibbits at the University of Nebraska Medical Center’s (UNMC) College of Public Health (COPH) (Tibbits, 2014). Results from the environmental scan were subsequently used by the Women’s Fund to help guide the creation and implementation of the Adolescent Health Project.

The first framework used to guide the environmental scan and later AHP, is the Ecological Model developed by Bronfenbrenner (1977). The Ecological Model rests on the central tenant that individuals do not live in a vacuum and to change an individual’s behavior

one must focus not only on the individual, but the environment in which they live (Bronfenbrenner, 1977). Moreover, the Ecological Model suggests an individual's development is influenced by indirect and direct cultural, social, and economic factors at the microsystem, mesosystem, exosystem and macrosystem, and that these factors can act as either risk factors or protective factors (Bronfenbrenner, 1977). The microsystem encompasses characteristics and traits of the individual, including risk and protective factors leading to unintended pregnancy related to the individuals' sexual risk behaviors, such as non-use of contraception, attitudes and beliefs held by the individual about pregnancy, sex, or contraception, as well as non-sexual behaviors such as low academic performance and poverty (Bronfenbrenner, 1977; Corcoran, Franklin, & Bennett, 2000; Kirby, 2007). However, the microsystem interacts with the mesosystem or the interactions individuals have with others in proximal settings (Bronfenbrenner, 1977). In the context of sexual behavior leading to unintended pregnancy, the mesosystem includes the family, peers, school, and health care providers that individuals interact with closely that may influence the individual's behavior (Corcoran et al., 2000). The third sphere of influence, the exosystem includes those factors that indirectly influence the settings in which the individual interacts (Bronfenbrenner, 1977). This sphere can include accessibility and affordability of healthcare, particularly reproductive healthcare, as well as neighborhood and community factors such as low-economic opportunity (Corcoran et al., 2000). Finally, the fourth sphere of influence in the Ecological Model is the macrosystem, which includes the larger social, economic, and cultural contexts in which an individual lives and works (Bronfenbrenner, 1977). In the context of sexual behavior, the macrosystem can include the cultural norms and attitudes within a particular community or society around sharing sexual information with teens and young adults, the availability of comprehensive sex education in a community, or the belief that all people should wait till marriage to have sexual intercourse.

The second framework, the Intervention Spectrum, adopted definitions of prevention previously developed as part of a 1994 Institute of Medicine report^e (Institute of Medicine, 1994), suggests there are four levels of interventions, which include 1) universal prevention efforts (e.g. efforts targeted to the general public or an entire population), 2) selective prevention efforts (e.g. efforts targeted to individuals at risk of specific health outcomes), 3) indicated prevention efforts (e.g. efforts targeted to high-risk individuals), and 4) treatment efforts (e.g. efforts using standard treatment efforts to help individuals already afflicted with the disease) (National Research Council & Institute of Medicine, 2009). For example, universal prevention efforts are programs targeted to entire populations such as school-based comprehensive sex education programs while indicated prevention efforts are programs targeted to individuals at high risk of an adverse health outcomes such as siblings of teen mothers. The final framework used to guide the development of AHP was the Health Impact Pyramid (Frieden, 2010). This framework suggests that there are specific areas that can be targeted to have the most population-level impact, with the greatest impact being interventions that target socioeconomic factors and changing the context of a person's day-to-day life in order to help them make healthy decisions their first choice (Frieden, 2010).

Combined, these three models guided the environmental scan to focus on understanding: 1) sexual and reproductive health services being offered to adolescents and young adults in the Omaha community; 2) youth development services available for adolescents and young adults in Omaha; 3) current collaborations between organizations in the Omaha community to address STIs and teen pregnancy; 4) barriers to collaboration; 5) barriers to providing education and services relevant to STIs and/or teen pregnancy; 6) costs of STI testing

^e The 1994 IOM report, *Reducing Risks for Mental Disorders*, worked to define prevention and proposed a conceptual framework for reducing risk factors for mental disorders (Institute of Medicine, 1994).

and treatment and contraceptive appointments; 7) barriers to providing STI testing/treatment and/or contraception to young people; 8) characteristics of clients seen for STI testing/treatment or contraceptive services; and 9) barriers to providing sexual and reproductive health services for young people in Omaha (Tibbits, 2014).

Over the course of several weeks, interviews were conducted with representatives from various youth-serving organizations in Omaha, which provided sexual and reproductive health services and/or general youth development services. Interviews were also conducted with clinical providers within the Omaha-metro area. Information garnered during the interviews led researchers to several specific conclusions and subsequent recommendations, which were presented according to the Intervention Spectrum (Tibbits, 2014). In terms of universal preventive interventions, the environmental scan found that there were very few universal preventive interventions being offered in Omaha and most youth do not have the knowledge and skills they need to make decisions about pregnancy or STI prevention (Tibbits, 2014). As a result, researchers recommended implementing universal, evidence-based, comprehensive teen pregnancy and STI preventive intervention in all middle and high schools through a comprehensive sex education program (Tibbits, 2014). Additionally, researchers concluded that of those programs that did focus on STI and pregnancy prevention in Omaha, the majority focused on individual risk factors such as an individual's sexual behavior, peer relationships, or partner communication (Tibbits, 2014). Researchers recommended focusing efforts at the broader spheres of influence proposed by the Ecological Model, such as the exosystem and macrosystem, in order to give youth and families greater opportunities to achieve educational or economic goals and to change social norms around sexual risk taking (Tibbits, 2014). Finally, researchers found that much of the condom distribution in Omaha focused on the adult population and suggested that these efforts should be expanded to include providing free

condoms at youth-serving organizations and community settings where adolescents and young adults frequent (Tibbits, 2014).

Furthermore, researchers found that many of the programmatic efforts within Omaha were at the selective prevention level, indicating limited population-level impact and that many of the selective interventions could be divided into locally-developed versus evidence-based programs (Tibbits, 2014). From these findings, it was recommended that promising selective interventions underway in Omaha should be expanded within the agencies and providing support to build the capacity of agencies to implement programs should be given as well (Tibbits, 2014).

Moreover, the environmental scan revealed that clinical providers in Omaha were not promoting the use of long-acting reversible contraceptives among adolescents and young adults (Tibbits, 2014). As a result, it was recommended that the Women's Fund should work with clinical providers to improve dual use of LARCs and condoms among adolescents and young adults in the population, as well as subsidize the cost of LARCs, since evidence shows these contraceptive methods tend to be more expensive and may not be covered in full by health insurance plans (Tibbits, 2014).

Finally, researchers heard from participants that there is a perception among youth that healthcare providers do not meet their needs in terms of expedited service, confidentiality, and providing age-appropriate services (Tibbits, 2014). As a recommendation, it was suggested that there need to be improvements in the quality of sexual and reproductive healthcare provided in to adolescents and young adults in Omaha (Tibbits, 2014).

The environmental scan also revealed that while there are several interventions that serve pregnant and parenting adolescents in Omaha in order to prevent repeat pregnancies,

there were no known STI interventions being implemented in Omaha (Tibbits, 2014). As a result, researchers recommended that as part of the project, there needed to be efforts to increase collaborations between existing agencies and programs to implement prevention programs that aim to help youth at high risk for STIs (Tibbits, 2014).

Accessibility and information about STI testing and treatment facilities were also revealed as healthcare service gaps for young people in Omaha. Researchers found that youth have limited access to STI testing sites due to their physical location in Omaha and the hours in which they operate and many of the testing sites do not have rapid, same-day results available (Tibbits, 2014). It was recommended that additional STI testing sites be added throughout Omaha and advertisements should be expanded throughout the city through a coordinated media campaign to let youth know about these new sites (Tibbits, 2014).

Finally, the environmental scan also highlighted that agencies serving youth in the Omaha area required additional resources to build their capacity to serve youth and that collaboration between agencies was seen as a barrier to having positive, population-level health outcomes for adolescents and young adults living in Omaha (Tibbits, 2014). Based off these results, researchers recommended aiding agencies in their ability to serve youth in the community through decision-making and hiring of additional staff. To combat the issue of collaboration between agencies within the city, researchers also recommended that collaboration be a requirement of the funding mechanism to be included in the Adolescent Health Project to ensure different agencies enter the project with the intent to collaborate with other agencies in the community (Tibbits, 2014).

Based on the guidance from these three frameworks and the results of the 2013 environmental scan, the Women's Fund developed four overarching goals for the Adolescent

Health Project including: 1) Advocate for medically-accurate, age appropriate comprehensive sexuality education in all middle and high schools in Douglas County, NE utilizing the WISE (Working to Institutionalize Sex Ed) curriculum; 2) Build capacity for STD testing and treatment among clinical providers through a RFP process; 3) Launch a cutting-edge media campaign that is informed by teens, aimed at teens and tested by teens to increase awareness, promote safe sex practices and promote STD testing; and 4) Increase access to long-acting reversible contraceptives (LARCs). AHP officially launched in January 2015 with dissemination of a community-wide media campaign followed by the expansion of STD testing and treatment services among seven healthcare organizations in Douglas County, Nebraska in May 2015. In 2015, AHP also worked with the Omaha Public School System to help facilitate the adoption of a new Human Growth and Development curriculum that included comprehensive sex education. Stakeholders from each of the participating healthcare organizations met on a monthly basis to work collaboratively to develop a set of principles to guide the work of the AHP and have gone through several iterations since the start of the project in order to help guide the work of the stakeholders.

Contraceptive Access Project

From the 2013 environmental scan, the WFO learned that adolescents and young adults living in Omaha had limited access to sexual and reproductive health services throughout the metro area, providers were not regularly recommending LARC methods to young people, and that providers in the area perceived that young people were facing financial barriers to the contraceptive method of choice, were concerned about confidentiality, and did not feel providers had the skills to interact with this particular age group in a desirable manner (Tibbits, 2014). Based on these findings, in May and June of 2015, the WFO contracted with researchers at a local university to help guide the development of CAP through a study to understand

providers' opinions about providing LARCs. An online survey was administered to providers at four health systems located in Omaha, NE with a longer, in-depth survey completed by the medical director at each organization (Tibbits, 2015). Results from this study showed that less than half of providers in Omaha discussed reproductive life planning with young women during their visit and around half discuss contraception at all visits (Tibbits, 2015). Additionally, the study found that only 40% of providers always or often recommend IUDs and 31% of providers always or often recommend implants (Tibbits, 2015). When asked reasons behind not recommending LARCs, providers raised concerns about cost of the method, concerns about side effects, lack of training and experience, as well as legislation barring the provision of contraception in school-based health centers (Tibbits, 2015).

From this study, researchers recommended that an initiative to address access to long-acting reversible contraceptives for young people in the Omaha metro would need to address several issues including: 1) educating health care providers about parental consent and contraception; 2) educating health care providers about the safety and efficacy of LARC methods for adolescents and young adults; 3) training health care providers to safely insert and remove LARC methods; 4) changing legislation in Nebraska concerning contraception information and services in school-based health centers; 5) conducting internal assessments within organizations serving youth to determine how to permit additional reproductive life planning counseling; 6) using low-cost LARC options; 7) giving patients additional information about programs available to help women afford LARCs; 8) helping adolescents and young adults with Medicaid enrollment, if eligible, to help improve insurance coverage among young people; 9) subsidizing the cost of LARCs, particularly if insurance does not cover LARC methods or only partially covers the cost; and 10) gather information about reproductive health services to determine trends and changes over time (Tibbits, 2015).

Guided by the three frameworks used to develop AHP, the Ecological Model (Bronfenbrenner, 1977), Intervention Spectrum (National Research Council & Institute of Medicine, 2009), and the Health Impact Pyramid (Frieden, 2010), results from the environmental scan conducted in 2013 , and results from a 2015 study conducted with Omaha health care providers, the WFO worked with representatives from the Nebraska Department of Health and Human Services (NEDHHS) Title X program to design CAP. It was determined that CAP would be a multi-component initiative developed to create sustainable community-wide changes to increase access to SRH services for youth and young adults to reduce unintended pregnancy. To achieve this goal, the WFO determined three primary strategies to drive CAP including: 1) fostering sustainable partnerships between non-profit, state governmental organizations, and local Title X health clinics; 2) training and mentoring of clinical and non-clinical staff to increase the quality of SRH services; and 3) providing no-cost contraceptive method of choice to persons who visit any of the partnering Title X health clinics.

The primary target population for CAP includes youth and young adults aged 15 to 24 years old; however, at the outset of the project, stakeholders decided to expand the scope to include persons over the age of 25 in order to reach all persons in need of SRH services with the overarching goal to decrease unintended pregnancy. During Year 1 of CAP (July 1, 2016 – June 30, 2017), CAP included four Title X-funded organizations overseeing 17 individual Title X sites in Omaha, NE. At the beginning of Year 2 (July 1, 2017), CAP expanded statewide to include all 14 Title-X funded organizations comprising 40 separate Title X sites across the state of Nebraska. However, in February 2018, one organization removed itself from CAP leaving 13 Title X-funded organizations overseeing 38 separate Title X sites in Nebraska. The following describes CAP's three main strategies in further detail.

Fostering CAP Partnerships

The WFO, the NEDHHS Title X Program, and four local Title X health centers in Douglas County entered into a formal partnership in late 2015, prior to the launch of the project in July 2016. As part of partnership development, CAP stakeholders participated in a series of monthly meetings intended to foster collaboration between members at all levels of each organization. Representatives from each site attending the meetings could include the organization's chief executive officer, reproductive health providers, and outreach staff. Since confidentiality to SRH services is a concern for young people, CAP stakeholders wanted to ensure confidentiality of all services for youth under the age of 19 through the incorporation of Title X family planning clinics into the project (T. L. Cheng, Savageau, Sattler, & DeWitt, 1993; Ford, Bearman, & Moody, 1999; Klein et al., 1999; Lehrer, Pantell, Tebb, & Shafer, 2007; Reddy et al., 2002). Federal regulations stipulate that confidentiality of services is ensured to minors seeking care at a Title X clinic or to those minors who have Medicaid, but state laws govern confidentiality concerns for private insurance holders and vary from state to state (R. K. Jones & Boonstra, 2004).

Training and Mentoring to Increase the Quality of SRH Services

One of CAP's key strategies is to provide quality SRH services to persons of reproductive age through the promotion and adoption of several family planning best practices, including the QFP recommendations, the Family Planning National Training Center (FPNTC) Contraceptive Change package best practices, and evidence-based clinical practices for adolescent reproductive health services in addition to the established program requirements for Title X funded family planning projects (Romero, Middleton, Mueller, Avellino, & Hallum-Montes, 2015; Romero et al., 2017). The Centers for Disease Control and Prevention in conjunction with the OPA, created the *Quality Family Planning (QFP) Recommendations* to identify best practices in family planning service delivery and encourage providers to use a client-centered approach

during their interactions with Title X family planning users (Fowler, Gable, Wang, & Lasater, 2016; Gavin et al., 2014; Simmons, Guerra-Reyes, Meyerson, Adams, & Sanders, 2016).

The QFP recommendations proposed by the CDC and OPA are based on the Institute of Medicine's definitions of quality health care (Boise et al., 2003; Langston, Rosario, & Westhoff, 2010), and are grouped according to attributes of quality health care including: 1) Safety, 2) Effectiveness, 3) Client-centered approach, 4) Timeliness, 5) Efficiency, 6) Accessibility, 7) Equity, and 8) Value (for more detailed information see Appendix A). In addition to the QFP recommendations, the FPNTC produced the *Contraceptive Access Change Package* to aide Title X-funded organizations in the implementation of best practices for increasing access, uptake and continuation of highly effective contraceptive methods (FPNTC, 2017). These best practices include: 1) Stock a broad range of contraceptive methods; 2) Discuss pregnancy intention and support patients through evidence-informed, patient-centered counseling; 3) Develop systems for same-visit provision of all contraceptive methods, at all visit types; and 4) Utilize diverse payment options to reduce cost as a barrier for the facility and the patient (FPNTC, 2017).

To achieve implementation of best practices, CAP created a multi-component approach that includes: 1) trainings for providers from each Title X clinic about all contraceptive methods; 2) general educational trainings for Title X clinic staff and providers; 3) establishment of a CAP Mentor (CM) at each Title X clinic; and 4) one-on-one mentoring opportunities with a Contract Nurse Clinician (CNC) to ensure quality contraceptive counseling based the FPNTC Quality Family Planning counseling materials. The WFO determined that the inclusion of mentors as part of CAP was necessary to help participating organizations implement the necessary changes required as part of CAP to ensure reaching the overarching goal of improving quality sexual and reproductive health services. To fill the role of CAP Mentor and Contract Nurse Clinician, the WFO decided to utilize those practitioners who had a combination of either advanced

knowledge of family planning and reproductive health, extensive experience working in family planning and reproductive health and/or extensive experience as a practitioner. While it is not known whether the WFO utilized evidence-based literature to develop the inclusion of the CM and CNC, the Advancing Research and Clinical practice through close Collaboration Model (Melnyk & Fineout-Overholt, 2002) utilizes the concept of an Evidence-Based Practice (EBP) mentor, who is an advanced nurse practitioner with extensive knowledge about EBP, to provide mentorship and facilitate implementation of EBP to improve patient care (Fineout-Overholt, Melnyk, & Schultz, 2005). The underlying concept of the ARCC model is that through this mentorship, clinicians will change their beliefs of EBP and begin to implement EBP in their everyday interactions with patients resulting in better patient outcomes (Melnyk, 2012). In a study by Levin and colleagues (2011), researchers conducted a 2-group randomized controlled pilot trial to determine the effects of the ARCC model on nurses' EBP beliefs, implementation of EBP, group cohesion, productivity, job satisfaction and attrition rates (Levin, Fineout-Overholt, Melnyk, Barnes, & Vetter, 2011). This study found that those nurses involved in the ARCC group, which included a 16-week mentoring period, had higher implementation of EBP, firmer beliefs in EBP, more cohesion and less attrition (Levin et al., 2011).

To facilitate implementation of CAP at each of the four participating Title X clinics, a nurse on staff is designated as the CM. As part of this role, the CM acts as the point of contact for the project and oversees the implementation of quality SRH services at their site. The CM also observes patient and provider interactions to understand if clinicians are meeting FPNTC quality family planning guidelines. Observations of patient and provider interactions were conducted using a form called the Contraceptive Counseling Observation Tool created by CAP program evaluators based on the National Clinical Training Center for Family Planning's (NCTCFP) quality family planning contraceptive services application available online.

In addition to the CAP Mentor, a CNC visits with each site weekly to assure compliance with the project's objectives and quality assurance expectations either in person or over the phone. As part of their role, the CNC conducts trainings with new hires, as well as refresher trainings for current staff. The CNC also provides one-on-one training with providers around techniques for inserting LARCs, as well as techniques for providing quality contraceptive counseling based on the QFP guidelines. Since the start of the project, the CNC has made weekly visits to each site to conduct trainings with staff. The CNC has also participated in the mandatory trainings provided to CAP providers. These trainings offered to providers and staff ensures that patients are receiving best practices in family planning service delivery as stipulated by the FPNTC such as conducting patient-centered counseling, using reproductive life planning techniques, avoiding reproductive coercion, obtaining complete medical histories, and utilizing techniques specifically for conversing with youth and young adults (Family Planning National Training Center, 2017).

Trainings by the CNC are developed by the CNC based on the needs of the organization and the individual providers within an organization. However, the WFO encouraged all CNC's to utilize the Family Planning National Training Center and the National Clinical Training Center for Family Planning's materials during trainings and mentoring to help practitioners implement quality family planning best practices within their organization. For those providers who require additional mentoring on the insertion and removal of IUDs, the CNC uses a simulator purchased by the WFO to train each provider in-person. Additionally, after training with the simulator, the CNC provides in-person mentorship during real-time clinical visits as to aid the provider in difficult cases and to build the confidence and skills of the provider in a real-world situation. As with the other trainings, the CNC is responsible for providing the necessary mentorship in

insertion and removal of IUDs as needed on a case-by-case basis of the providers within their jurisdiction.

SRH providers and staff at each CAP-funded Title X health center also participate in semi-annual trainings conducted by the WFO, as well as through the National Title X Conference, which is held annually. Trainings conducted by the WFO, and also included in the National Title X Conference, have included information about LARC insertion methods, client-centered contraceptive counseling, billing and coding procedures, communicating with youth and young adults and sexual health, reproductive justice, trauma informed care, and how to create youth-friendly SRH services, competencies of quality family planning services such as reproductive justice, culturally-responsive approaches for counseling contraceptive options in diverse communities, inclusive sexual history intake and same-day placement of LARC methods, and supporting LGBTQ+ adolescents in family planning. The optional trainings offered to CAP sites by the WFO have included topics such as engaging males in SRH services, sex trafficking, and how to become an 'Askable Adult.'

Providing No Cost Contraception

The final CAP strategy is to provide no-cost contraception to persons of reproductive age who seek services at one of the participating Title X clinics. As research has shown, cost of contraception and lack of insurance coverage are two major barriers to accessing effective contraceptive methods, specifically Tier 1 methods such as IUDs and implants, which tend to be more expensive (M. Goodman et al., 2017; Parks & Peipert, 2016; Ricketts et al., 2014). Financial barriers were also found to be present amongst adolescents and young adults living in Omaha according to results from the 2013 environmental scan (Tibbits, 2014) and the 2015 study with health care providers in Omaha (Tibbits, 2015). As part of CAP, any person seeking contraception at one of the 14 Title X-funded organizations across Nebraska receives their

contraception free of charge. Patients are free to choose the contraceptive method that best suits their individual needs and receive quality patient-centered counseling from providers during their SRH visit. The fourteen participating Title X-funded organizations were encouraged to increase the number of Tier 1, Tier 2, and Tier 3 contraceptive methods kept on site in order to increase the provision of same-day contraception. The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) have categorized contraceptive methods into three tiers of effectiveness. The most effective methods including female and male sterilization, intrauterine devices (IUDs) and subdermal implants. The less effective methods include oral contraceptive pills, hormonal patch, hormonal ring, hormonal injection, diaphragm or cervical cap. The least effective methods include male and female condoms, spermicide, sponge, and withdrawal (Steiner et al., 2006; World Health Organization Department of Reproductive Health and Research, Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs, & INFO Project, 2007).

Conclusion

Research shows unintended pregnancy during adolescence and young adulthood can have a variety of adverse economic and health outcomes for the mother, their families, and their children including higher rates of maternal depression, intimate partner violence, low-birthweight infants, poorer behavioral, mental and physical health in children, as well as lower educational attainment in mothers, fathers and children (D. Cheng et al., 2009; D'Angelo et al., 2007; Gipson et al., 2008; Logan et al., 2007; Parks & Peipert, 2016). Despite overall declines in unintended pregnancy, barriers to family planning services and contraception continue to exist for women of reproductive age living in the United States, particularly among adolescent and young adults aged 15 to 24 (Kumar & Brown, 2016; Pritt et al., 2017).

Moreover, within the adolescent and young adult populations disparities in access to care and contraception of choice continue to exist among women of different races and ethnicities as well as socioeconomic status (Abma & Martinez, 2017; Dehlendorf, Rodriguez, et al., 2010; Finer & Zolna, 2011; Garbers et al., 2013; Mosher et al., 2012). While various initiatives have been implemented over the years from programmatic interventions to enactment of policies around family planning (Goesling et al., 2014; Kirby, 2007; Lopez et al., 2016; Lugo-Gil et al., 2016; Romero et al., 2015; Romero et al., 2017), more work needs to be done to help adolescent and young adult women successfully prevent unintended pregnancy. Systems change approaches that incorporate multiple strategies to tackling several barriers to family planning services and contraception are an important next step in the evolution of pregnancy prevention initiatives (T. Mueller et al., 2017; Romero et al., 2017). Along with the creation and implementation of these new approaches, it will be important to conduct research and evaluation to better understand how to improve these initiatives, as well as the overall impact they have on reducing barriers to family planning services and contraceptive methods.

While policy and systems-change interventions are becoming increasingly warranted as approaches to reducing barriers to SRH services for youth and young adults, there remains a gap in the literature around the impact these types of programs are having on the contraceptive behavior of young people. CAP is filling a gap in the current teen pregnancy prevention initiatives by utilizing a series of strategies including providing no-cost contraception in conjunction with implementation of quality family planning recommendations to reduce barriers to contraception for adolescent and young adult women.

Statement of Purpose

The overall purpose of this dissertation is to examine and understand barriers to SRH services for adolescents and young adults aged 15-24 in Nebraska and the role of CAP in

reducing those barriers. The dissertation has three specific aims which were addressed in three separate studies.

Aim 1: Examine whether different age racial/ethnic groups have different preferences for contraceptive methods with the implementation of CAP strategies.

Aim 2: Determine the baseline implementation of quality family planning best practices within all fourteen organizations that administer Title X services across Nebraska to further the current literature around the QFP recommendations and FPNTC Contraceptive Change package best practices.

Aim 3: Understand Title X clinical staffs' knowledge and attitudes about contraception for youth and young adults and their perceived barriers to providing a young person's contraceptive method of choice in Nebraska.

Chapter 2: Use of Long-Acting Reversible Contraceptives among Women Aged 15-24: Results from Year 1 of the Contraceptive Access Project

Introduction

Despite declines in rates of teen pregnancy and teen births in the U.S. over the past two decades, rates of pregnancy and subsequent births to adolescents and young adult women remain higher than in other developed countries (Martin, Hamilton, Osterman, Driscoll, & Mathews, 2017; Sedgh et al., 2015). Moreover, data from 2016 reveal racial and ethnic differences in birth rates among women aged 15-24 in the U.S. (Martin et al., 2018). While the birth rate among non-Hispanic White adolescents aged 15-19 was 14.3 per 1,000 women, the birth rate for non-Hispanic Black women and Hispanic women aged 15-19 was markedly higher at 29.3 and 31.9, respectively (Martin et al., 2018). These trends were similar for young adult women aged 20-24; non-Hispanic White women had a much lower birth rate (62.4) compared to non-Hispanic Black women (95.8) and Hispanic women (98.4) (Martin et al., 2018).

Research suggests that the majority of pregnancies to adolescent and young adult women aged 15-24 were unintended (i.e., they were unwanted or mistimed) (Santelli et al., 2003). In 2011, for example, of the 574,000 pregnancies to adolescent females aged 15-19, 75% were unintended, while among women aged 20-24, 59% of the 1.5 million pregnancies were unintended (Finer & Zolna, 2016). Further, there are known racial disparities in unintended pregnancy. Of the total number of pregnancies reported in 2011 among all women of reproductive age (15-44), 64% of non-Hispanic Black women and 56% of Hispanic women reported an unintended pregnancy compared to only 38% of non-Hispanic White women (Finer & Zolna, 2016).

Evidence shows that one of the most important predictors of unintended pregnancy among adolescents and young adults is contraceptive behavior, specifically the use of less

effective methods^f, non-use of a contraceptive method, and misuse or failure of a contraceptive method (Sonfield et al., 2014). In 2008, researchers found that of the 3.4 million unintended pregnancies, 5% of women used contraception consistently, whereas 41% used contraception inconsistently and 54% did not use contraception (Sonfield et al., 2014).

While use of Tier 1 methods of birth control including long-acting reversible contraceptive (LARC) methods such as intrauterine devices (IUDs) and implants among younger women have steadily increased over time, the percent of young women aged 15-24 using LARC methods to prevent pregnancy remains significantly lower in comparison to less effective, Tier 2 methods such as the birth control pill, patch, or ring, as well as the least effective, Tier 3 methods such as withdrawal (Kavanaugh & Jerman, 2018). Recent YRBS data from 2017 show that among sexually active non-Hispanic Black and non-Hispanic White females aged 15-19, the percent using a prescription birth control method has increased since 2015 (20.5% to 23.7% and 39.2% to 43.9%, respectively), but has actually decreased among sexually active Hispanic females aged 15-19 from 39.2% to 43.9% (Witwer et al., 2018). Reported use of the IUD has increased between 2015 and 2017 for sexually active female high school students in all racial/ethnic groups: among non-Hispanic White females the percent using IUDs or implants increased from 3.9% to 6.2%, while use among non-Hispanic Black females increased from 3.7% to 3.9% and from 4% to 4.4% among Hispanic females (Kann et al., 2016; Witwer et al., 2018).

Additionally, data from the 2006-2010 National Survey of Family Growth (NSFG), revealed that non-Hispanic Black women and young women aged 15-24 were significantly less

^f The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) have categorized contraceptive methods into three tiers of effectiveness. The most effective methods including female and male sterilization, intrauterine devices (IUDs) and subdermal implants. The less effective methods include oral contraceptive pills, hormonal patch, hormonal ring, hormonal injection, diaphragm or cervical cap. The least effective methods include male and female condoms, spermicide, sponge, and withdrawal. (Steiner et al., 2006; World Health Organization Department of Reproductive Health and Research et al., 2007)

likely to use a contraceptive method at last sexual intercourse despite not wanting (more) children (Grady et al., 2015). This trend was also found in analysis of the 2011-2013 NSFG, in which almost two-thirds (65%) of non-Hispanic White women were found to currently be using a contraceptive method compared to 57% of Hispanic women and 58% of non-Hispanic Black Women (Daniels et al., 2014). Moreover, historically Hispanic and Black women are shown to be more likely than White women to use condoms or sterilization to prevent pregnancy (Dehlendorf et al., 2011; Frost & Darroch, 2008; J. Jones, Mosher, & Daniels, 2012).

Past research suggests that ineffective use of a contraceptive method could be due to misconceptions about the contraceptive method, low self-efficacy, and perceived barriers such as low support for the contraceptive method from partners (Santelli et al., 2003). Other barriers to use of effective contraceptive methods among young people include: lack of knowledge and awareness among youth, parents, and providers of contraception in general or appropriateness of contraceptive methods for young people; negatives attitudes and beliefs among young people, parents, and providers about the acceptability of contraception for young people; and lack of affordability and accessibility of a young person's contraceptive method of choice (D. L. Eisenberg et al., 2013; M. Goodman et al., 2017; Kumar & Brown, 2016; Madden et al., 2015; Pritt et al., 2017; Tessler & Peipert, 1997). For example, in a study by Coles and colleagues (2011), researchers found that of those who reported not using a form of contraception at time of conception, difficulty obtaining contraception and partner pressure to not use birth control were significantly associated with either a mistimed or unwanted pregnancy (Coles et al., 2011). Several studies have shown that contraceptive behavior in young women was related to the shared contraceptive experiences of those in their social networks (Anderson et al., 2014; Yee & Simon, 2010). Young women who knew someone in their social network who had a positive or

negative experience with a LARC were more or less likely to use LARCs as a result (Anderson et al., 2014; Benson et al., 2012).

Two initiatives within the past decade, the Colorado Family Planning Initiative and the Contraceptive CHOICE Project in St. Louis, have worked to reduce teen pregnancy by addressing barriers to contraception and SRH services for women at risk of unintended pregnancy (Peipert et al., 2012; Ricketts et al., 2014; Secura et al., 2010). Both programs found that by eliminating cost as a barrier to contraception, more effective methods such as the IUD and implant were adopted by young women; 70% of young women aged 14-20 chose a LARC method as a result of the CHOICE project (Mestad et al., 2011), while the percent of young women aged 15-24 increased from 5% to 19% during the Colorado Family Planning Initiative (Ricketts et al., 2014).

In 2015, the Women's Fund of Omaha (WFO), along with community stakeholders, launched the Adolescent Health Project (AHP), a community-wide, multi-pronged approach to reduce teen pregnancy and sexually transmitted infections (STIs) in Nebraska, and specifically in Douglas County, NE. Guided by three separate frameworks[§], as well as an environmental scan conducted by researchers at a local university in 2013, AHP comprises four strategies: 1) Advocating for medically-accurate, age appropriate comprehensive sexuality education in all middle and high schools in Douglas County, NE utilizing the WISE (Working to Institutionalize Sex Ed) curriculum; 2) Building capacity for STD testing and treatment among clinical providers through a RFP process; 3) Launching a cutting-edge media campaign that is informed by teens, aimed at teens and tested by teens to increase awareness, promote safe sex practices and promote STD testing; and 4) Increasing access to long-acting reversible contraceptives (LARCs).

[§] The three frameworks include: Ecological Model (Bronfenbrenner, 1977), the Intervention Spectrum developed by the Institute of Medicine (IOM) and National Research Council (National Research Council & Institute of Medicine, 2009), and the Health Impact Pyramid (Frieden, 2010).

In the state of Nebraska, data from 2014 show the birth rate among women aged 15-19 year was 22.2 births per 1,000 women aged 15-19, while the birth rate for women aged 20-24 was 82.8 births per 1,000 women aged 20-24 (Hamilton et al., 2015). Additionally, despite having lower rates of teen pregnancy and teen births than the U.S., data from 2010 show that in Nebraska 43% of all pregnancies among women 15-44 years old were unintended (Kost, 2015). From the Nebraska epidemiologic data on adolescents and young adult birth and pregnancy rates, coupled with the results from a 2013 environmental scan conducted by local researchers assessing current sexual and reproductive health services in Omaha, in 2016, the Women's Fund of Omaha launched the Contraceptive Access Project (CAP). CAP is a multi-component initiative developed to create sustainable community-wide changes to increase access to SRH for youth and young adults ages 15 to 24 to reduce unintended pregnancy across Nebraska.

CAP encompasses three main strategies including: 1) fostering sustainable partnerships between non-profit, state governmental organizations, and local Title X health clinics; 2) training and mentoring Title X-funded clinical and non-clinical staff to increase the quality of SRH services; and 3) providing no-cost contraceptive method of choice to persons who visit any of the partnering Title X health clinics. Through the implementation of these strategies, CAP promotes systemic change amongst Title X family planning health centers in Nebraska to ensure persons of reproductive age, and specifically youth and young adults, have access to quality, affordable SRH services to prevent unintended pregnancy. The aim of this study was to examine whether different age groups and racial/ethnic groups have different preferences for contraceptive methods with the implementation of CAP strategies. We hypothesized that during Year 1 of CAP (July 2016 to June 2017), adolescents and young adults will adopt effective, Tier 1 contraceptive methods (e.g. IUD and implant), regardless of race/ethnicity or age. Specifically, we aimed to address the following research questions:

1. *During Year 1 of CAP, does the use of a Tier 1 method differ between women aged 15-19 compared to women aged 20-24?*
2. *During Year 1 of CAP, does the use of a Tier 1 method differ between women in different racial/ethnic groups?*
3. *When adjusting for each of the predictors (e.g. age, race/ethnicity), is there an independent association with use of Tier 1 methods?*

Methods

Data Collection and Analysis

Clients at each of the Title X-funded organizations were included in this study if they: 1) received family planning or reproductive health services from one of the four Title X-funded organizations participating in Year 1 of CAP; 2) were between the ages of 15 and 24 years old; 3) and reported use of a contraceptive method at least once between July 2016 and June 2017.

Demographic information, date of visit, and contraceptive method of choice were obtained by each Title X-funded organization either at the time of the clients' clinic visit or during an on-site pharmacy visit to fill a prescription from electronic health records. De-identified data were submitted quarterly to the CAP Evaluation Team between July 2016 and June 2017.

Demographic information included age, race (e.g. White, Black or African American, American Indian or Alaska Native, Asian, or Other/multiple races) and ethnicity (e.g. Hispanic or Latino, non-Hispanic or Latino). Contraceptive methods offered at no-cost through CAP include progestin-Intrauterine Device (IUD), Copper IUD, and subdermal implant, combination oral contraceptives, progestin-only oral contraceptives, and hormonal oral contraceptives, transdermal contraceptive patch, vaginal contraceptive ring, hormonal contraceptive injection (Depo-Provera), diaphragm/cervical cap, spermicide, withdrawal, cycle beads, or natural family planning. The study protocol was reviewed by the University of Nebraska Medical Center Institutional Review Board and determined to be exempt since the study relied on secondary data collected for evaluation purposes.

To understand the contraceptive behavior of women included in the study, the most recent client data collected from Title X sites were used to determine contraceptive method for a particular client, since some clients returned multiple times for services throughout the year. For purposes of analysis, contraceptive methods were divided into Tiers of effectiveness according to guidelines from the Centers for Disease Control and Prevention (Curtis, 2016; Steiner et al., 2006; Trussell, 2011; World Health Organization Department of Reproductive Health and Research et al., 2007) including: Tier 1 (e.g. progestin-only IUD, Copper IUD, and subdermal implant), Tier 2 (e.g. combination oral contraceptives, progestin-only oral contraceptives, and hormonal oral contraceptives, transdermal contraceptive patch, vaginal contraceptive ring, diaphragm/cervical cap, hormonal contraceptive injection) and Tier 3 (spermicide, withdrawal, cycle beads, or natural family planning). Condoms have not been included in Tier 3 since Title X requires that all patients receive/have access to condoms at their visit. No method was calculated as the absence of contraceptive method listed by a client. However, it should be noted that clients were not assessed for whether they were using a contraceptive method prior to implementation of CAP. As such, some clients categorized as 'no method' could in fact be using a form of long acting birth control such as an IUD or implant but obtained that form of contraception prior to the start of the project. Since the primary outcome of interest was use of a Tier 1 method, those who were calculated as 'no method' were excluded from analysis. We then combined Tier 2 and Tier 3 methods to differentiate from Tier 1 method during analysis.

Women aged 25 years and older were also excluded since the target population of interest are women between the ages of 15 and 24. To understand nuances in contraceptive behavior within this population, age was further categorized into 15-19 year olds and 20-24 year olds (Mestad et al., 2011). Racial groups were condensed into three categories including White,

Black or Other/Multiple races because of small numbers in several of the racial group categories. Race and ethnicity were then combined into a traditional race/ethnicity variable (e.g. Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Other or Multiple races, and Hispanic). Before beginning analysis, we excluded any observation that was missing any of the study variables.

Descriptive statistics including frequencies, percentages, means and standard deviations were used to describe demographic characteristics of the sample, as well as Tiers of contraceptive methods. To measure the association of contraceptive method (Tier 1 vs. Not Tier 1) by age group (15-19 years old or 20-24 years old), and by race/ethnicity (Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Other or Multiple races, and Hispanic) a bivariate analysis was performed using Pearson chi-square test. Simple logistic regression was used to estimate unadjusted odds ratios for the relationship between use of a Tier 1 contraceptive method (Tier 1 vs. Not Tier 1) and demographic characteristics (e.g. age, race/ethnicity). Due to the small number of predictors, all variables examined during bivariate analyses were then used in multivariable logistic regression model regardless of significance level from the bivariate analyses. The multivariable logistic regression examined the strength to which age predicts use of a Tier 1 method when controlling for race/ethnicity, as well as the strength to which race/ethnicity predicts use of a Tier 1 method when controlling for age. Hosmer-Lemeshow statistics was calculated to assess model fit (Hosmer & Lemeshow, 1989).

Results

During Year 1, there were 1,711 unique clients who received SRH services from one of the four participating Title X-funded organizations. Of these, 832 reported use of a contraceptive method at least once between July 2016 and June 2017 and were included in the analysis. All participants were female and between the ages of 15 and 24, with a mean age of 20 (SD=2.50). Of the 832 clients, the majority were aged 20-24 (61%), non-Hispanic White (44%), and reported using either a Tier 2 or Tier 3 method (69%) (Table 1). Bivariate analysis showed no

significant association between use of a Tier 1 method ($p=0.54$) during Year 1 of CAP and age (i.e. whether a woman was a younger adolescent aged 15-19 or a young adult aged 20-24). However, bivariate analyses showed a significant association between race/ethnicity and use of a Tier 1 method ($\chi^2=18.89$, $p<0.001$). In multivariable logistic

Table 1: Demographics of Study Participants (N=832)

		N (%)
Age Group	15-19	325 (39%)
	20-24	507 (61%)
Tier	Tier 1 Method	256 (31%)
	Not a Tier 1 Method	576 (69%)
Race/ethnicity	Non-Hispanic White	369 (44%)
	Non-Hispanic Black	114 (14%)
	Non-Hispanic Other or Multiple races	59 (7%)
	Hispanic	290 (35%)

regression, race/ethnicity was the stronger predictor of use of a Tier 1 method when controlling for age ($\chi^2=18.37$, $p<0.001$). Data show that among women of different racial/ethnic groups, the odds Hispanic women used a Tier 1 method were 49% higher than non-Hispanic White women (OR 1.49, 1.07 - 2.06). In contrast, non-Hispanic Black women were 38% less likely to have reported use of a Tier 1 method compared to non-Hispanic White women. Non-Hispanic women of other or multiple races were 52% less likely to use a Tier 1 method compared to non-Hispanic White women (Table 2). We found the model to have good fit ($\chi^2=19.96$, $p<0.001$).

Table 2. Unadjusted and Adjusted Odds Ratios of Demographic Characteristics and Reported Use of Tier 1 Method in Year 1 of the Contraceptive Access Project (CAP).

Demographic Characteristic	Unadjusted OR (95% CI)	P-value	Adjusted OR ^a (95% CI)	P-value
Age		0.54		0.54
15-19	0.91 (0.67-1.23)		0.91 (0.67-1.24)	
20-24	1.00		1.00	
Race/Ethnicity		<0.001		<0.001
Non-Hispanic White	1.00		1.00	
Non-Hispanic Black	0.63 (0.38 – 1.04)		0.63 (0.38 – 1.04)	
Non-Hispanic Other or Multiple races	0.48 (0.24-0.98)		0.48 (0.24-0.98)	
Hispanic	1.48 (1.07 – 2.05)		1.49 (1.07 – 2.06)	

^a Adjusted for the effect of all covariates

Discussion

The Contraceptive Access Project (CAP) is a multi-component initiative geared towards reducing barriers to SRH services for young people through a series of strategies that include providing no-cost contraception and improving accessibility to quality family planning services. At the outset of the study, we hypothesized that during Year 1 of CAP (July 2016 to June 2017), adolescents and young adults will adopt effective, Tier 1 contraceptive methods (e.g. IUD and implant), regardless of race/ethnicity or age. We found no differences in use of Tier 1 methods for women within the target population of 15 to 24 years old. This finding contradicts other studies conducted that have found age to be a significant predictor of whether a woman uses a long-acting reversible contraceptive (Hoopes, Teal, Akers, & Sheeder, 2018; Kramer, Higgins, Godecker, & Ehrental, 2018; Mestad et al., 2011). For example, the Contraceptive CHOICE project found that younger adolescents 14-17 were slightly more likely to choose a LARC method compared to women aged 18-20 and that among the adolescents who chose a LARC method, younger women were more likely to choose the implant while older adolescent women were more likely to choose an IUD (Mestad et al., 2011). In a more recent study, researchers found that adolescents 15-19 were less likely to use LARCs compared to adults 25-34 years old and when factoring in socioeconomic status and reproductive health characteristics, young

women aged 20-24 became more likely to use LARCs compared to 25-34 year olds (Kramer et al., 2018). Additionally, our findings do not reflect those found in Kramer et al. (2018) in which young adults aged 20 to 24 were found to be more likely to use Tier 1 methods than adolescents aged 15 to 19.

There are several potential reasons to explain why we did not find an association between age and use of Tier 1 methods after this first year of CAP. First, it is possible that young people in the Omaha area did not yet know about CAP and therefore continued to perceive Tier 1 methods as unaffordable, which the literature tells us cost is a major barrier to young people obtaining contraception (Kavanaugh, Frohwirth, et al., 2013; Peipert et al., 2012; Teal & Romer, 2013). Second, minors in the Omaha area may continue to be concerned with confidentiality of services despite the fact that the Title X organizations implementing CAP have policies in place to ensure family planning services remain confidential for young people. Finally, we might not have seen an association between Tier 1 use and age because young people in the Omaha metro may have limited knowledge and awareness about birth control methods in general. Research shows that lack of knowledge and awareness, lack of accurate information, and misconceptions about contraceptive methods can all impact the contraceptive behavior of young people (Coles et al., 2011; Khurana & Bleakley, 2015; Kirby, 2007). As a result, one or more of these issues may be playing an important role in constituting the contraceptive behavior of adolescents in Omaha.

While age was not found to be predictive of Tier 1 use, we did find that race/ethnicity was a predictor of Tier 1 use. This finding is similar to other research that has shown race/ethnicity to be a significant predictor of whether a woman uses a Tier 1 method such as an IUD or implant (Daniels et al., 2014; Dehlendorf et al., 2011; Dehlendorf, Park, et al., 2014; Frost & Darroch, 2008; Hoopes et al., 2018; Jackson, Karasek, Dehlendorf, & Foster, 2016; J. Jones et

al., 2012; Kavanaugh, Jerman, & Finer, 2015; Kramer et al., 2018; Mestad et al., 2011). We found that Hispanic women are significantly more likely than non-Hispanic White women to use Tier 1, which is contradictory to previous studies showing Hispanic and Black women are more likely than White women to use either the least efficacious method, condoms, or the most efficacious method, female sterilization (Dehlendorf et al., 2011; Frost & Darroch, 2008; J. Jones et al., 2012). Our findings align with studies examining data collected from the National Survey for Family Growth between 2006 and 2013 in which Hispanic women were found to be more likely to use LARCs (Daniels et al., 2014; Dehlendorf, Park, et al., 2014; Kavanaugh et al., 2015). One study found that among women of reproductive age (15 – 44 years old), Hispanic women are significantly more likely to currently use LARCs compared to non-Hispanic Black women (Daniels et al., 2014). Another study found that use of LARCs among Hispanic women aged 15-44 significantly increased between 2008 and 2013 (Kavanaugh et al., 2015). Similarly, in another study by Dehlendorf et al. (2014), among women using contraception, younger Hispanics aged 15-19 were significantly more likely to use a highly effective method of birth control (e.g. IUDs, Implants, and female or male sterilization) rather than a moderate (e.g. pills, patch, ring, and injection) or less-effective method (e.g. condoms, diaphragms/sponges, spermicides).

There are several possibilities to explain our study's findings concerning Hispanic women. First, our findings could be related to the acculturation^h status of the women included in our study, since research has shown that acculturation status of young Hispanic and Latino women has an inverse relationship on sexual risk behavior and contraceptive use within this population (Aneshensel, Becerra, Fielder, & Schuler, 1990; Cubbin et al., 2002; Dobry, Rojas-Mendez, Sanchez, & Reddy, 2018; Marin, Tschann, Gomez, & Kegeles, 1993; Minnis & Padian,

^h Acculturation is considered the process through which a person assimilates to a non-native culture (Berry & Sam, 1997)

2001; Romo, Berenson, & Segars, 2004; Sabogal, Perez-Stable, Otero-Sabogal, & Hiatt, 1995). In a 2018 study by Dobry et al. acculturation status was found to be related to knowledge of LARCs among Hispanic adolescents, with less acculturated individuals being more likely to have heard of an IUD compared to more acculturated Hispanic adolescents (Dobry et al., 2018). Moreover, in a another study by Romo and colleagues (2004), results showed that inconsistent use of contraception was higher among young, English-speaking Latino women, or those who are more acculturated, compared to less-acculturated young, Latino women (Romo et al., 2004).

Second, it is possible that the clinical and non-clinical staff at the Title X sites in our study are more adept at interfacing with Hispanic and Latino youth whether through reduced language barriers or higher cultural competence among staff. Research has shown that cultural competence is an important factor to consider in the treatment and care of individuals because it can eliminate health care disparities (Institute of Medicine & Committee on Understanding Eliminating Racial Ethnic Disparities in Health Care, 2003; Williams & Rucker, 2000). Additional analysis with location as a variable could indicate whether the organization is having an impact on contraceptive behavior or is mediating the effects of race/ethnicity.

Finally, this finding could also signify that CAP has reduced barriers for Hispanic and Latino youth in terms of accessing contraception, as well as SRH services in general. The availability of no-cost contraception could have had a larger effect on Hispanic youth than non-Hispanics, especially if those accessing services are undocumented or uninsured. Data suggest that undocumented immigrants are more likely to be impoverished and less likely to have access to public or private health insurance (Hacker, Anies, Folb, & Zallman, 2015; Wallace, Torres, Sadegh-Nobari, & Pourat, 2013). As a result, having access to no-cost contraception and reproductive health services if under the age of 24, could be an appealing option for young immigrant Hispanic women. Moreover, research suggests that confidentiality of services plays a

role in whether young people, particularly adolescents, seek our family planning services and obtain contraception (Copen et al., 2016; Ford et al., 2004; Kumar & Brown, 2016). In one study conducted by the Child Trends research organization, researchers found that young Latina women were concerned with their family finding out that they sought sexual and reproductive health services for fear of being judged negatively (Caal et al., 2012). Since CAP offers LARCs at no-cost for adolescents and young adults aged 15 to 24, it is possible that being able to obtain a birth control option undetectable to parents, guardians, or significant others played a significant role in the adoption of LARCs among Latino youth compared to non-Hispanic White and non-Hispanic Black adolescents and young adults included in the study.

Limitations

Despite positive findings, addressing the limitations of our study is warranted. First, since this study is cross-sectional, we can only assume association with CAP implementation and cannot assume results have been caused by implementation of CAP. Second, our study sample consists of individuals from Title X-funded organizations, which tend to serve low-income and uninsured women. Third, we were limited to analyzing secondary data, which meant only a few predictor variables could be included in the multivariable logistic regression model, making it not as robust. There are several characteristics found in previous studies that could be confounding the effect of ethnicity within our sample population such as income level, educational attainment, length of time in the U.S., or level of acculturation. Additionally, we do not capture whether young women were on a method of birth control prior to the start of CAP. As a result, our data could be skewed to represent only new users of LARC methods rather than existing users or those who are maintaining their birth control method. Additionally, our study is limited to only looking at Tier 1 methods, rather than comparing between Tiers and we did not

compare older adult women to the adolescent and young adults included in our target population. Both analyses can be pursued in greater detail in future studies.

Conclusions

In the first year of the Contraceptive Access Project we have seen an interesting finding among Hispanic women in the reported use of LARC methods. As CAP continues to be implemented in the state of Nebraska, it will be important to monitor whether these trends hold steady or whether women of different racial/ethnic groups begin to adopt Tier 1 methods at a greater rate than Hispanic women. This study contributes to the literature that Title X funded organizations are a way to help low-income, uninsured women in accessing sexual and reproductive health services and contraceptives that may otherwise be unattainable. Additionally it contributes to the evidence that removing cost as a barrier can have significant impact on young women's access to the contraceptive method of their choice. Moreover, seeing the uptake in Tier 1 methods among young Hispanic women may indicate there is a need for these barrier-reducing programs in areas with large Hispanic populations. Findings from this study can be utilized by other states across the country with growing Hispanic populations creating policies or programs to increase access to birth control for young Hispanic women.

Chapter 3: Implementation of Quality Family Planning Best Practices in Title X-funded Sites across Nebraska

Introduction

The Title X National Family Planning Program (Title X) is a federally-funded program to provide family planning and other related preventive health care services to both women and men of reproductive age, including adolescents (Fowler et al., 2016). Administered by the U.S. Department of Health and Human Services, Office of Population Affairs (OPA), Title X-funded sites deliver high quality family planning services including contraception education and counseling, contraceptive supplies, breast and cervical cancer screening, pregnancy diagnosis and counseling, and HIV/STI testing, referral, and education (U.S. Department of Health and Human Services (US DHHS) & Office of Population Affairs (OPA), 2014). In 2015, 90% of clients at Title X clinics were female, 67% were adolescents and young adults, and 66% were considered low-income at or below the poverty level (Fowler et al., 2016).

In the state of Nebraska, the setting of the current study, over 50% of women aged 13-44 (N=389,110) are in need of contraceptive services, of which 16% are under the age of 20, 41% are below 250% of the federal poverty level, and 17% are either non-Hispanic Black or Hispanic women (Frost, Frohwirth, & Zolna, 2016). Generally, and specifically in Nebraska, Title X organizations provide reproductive health care to predominantly low-income women that in many cases would not be able to access reproductive health care otherwise.

Title X-funded organizations follow the *Program Requirements for Title X Funded Family Planning Projects*, which dictates the guidelines that all Title X-funded sites should adhere to when delivering services. In addition to these requirements, the Centers for Disease Control and Prevention in conjunction with the OPA, created the *Quality Family Planning (QFP) Recommendations* to identify best practices in family planning service delivery and encourage

providers to use a client-centered approach during their interactions with Title X family planning users (Fowler et al., 2016; Gavin et al., 2014; Simmons et al., 2016). The QFP recommendations proposed by the CDC and OPA are based on the Institute of Medicine's definitions of quality health care (Boise et al., 2003; Langston et al., 2010), and are grouped according to attributes of quality health care including: 1) Safety, 2) Effectiveness, 3) Client-centered approach, 4) Timeliness, 5) Efficiency, 6) Accessibility, 7) Equity, and 8) Value (for more detailed information see Appendix A).

In addition to the QFP recommendations, the Family Planning National Training Center (FPNTC) produced the *Contraceptive Access Change Package* to aide Title X-funded organizations in the implementation of best practices for increasing access, uptake and continuation of highly effective contraceptive methods (FPNTC, 2017). These best practices include: 1) Stock a broad range of contraceptive methods; 2) Discuss pregnancy intention and support patients through evidence-informed, patient-centered counseling; 3) Develop systems for same-visit provision of all contraceptive methods, at all visit types; and 4) Utilize diverse payment options to reduce cost as a barrier for the facility and the patient (FPNTC, 2017).

Quality family planning services are essential to helping women avoid unintended pregnancy, which as of 2011, accounted for almost half of pregnancies in the United States (Finer & Zolna, 2016). For example, among female family planning users seen at Title X-funded sites in 2015, 3.2 million were at risk of an unintended pregnancy, and of those 70% received either a Tier 1 contraceptive method (e.g. intrauterine device, implant, or sterilization) or a Tier 2 contraceptive method (e.g. injectable, vaginal ring, contraceptive patch, combined and progestin-only pills, or diaphragm with spermicidal cream/jelly) (Fowler et al., 2016; World Health Organization Department of Reproductive Health and Research et al., 2007). In the state of Nebraska, there were 3,480 teens served at Title X-funded clinics in 2014, which averted 800

unintended pregnancies, 400 unintended births, and 300 unintended abortions (Frost et al., 2016). By helping young women avoid having an unintended pregnancy, Title X organizations are helping prevent adverse health outcomes associated with unintended pregnancies and resulting births such as delayed initiation of prenatal care and premature infants (Frost et al., 2016; Hellerstedt et al., 1998).

Despite dissemination of the 2014 QFP recommendations, there has been limited research conducted on implementation of these recommendations. One 2015 study found that there has been inconsistent adoption of the recommendations at federally funded clinics (Bornstein, Carter, Gavin, & Moskosky, 2015), while another study found that misalignment with current organizational practices as well as professional values and experience can impede adoption of the QFP recommendations (Simmons et al., 2016). Moreover, to date there have been no published, in-depth evaluations of the FPNTC Contraceptive Change package best practices.

We conducted a convergent mixed methods study to determine the baseline implementation of quality family planning best practices within all fourteen organizations that administer Title X services across Nebraska and to further the current literature around the QFP recommendations and FPNTC Contraceptive Change package best practices. The convergent mixed methods design promotes collection of both qualitative and quantitative data simultaneously in order to “obtain different but complementary data on the same topic” (Morse, 1991, p. 122). The following questions guided this study:

1. *How are best practices being implemented at each of the Title X organizations across Nebraska?*
 - a. *How many CAP grantees are stocking all of the FDA-approved contraceptive methods on site? If sites are not stocking all methods, how many are they able to stock? Why are they unable to stock all methods?*

- b. *How many clinic staff and non-clinical staff are considered proficient in topics related to discussing pregnancy intention and supporting patients through evidence-informed, patient-centered counseling?*
- c. *How many CAP grantees are able to provide methods at each Tier during the patients visit on the same day? If sites are not providing same-day methods, why not?*
- d. *Within CAP grantees, what percentage of clinical staff are knowledgeable that contraceptive methods are no cost for patients of all ages who present without insurance? Within CAP grantees, how many non-clinical staff are knowledgeable that contraceptive methods are no cost for patients of all ages who present without insurance?*

2. *What are barriers to implementing family planning best practices?*

Materials and Methods

Study Setting

All Title X sites included in this study also participate in the Contraceptive Access Project (CAP), which was launched in 2016 by the Women’s Fund of Omaha. CAP was developed to create sustainable community-wide changes to increase access to SRH services for youth and young adults ages 15 to 24 to reduce unintended pregnancy in Omaha, Nebraska (Omaha CAP). CAP is part of a larger SRH system change initiative called the Adolescent Health Project. In July 2017, CAP was expanded statewide to encompass all Title X-funded organizations in Nebraska (Statewide CAP). CAP’s three main strategies including: 1) fostering sustainable partnerships between non-profit, state governmental organizations, and local Title X health clinics; 2) training and mentoring Title X-funded clinical and non-clinical staff to increase the quality of SRH services; and 3) providing no-cost contraceptive method of choice to persons who visit any of the partnering Title X health clinics.

As part of CAP’s strategy to improve the quality of family planning services in Title X facilities across Nebraska, CAP created the CAP Mentor (CM) and Contract Nurse Clinician (CNC) to provide support at each of the statewide Title X-funded organizations. The CM is an employee at one of the organizations administering Title-X services across Nebraska and acts as the point

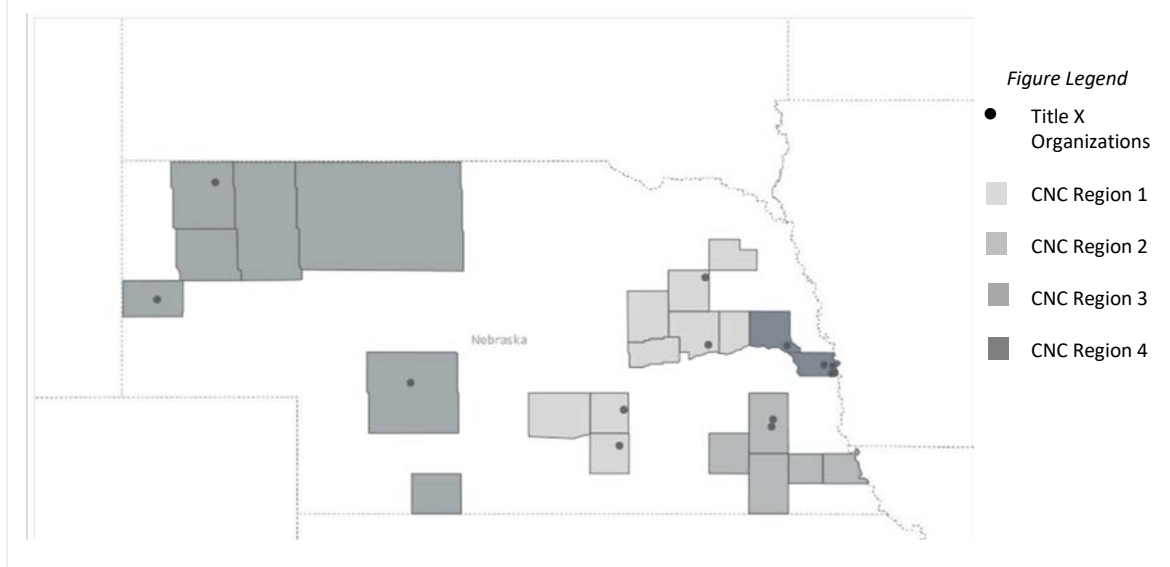
of contact for the project and oversees the implementation of quality SRH (SRH) services at each site within their organization. The CNC is charged with overseeing the implementation of CAP at Title X-funded organizations within a specific region of Nebraska. In this role, the CNC is responsible for observing clinical, educational, and counseling practices to ensure compliance with the best practices, as well as to provide training and technical assistance to specific sites based on the observed need or request from the CM. Additionally, as part of the second strategy, CAP began promoting the adoption of several family planning best practices, including the QFP recommendations, FPNTC Contraceptive Change package best practices, and evidence-based clinical practices for adolescent reproductive health services (Romero et al., 2015) at the beginning of the second year of the project (Fall 2017).

Study Participants

In July 2017, CAP was expanded from Omaha-only to include all fourteen Title X-funded organizations across the state of Nebraska¹. In total, CAP was designed to have fourteen designated CAP Mentors (one at each Title X-funded organization) and four designated Contract Nurse Clinicians (one for each designated region in Nebraska) (Figure 1). All CNCs and CAP Mentors involved in CAP at the time of data collection were asked to participate in data collection (October and November 2017). While all fourteen CMs were participating in CAP at the time of data collection, only two of the four CNCs had contractual agreements in place resulting in data representing only two regions in Nebraska – Region 3 and Region 4.

¹In July 2017, Nebraska had 14 Title-X funded organizations which operated a total of 40 separate clinics statewide. While some Title X organizations in the state operated as many as eight different sites, some organizations only have one site where they operate Title X services. For those sites with multiple locations, one site was designated by the organization as a ‘main’ site.

Figure 1. Map of Title X Organizations and CNC Regions across Nebraska



Data Collection Instruments

To gather data related to the overarching research questions, a self-administered tool (Appendix B) was created (Table 3). The tool was adapted from the Family Planning National Training Center's *Contraceptive Access Change Package*. The FPNTC's Contraceptive Access Change Package was released in 2017 as a guide for Title X grantee's to help measure whether four specific best practices were being implemented within the clinic to achieve increased access, uptake and continuation of Tier 1 methods of contraception (e.g. IUDs and implants), and well as Tier 2 methods of contraception (e.g. birth control pill, patch, ring, and injection) (Family Planning National Training Center, 2017). As part of the tool, the CM and CNC were asked to provide information on the following FPNTC Best practices: 1) Stock a broad range of contraceptive methods including all provider-dependent FDA-approved contraceptive methods); 2) Discuss pregnancy intention and support patients through evidence-informed, patient-centered counseling that enables them to choose from the full range of contraceptive methods if they do not desire pregnancy presently; 3) Develop systems for same-visit provision of all contraceptive methods, at all visit types making it possible for patients, including women who

choose LARCs, to leave their visit with their selected contraceptive method; and 4) Utilize diverse payment options to reduce cost as a barrier for the facility and the patient including informing patients about self-pay, sliding fee schedules, and insurance enrollment options. The fourth Best Practice was adapted to understanding whether clinical and non-clinical staff are knowledgeable about offering no-cost contraception for clients. For a list of FDA approved contraceptive methods, please refer to Appendix C. Open-ended questions were also included on the form in order to gather additional information describing implementation of best practices at each site or within each organization.

Table 3. Overview of FPNTC Best Practices, Study Research Questions, and Instrument Questions

FPNTC Best Practice	Study Research Question(s)	Instrument Questions
#1: Stock a broad range of contraceptive methods including all provider-dependent FDA-approved contraceptive methods.	<p><i>How many CAP grantees are stocking all of the FDA-approved contraceptive methods on site?</i></p> <p><i>If sites are not stocking all methods, how many are they able to stock?</i></p> <p><i>Why are they unable to stock all methods?</i></p>	<p>During the last month, which FDA approved contraceptive methods were not carried on-site at this location (check all that apply) (<i>see Appendix C for all FDA-approved methods</i>)</p> <p>Please make any additional comments about contraceptive availability at this location.</p>
#2: Discuss pregnancy intention and support patients through evidence-based information, patient-centered counseling that enables them to choose from the full range of contraceptive methods if they do not desire pregnancy.	<p><i>How many clinic staff and non-clinical staff are considered proficient in topics related to discussing pregnancy intention and supporting patients through evidence-informed, patient-centered counseling?</i></p>	<p>Approximately what number and percentage of staff are proficient in each of the following topics out of all staff at this location who interact with Title X clients (e.g. front desk, billing, doctor, nurse, health education, etc.)?</p> <p>Topics Included:</p> <ul style="list-style-type: none"> - Patient-centered contraceptive counseling - Medical eligibility criteria for contraceptive methods - Managing common issues regarding initiation and use of specific methods - The range of methods and associated effectiveness, benefits, myths, and potential side effects - Reproductive justice and strategies to avoid coercion - Reproductive life planning - Insertion and removal of IUDs - Insertion and removal of implants - Sexual coercion - Talking to parents about sex <p>What are the current training priorities at this location?</p> <p>Are there any barriers to addressing the current training needs at this location?</p> <p>Other comments about this location's ability to provide evidence-informed patient-centered counseling.</p>

<p>#3: Develop systems for same-visit provision of all contraceptive methods, at all visit types. Make it possible for patients, including women who choose LARCs, to leave their visit with their selected contraceptive method.</p>	<p><i>How many CAP grantees are able to provide methods at each Tier during the patients visit on the same day? If sites are not providing same-day methods, why not?</i></p>	<p>At any time in the past 30 days, have any of the following FDA approved contraceptive methods not been available to women the same day as their visit at this location? (check all that apply) <i>(see Appendix C for all FDA-approved methods)</i></p> <p>If any of the above contraceptive methods were not available at this location, what is the reason?</p> <p>What are the barriers to same-visit/same-day provision of contraception at this location?</p> <p>What, if anything, is this location currently doing to improve the same-visit/same-day provision of contraception?</p> <p>Other comments about same-visit/same-day provision of contraception at this location.</p>
<p>#4: Utilize diverse payment options to reduce cost as a barrier for the facility and the patient. Inform patients about self-pay, sliding fee schedules, and insurance enrollment options. Ensure access to services regardless of ability to pay.</p>	<p><i>Within CAP grantees, what percentage of clinical staff are knowledgeable that contraceptive methods are no cost for patients of all ages who present without insurance?</i></p> <p><i>Within CAP grantees, how many non-clinical staff are knowledgeable that contraceptive methods are no cost for patients of all ages who present without insurance?</i></p>	<p>At this location, how knowledgeable are clinical staff about CAP payment procedures for patients?</p> <p>At this location, how knowledgeable are other staff about CAP payment procedures for patients?</p>

A semi-structured interview guide (Appendix D) was also created to conduct interviews as part of the CAP process evaluation. The semi-structured interview guide was created by the CAP evaluation team to assess overall current practices of CAP grantees. Questions were based on the evaluation plan created by the team. For both the Omaha and Statewide CAP grantees, the interview guide was constructed to assess pathway capacity and related structural barriers as well as quality of organizational practices and institutional structures.

For the purposes of this study, questions from the interview guide utilized to triangulate findings from the CM and CNC Best Practices form included: 1) How does [your organization] approach incorporating Quality Family Planning Best Practices into the CAP visit?; 2) What are any challenges to incorporating Quality Family Planning Best Practices into the CAP visit?; 3) What improvements could be made to address these challenges?; and 4) What gets in the way of making these improvements? The study protocol was reviewed by the University of Nebraska Medical Center Institutional Review Board and determined to be exempt since the study relied on secondary data collected for evaluation purposes.

Data Collection

The Best Practices tool was created in Microsoft Excel for Office 365 for the CM and CNC to securely document implementation of best practices. Each CM was sent a link to their organization's folder which contained a separate form for each site within their designated organization. The CNC, on the other hand, was sent a folder containing a separate form for each organization within their designated region. In October 2017, each CM and CNC were emailed a link to their specific sites and/or organization(s) and asked to complete the tools by the fifth of the following month (e.g. November 5, 2017). Email follow-up was conducted as needed if the CM or CNC did not complete the form by November 5, 2017. In total, 48 Best Practices forms were completed; 40 were completed by CAP Mentors and 8 were completed by CNCs.

CAP evaluation team members determined that the semi-structured interview should be conducted with at least one key-informant representative from each of the CAP grantee organizations. CAP evaluation team members reached out to the Region 4 CNC to determine Omaha CAP grantees to include in the interview, while a representative from each Statewide CAP grantees were contacted directly by a CAP evaluation team member to determine who at the organization would be eligible and available for an interview. CAP evaluation team members conducted in-person and telephone interviews throughout October and November 2017 to assess barriers to implementation of quality family planning best practices and site-specific proposed solutions for overcoming those barriers. Interviews were audio-recorded and detailed notes were taken by CAP evaluators conducting the interviews. Interviews lasted approximately one and a half hours. After each interview notes taken by during the interview were combined and detailed notes were taken from the audio-recordings. If needed, CAP evaluators reached out to key informants to gain clarification of any unclear information obtained during the interview.

Data Analysis

Descriptive statistics including frequencies and percentages were used to describe quantitative data from each tool. FPNTC Best Practice One (i.e. the type of FDA approved contraceptive methods carried on-site at the Title X location) and Best Practice Three (i.e. the type of FDA-approved contraceptive methods that are available to women on the same day as their visit) were analyzed by site using SAS 9.4. For purposes of analysis, the FDA-approved contraceptive methods listed on the form were divided into Tiers of effectiveness according to guidelines from the Centers for Disease Control and Prevention (Curtis, 2016; Steiner et al., 2006; Trussell, 2011; World Health Organization Department of Reproductive Health and Research et al., 2007) including: Tier 1 (e.g. progestin-only IUD, Copper IUD, and subdermal

implant), Tier 2 (e.g. combination oral contraceptives, progestin-only oral contraceptives, and hormonal oral contraceptives, transdermal contraceptive patch, vaginal contraceptive ring, diaphragm/cervical cap, hormonal contraceptive injection) and Tier 3 (spermicide, withdrawal, cycle beads, or natural family planning). Quantitative data for FPNTC Best Practice Two were excluded from analysis due to substantial missing data. Responses to FPNTC Best Practice Four were coded according to a four-item scale (e.g. 1- Not Knowledgeable, 2 – Somewhat Knowledgeable, 3 – Very Knowledgeable, 4 – Not Applicable) developed by the study researchers in order to summarize responses quantitatively. Frequencies were calculated for each question asked as part of FPNTC Best Practice Four. Qualitative data from the questions included in the online instrument for FPNTC Best Practice One, Two, and Three (see Table 3), were analyzed with NVivo 11. One CAP evaluation team member coded the qualitative data collected from the online instrument, while two other CAP evaluators coded the interviews. Key themes were identified using *a priori* coding structures informed by the questions included in the online tool and interview questions developed by the CAP evaluation team. A grounded theory approach was also utilized to determine emergent codes and themes from data collected through both the online instrument and interviews (Miles, Huberman, Huberman, & Huberman, 1994). Themes that emerged from the interviews and the online instrument were triangulated to corroborate findings (Creswell & Plano Clark, 2011).

Results

Baseline data were collected in October 2017 by both the CAP Mentors and Contract Nurse Clinicians. According to the CAP Mentors, 30% of the sites do not stock a Tier 1 method, while just over one-third (37.5%) stock all Tier 1 methods (e.g. Copper IUD, IUD with progestin and implantable rod) (Table 4). There were no sites that stock all of the Tier 2 contraceptive

methods and 8% of the sites stock absolutely no Tier 2 contraceptive methods. Furthermore, only 5% of the sites stock all Tier 3 methods and 8% of sites do not stock any Tier 3 methods.

Table 4. Best Practice #1: Stock a broad range of FDA-Approved Contraceptive Methods On-Site (N=40)

	% sites that Carry All Methods in Tier	% sites that Carry ≥50-99% of Methods in Tier	% sites that Carry between 1 and 50% of Methods in Tier	% sites that Carry No Methods in Tier	TOTAL
Tier 1 methods	38%	28%	5%	30%	100%
Tier 2 methods	0%	55%	38%	8%	100%
Tier 3 Methods	5%	58%	30%	8%	100%
Emergency Contraception	15%	35%	0%	50%	100%

CAP Mentors also provided data on Best Practice #3: Develop systems for same-visit provision of all contraceptive methods, at all visit types (Table 5). According to CAP Mentors, almost half (45%) of sites did not provide any same-day provision of Tier 1 methods and less than a quarter (23%) of sites had same-visit provision of all Tier 1 methods. Despite the lack of same-day provision of Tier 1 methods, 55% of sites did offer the majority of Tier 2 methods to clients during the same-visit and 53% of sites offered the majority of Tier 3 methods to clients during the same-visit.

Table 5. Best Practice #3: Develop systems for same-visit provision of all contraceptive methods, at all visit types (N=40)

	% sites that have Same-Visit Provision of All Methods in Tier	% sites that have Same-Visit Provision of ≥50-99% of Methods in Tier	% sites that have Same-Visit Provision of between 1 and 50% of Methods in Tier	% sites that have Same-Visit Provision of No Methods in Tier	TOTAL
Tier 1 methods	23%	25%	8%	45%	100%
Tier 2 methods	0%	55%	35%	10%	100%
Tier 3 Methods	0%	53%	38%	10%	100%
Emergency Contraception	13%	38%	0%	50%	100%

Almost all clinical staff at the sites (83%) were somewhat to very knowledgeable about CAP payment procedures, while two-thirds (66%) of non-clinical staff were somewhat to very knowledgeable about CAP payment procedures, specifically referring to the provision of no-cost contraception for women 24 years or younger and for women 25 years and older if they did not have insurance or their insurance did not cover the cost of birth control (Table 6).

Table 6. Best Practice #4: Utilize diverse payment options to reduce cost as a barrier for the facility and the patient (N=40)

	% sites with Clinical Staff knowledgeable about CAP Payment Procedures	% sites with Non-Clinical staff knowledgeable about CAP Payment Procedures
Not Knowledgeable	5%	13%
Somewhat Knowledgeable	40%	33%
Very Knowledgeable	43%	33%
Not Applicable	13%	23%
Total	100%	100%

Similar themes emerged from questions included in both the self-administered online tool questions and in the interview guide. In terms of the first FPNTC best practice, stocking all FDA-approved contraceptive methods on-site, CAP Mentors, Contract Nurse Clinicians and interview participants brought up several barriers to stocking all FDA-approved contraceptive methods. These barriers included having no trained providers on-site, high costs to obtain certain contraceptive methods, methods are not requested enough by patients to be stocked on-site, and no patients being seen at the site. For example, one site mentioned their board of directors as a barrier to stocking all methods of contraception, “Our board of directors in the past has voted not to have emergency contraception in our pharmacy.” While another site responded that they “Have not had requests to carry: Sponge, spermicide, [or] diaphragm. [And that] Cost is a barrier to Ulipristal Acetate.” Despite these barriers, CAP Mentors also addressed strategies that sites are taking to remedy the lack of all methods including training providers and

ordering those forms of contraception that are not currently stocked on-site, particularly the long-acting reversible contraceptive methods.

The second best practice, discuss pregnancy intention and support patients through evidence-based contraceptive counseling, was assessed through the following three questions: 1) What are the current training priorities at this location?; 2) Are there any barriers to addressing the current training needs at this location?; and 3) Other comments about this location's ability to provide evidence-informed, patient centered counseling. For several of the sites, training priorities centered on learning more about CAP requirements and about Title X policies and procedures, in general. For example, one response was "Given the new reporting of measures above, priority will be placed on assessing all staff on their familiarity with Title X topics." Another response included "Eligibility and criteria of the CAP program." Other training priorities across sites included LARC insertion and removal training and additional training in patient-contraceptive counseling including non-coercion techniques and maintaining privacy and confidentiality. One of the major barriers to implementing training for staff across sites was the issue of time, particularly in terms of scheduling clinical and non-clinical staff. One CM responded that their barriers is "Schedule as one clinician works full-time at another job," while another CM stated "Clinician hours are filled with appointments, so blocking for training is necessary. Also share non-clinical staff with immunization/peds/adult medicine clinics." Another barrier to training was limited staff on-site at a particular location. For example, one site responded "1. Location will have to establish best method of training, 2. Time (plan, execute, follow up), 3. Limited staff (1 provider, 1 nurse; support staff in different area or building)."

Questions to assess the third FPNTC best practice, develop systems for same-visit provision of all contraceptive methods at all visit types, were similar in nature to responses gathered for the first best practice included: 1) If any of the above contraceptive methods were

not available at this location, what is the reason?; 2) What are the barriers to same-visit/same-day provision of contraception at this location?; 3) What, if anything, is this location currently doing to improve the same-visit/same-day provision of contraception?; and 4) Other comments about same-visit/same-day provision of contraception at this location. Responses to these questions were similar in nature to those gathered for the first FPNTC best practice. Reasons listed for not having all FDA-approved contraceptive methods on-site and the barriers to same-visit/same-day provision of contraceptive methods across sites included no demand for the contraceptive method, lack of provider training, and clinical systems where patients need medical clearance prior to being administered a particular method and cost. For example, one organization responded “As we currently only have access to a Provider once a week, we are not able to provide the LARCs same day insertion.” For another organization, the barrier to same-day provision of contraceptive methods included “Providers at this location are not currently trained on Nexplanon insertion or IUD insertion.” Other barriers include not keeping the contraceptive method is not carried on-site, since several sites do not have a pharmacy at the specific location, which requires patients to go to the ‘main’ location within the organization or to another pharmacy.

In total, there were nineteen interviews with CAP Mentors and reproductive health managers from the fourteen Title X organizations across Nebraska. Across the state, barriers to implementing best practices addressed in the interviews were similar to those addressed in the monitoring form, however, the interviews did reveal some additional barriers. For example, similar to the monitoring form, interviewees expressed that lack of time during a provider visit is a barrier and having staff trained in LARC insertion and removal can present as barriers. Additionally, scheduling providers who are trained is a barrier to ensuring same-visit provision of birth control methods. One individual stated “I don’t have a budget to have a provider very day

of the week, I have one day a week on Wednesdays...During that time, we need to see patients with problem visits, pap smears, etc.; plus being able to put in LARCS...So, there is a lot we have to get in on that one day.”

Other barriers to implementing best practices that were addressed during interviews included provider beliefs about sexual and reproductive health services for young people and presence of parents during sexual and reproductive health visits. One individual stated, “I’m trying to normalize the sexuality piece with other providers. For some teens that’s a big part of their life. We need to be sure we’re taking care of their needs.” Those interviewed did mention strategies being taken within their organization to overcome barriers including adjusting schedules, changing policies and procedures to adopt the Quick Start method, and ensuring more providers are trained to insert and remove LARC methods. For example, in terms of scheduling, one interviewee stated “Definitely my use of LARC has gone up each day and our schedule is a lot more full, especially now we’ve started blocking our evening clinic on Wednesday nights for those young kids so that they’re not missing school, so Wednesday nights now are completely full with 16-21 year olds.”

Discussion

The purpose of this study was to understand baseline implementation of QFP recommendations and FPNTC Best Practices within all fourteen organizations that administer Title X services across Nebraska in order to contribute to the current literature on adoption of QFP and FPNTC Best Practices. Across Title X-funded organizations in Nebraska, several QFP recommendations and the FPNTC’s Best Practices have been adopted. However, barriers to implementing these QFP recommendations and best practices are still present, including, lack of trained staff to provide LARCs to patients, organizational policies that promote stocking all FDA-approved contraceptive methods, and lack of staff trained in patient-centered counseling. A

common theme across these barriers is the fact that resolving these issues relies on institutional changes within the Title X organizations where the barriers exist.

One barrier to adoption of the QFP and FPNTC Best Practices is ensuring clinicians have the training to provide all contraceptive methods on-site, particularly LARCs. Among organizations with multiple sites, the primary or main site within an organization tended to have providers that are fully trained to administer all methods of contraception, while some of the smaller sites within an organization do not currently have the capacity to keep a trained provider at the location. Building capacity within smaller sites should be a main focus to ensure youth and young adults have access to quality reproductive health services that they want and need. Moreover, many of the smaller sites are located in more rural areas where research has shown access to healthcare may be more limited, particularly for youth and young adults and those seeking SRH services (Bennett, 2002; Bushy, 1998; Caldwell, Ford, Wallace, Wang, & Takahashi, 2016; Hart, Larson, & Lishner, 2005; Martins, Starr, Hellerstedt, & Gilliam, 2016; K. J. Mueller, Ortega, Parker, Patil, & Askenazi, 1999).

In the state of Nebraska, there is a known shortage of obstetrician-gynecologists in rural areas, creating a gap in healthcare access that can be filled by Title X family planning organizations (Nebraska Department of Health and Human Services & Division of Public Health, September 2016). For other states with large rural areas, building capacity at the smaller, satellite locations is essential to aligning with the QFP recommendations and FPNTC best practices, as well as to ensuring quality reproductive health services when clients cannot access the primary location, particularly if these states have healthcare shortage areas where access to any obstetrician-gynecologist is already limited.

Similar to having trained providers, stocking all FDA-approved contraceptive methods on-site is another barrier faced by many of the Title X organizations included in our study. Despite Title X clinics having access to the 340B Drug Pricing Program^j, stocking all FDA-approved methods on-site may be difficult for some of the smaller, satellite locations. However, to align with the QFP recommendations and FPNTC best practices, Title X organizations need to implement changes within their larger purchasing systems to ensure that all methods can be stocked. This may mean that organizations need to conduct an internal assessment of the services they provide at each site to understand the feasibility of stocking all methods and whether or not patients would like certain methods that are not kept on site, as well as keep abreast of changes in Title X funding, which can also play significantly into Title X-funded organizations' ability to stock all contraceptive methods available to women. For other states with large rural populations, conducting both an environmental scan of methods available in rural communities, as well as a needs assessment to understand the desires of the community being served are steps that could be taken in the future. Additionally, understanding policy changes to Title X at the state and federal levels will be important for any Title X clinic across the U.S. since Title X programs are a source of healthcare for millions of women in the U.S. (Frost et al., 2017; Frost et al., 2016).

Another barrier to alignment we found within our study population is ensuring all clinical and non-clinical staff are familiar with the patient-centered approach to reproductive health care. For clinicians, understanding and implementing patient-centered counseling is one of the main cornerstones of quality family planning services (Dehlendorf, Krajewski, & Borrero, 2014). Within our study population, clinicians need more opportunities to learn about patient-

^j Established by Congress in 1992 through a law that requires companies to sell the drugs they manufacture to a range of safety-net providers including Title X clinics and federally qualified health centers (Sonfield, 2010)

centered reproductive health care and why it is an essential component to providing reproductive health services, especially to youth and young adults. This recommendation is echoed in the results from an exploratory study to examine family planning providers' attitudes toward and barriers to QFP adoption (Simmons et al., 2016). In the study by Simmons et al. (2016), researchers found that training for providers and non-clinical staff is essential to eliminating barriers and aligning with QFP recommendations. While CAP, ensures clinical and non-clinical staff are trained in patient-centered care through the CM and CNC, Title X organizations nationwide could also consider building the capacity of their providers through trainings and follow-up mentoring meetings around patient-centered care for both clinical and non-clinical staff.

Limitations

The current study is limited in that the study population is specific to the state of Nebraska. While some findings may be relevant to other populations in the Midwest or to states with large rural populations, it is unknown if the results from this study can be generalized with reliability. Additionally, we were limited in the data that could be analyzed around FPNTC Best Practice Two (e.g. the number and percent of clinic staff and non-clinical staff that are proficient in topics related to discussing pregnancy intention and supporting patients through evidence-informed, patient-centered counseling) because of misunderstandings among CAP Mentors as to how to complete this section of the Best Practices form. While some CAP Mentors found rating the proficiency levels in certain topics of their clinical and non-clinical staff, other CAP Mentors found the task more difficult to complete because they felt they could not quantify proficiency. As a result, we may be missing key information about patient-centered care.

Conclusions

Overall, Title X organizations in Nebraska are building capacity to implement the Contraceptive Access Project and align with the QFP recommendations and FPNTC best practices. Alignment of the QFP and FPNTC best practices is essential to ensuring adoption of these practices are sustainable within Title X organizations not only in Nebraska but across the U.S. Other states, particularly those with large rural populations, can use the information presented in this study to help their Title X organizations, as well as other family planning providers, to implement the QFP best practices. Helping more women across the nation receive quality family planning and reproductive health services can directly impact unintended pregnancy rates in adolescent, young adult, and adult populations.

Chapter 4: Barriers to LARCs in Nebraska: Knowledge, Attitudes, and Beliefs of Title X Clinical Staff Providing Services to Adolescents and Young Adults

Introduction

Over the past decade the American College of Obstetrics and Gynecology (ACOG), the American Academy of Pediatrics (AAP), the Centers for Disease Control and Prevention (CDC), and the World Health Organization (WHO) have all deemed long acting reversible contraceptives (LARCs), such as intrauterine devices (IUDs) and subdermal implants, highly effective forms of contraception for women of reproductive age, including nulliparous women and adolescent women ("ACOG Committee Opinion No. 392, December 2007. Intrauterine device and adolescents," 2007; "ACOG Committee Opinion no. 450: Increasing use of contraceptive implants and intrauterine devices to reduce unintended pregnancy," 2009; Committee on Adolescence, 2014; Committee on Adolescent Health Care Long Acting Reversible Contraception Working Group & The American College of Obstetricians and Gynecologists, 2012; Contraception, 2015; Curtis et al., 2010; Kottke & Hailstorks, 2017; Ott & Sucato, 2014). LARCs are one of the most effective forms of birth control due to the fact that they last for longer periods of time^k compared to other birth control methods, do not require daily or monthly monitoring, and have failure rates much lower than other forms of birth control (McNicholas & Peipert, 2012; Trussell, 2004; Winner et al., 2012). Between 2008 and 2014, the percent of women aged 15-44 at risk of unintended pregnancy who report using a long-acting reversible contraceptive (LARC) increased from 6% in 2008 to 14% in 2014 (Kavanaugh & Jerman, 2018).

^k The length of time for a LARC method is dependent on the type of method (e.g. IUD or implant), the hormonal composition of that method (e.g. copper IUD versus progestin-only IUD or implant), and the manufacturer of the LARC method. Some methods last 3 years, other methods can last 5 years or as many as 10 years.

Studies have also shown that use of LARCs has been associated with decreased rates of unintended pregnancies including among teens and young adults (S. Goodman, Hendlish, Reeves, & Foster-Rosales, 2008; Kavanaugh & Jerman, 2018; Peipert et al., 2012; Ricketts et al., 2014; Secura et al., 2010; Wellings, Zhihong, Krentel, Barrett, & Glasier, 2007). In one study, researchers found that the decline of fertility rates among young adult women aged 20 to 24 was influenced by the uptake of LARC methods among 18- and 19-year olds in the years prior (Ricketts et al., 2014). Similarly, among young women aged 15 to 24, there was a significant increase in the percent reporting the use of an implant, however, only young women aged 20 to 24 saw an increase in reported use of an IUD (Kavanaugh & Jerman, 2018).

Even with reported uptake in LARCs among young women, and the recommendations for young women to use LARCs, this population continues to experience barriers to accessing and using LARC methods (Kumar & Brown, 2016; Pritt et al., 2017). These barriers can include women's lack of knowledge and awareness about LARCs (Coles et al., 2011; Khurana & Bleakley, 2015; Rubin & Winrob, 2010; Suellentrop & Frost, 2009; Whitaker et al., 2008), as well as accessibility to and affordability of LARCs (Bergin et al., 2012; D. L. Eisenberg et al., 2013; Kavanaugh, Jerman, et al., 2013; Maslyanskaya et al., 2016; Mestad et al., 2011; A. E. Philliber et al., 2014).

Moreover, studies have shown that knowledge and attitudes of clinical providers can impact the provision of a LARC method to young women (Berlan et al., 2017; Collier, Rosenthal, Harris, Lucas, & Stanwood, 2014; Dehlendorf, Levy, Ruskin, & Steinauer, 2010; Diaz, Hughes, Dickerson, Wessell, & Carek, 2011; Kohn et al., 2012; Rubin, Coy, Yu, & Muncie, 2016; Rubin et al., 2013; Rubin, Fletcher, Stein, Gold, & Segall-Gutierrez, 2010; Stanwood, Garrett, & Konrad, 2002; Stubbs & Schamp, 2008; Swanson, 2013; Vaaler, Kalanges, Fonseca, & Castrucci, 2012; Wellings et al., 2007). For example, one study found that pediatricians held preconceived

notions that LARCs should be reserved for only those patients mature enough to handle these forms of contraception (Berlan et al., 2017). Most studies examining knowledge, attitudes and beliefs of providers have focused on providers specializing in pediatrics or family medicine (Kohn et al., 2012; M. K. Miller et al., 2011; Rubin et al., 2013; Rubin, Fletcher, Stein, Segall-Gutierrez, & Gold, 2011; Swanson, 2013; Wilson, Strohsnitter, & Baecher-Lind, 2013). However, few studies specifically examine the relationship between family planning providers' knowledge and attitudes and recommendation of LARC methods for adolescents and young adults, presenting a gap in the current literature (A. E. Philliber et al., 2014; Vaaler et al., 2012).

Research also shows that access to care can be an issue depending on the geographic residence of the patient creating disparities in health care received between urban and rural populations, particularly for women seeking sexual and reproductive health (SRH) services (Bennett, 2002; Bushy, 1998; Caldwell et al., 2016; Hart et al., 2005; Martins et al., 2016; K. J. Mueller et al., 1999). A 2012 study by Rayburn et al. found that the number of ob-gyns declined when moving from metropolitan areas to micropolitan or rural areas resulting in less women having access to the SRH services they may need (Rayburn, Klagholz, Murray-Krezan, Dowell, & Strunk, 2012). In another study focusing specifically on access to family planning services in Title X clinics in the Midwest, researchers found differences in appointment types and types of contraception offered between rural and urban clinic locations (Martins et al., 2016). For example, researchers found that rural clinics tended to offer fewer contraceptive methods and refer clients to other sites for LARC methods that require trained providers (Martins et al., 2016). Additionally, the Nebraska Department of Health and Human Services (NEDHHS) Office of Rural Health (ORH) has designated the majority of the state as a shortage area for specific physician specialties including ob-gyns (Rural Health Advisory Commission, November 2016). Despite evidence that rural women have less access to a range of contraceptive methods, data

from the 2011-2015 National Survey for Family Growth suggest that the percent of women in rural areas who use the most effective methods of birth control (e.g. female or male sterilization, IUDs or implants) is significantly higher than women in urban areas (Daniels et al., 2018). However, conducting additional analysis of these numbers is necessary to understand whether sterilization is playing a more significant role within the population of rural women, or if women are in fact using more IUDs and implants.

Moreover, while we know there is a relationship between geographic location (e.g. rural vs. urban) and access to health care including reproductive healthcare (Bennett, 2002; Bushy, 1998; Hart et al., 2005; Lunde et al., 2014; Martins et al., 2016), only one study to date has examined the relationship between geographic location and family planning providers' knowledge, attitudes and beliefs concerning LARCs for young women (Vaaler et al., 2012). In this study by Vaaler and colleagues (2012), researchers found that differences exist between urban and rural providers in terms of their attitudes about LARCs and the likelihood of recommending LARCs (Vaaler et al., 2012). For example, the study found that urban providers were more knowledgeable about certain facts concerning intrauterine contraception (IUCs) (e.g. IUCs can last up to 10 years) compared to rural providers, and that urban providers were significantly more likely to recommend a subdermal implant compared to rural providers (Vaaler et al., 2012). Having a better understanding of the relationship between geographic location and providers' knowledge, attitudes, and beliefs about LARCs for young women can help those creating policies for Title X organizations and reduce any barriers that may be present due to differences between rural and urban Title X staff.

The primary purpose of this study was to understand Title X clinical staffs' knowledge and attitudes about contraception for youth and young adults and their perceived barriers to providing a young person's contraceptive method of choice. An initial study was conducted in

May and June of 2015 by researchers from a local university with health care providers across different health care settings in Omaha to understand providers' opinions about providing LARCs. Results from this study showed that less than half of providers in Omaha discuss reproductive life planning with young women during their visit and around half discuss contraception at all visits (Tibbits, 2015). Additionally, the study found that only 40% of providers always or often recommend IUDs and 31% of providers always or often recommend implants (Tibbits, 2015). When asked reasons behind not recommending LARCs, providers raised concerns about cost of the method, concerns about side effects, lack of training and experience, as well as policies barring the provision of contraception in places such as school-based health centers (Tibbits, 2015).

We hypothesized that misconceptions about contraception, particularly LARC methods, for young people exist among Title X clinical staff across Nebraska. Additionally, we hypothesized that there is a difference between rural and urban Title X clinical staffs' knowledge and attitudes about contraception, particularly LARCs, for youth and young adults and their perceived barriers to providing a young person's contraceptive method of choice. The following research questions were used to guide this study:

1. *Are there misconceptions about contraception for adolescents among Title X-funded clinical staff in Nebraska?*
 - a. *What are the common misconceptions held by providers in Nebraska about contraception for adolescents?*
 - b. *Do providers' misconceptions about contraceptive methods differ by location in Nebraska (e.g. rural vs. urban)?*
2. *What are the attitudes and beliefs toward effective contraception for young adults held by Title X clinical staff in Nebraska?*
 - a. *Do rural and urban clinical staff have different attitudes towards the use of effective contraception among adolescents and young adults?*
 - i. *Do rural and urban clinic staff have different concerns about providing IUDs and/or implants to adolescent and young adult women?*

- ii. *Do rural and urban clinical staff have different comfort levels about providing non-LARC methods to adolescent and young adult women?*
3. *Are there differences between urban and rural providers in the reported likelihood of recommending a LARC method to adolescents and young adult women?*

Methods

Study Setting and Design

In 2016, the Women’s Fund of Omaha launched the Contraceptive Access Project (CAP) a multi-component initiative developed to create sustainable community-wide changes to increase access to SRH care for youth and young adults ages 15 to 24 to reduce unintended pregnancy in Omaha, Nebraska (Omaha CAP) as part of a larger initiative called the Adolescent Health Project. In July 2017, CAP was expanded statewide to encompass all Title X-funded organizations in Nebraska (Statewide CAP).

The primary purpose of this study was to understand Title X clinical staffs’ knowledge and attitudes about contraception for youth and young adults and their perceived barriers to providing a young person’s contraceptive method of choice. Since the initial study in 2015 was only conducted in Omaha and, despite both individual and group trainings for clinical and non-clinical staff through CAP, it is unclear whether misconceptions about contraception for adolescents persist and whether providers’ attitudes about contraception for young people present additional barriers to youths’ access to their contraceptive method of choice across the state. This study is guided by Bronfenbrenner’s Ecological Model (1977), which posits that an individual’s behavior is impacted by four different spheres of influence, which surround the individual (Bronfenbrenner, 1977). According to the model, these spheres of influence include 1) the microsystem, (e.g. characteristics and traits of the individual); 2) the mesosystem, (e.g. settings where individuals interact with other individuals in proximal settings); 3) the exosystem,

(e.g. factors that indirectly influence the settings in which the individual interacts); and 4) the macrosystem, (e.g. the larger social, economic, and cultural contexts in which an individual lives and works) (Bronfenbrenner, 1977; Corcoran et al., 2000). This study focuses on the mesosystem, which encompasses the interactions between individuals and different settings setting such as between a Title X family planning clinic, as well as the larger exo- and macrosystems, specifically the influence of geographic location in which the individual lives and is seeking reproductive health services. Better understanding the setting of Title X clinical staff in Nebraska can aid CAP in improving strategies to reduce barriers to SRH services for young women. Additionally, this study will add to the current literature on family planning providers' knowledge, attitudes, and beliefs about contraceptive methods, particularly LARCs, for young women in rural and urban geographic locations.

Data Collection

In the summer of 2018, a confidential online survey was sent to clinical staff at thirteen Title X-funded organizations participating in CAP across Nebraska. To be included in the study, participants needed to be employed at one of the Title X-funded organizations in Nebraska and be considered clinical staff. For the purposes of this study we defined clinical staff as anyone having at least one of the following credentials: physicians (MD), physician assistant (PA), certified nurse midwives (CNM), registered nurses (RN), certified medical assistants or medical assistants (CMA/MA), certified nursing assistants (CNA), nurse practitioners (NP), advanced practice registered nurses (APRN), and licensed practical nurses (LPN) at their facility. While CAP had been implemented among Omaha Title X organizations a year prior (July 2016) and among statewide Title X organizations beginning in July 2017, this study was conducted at the end of the second year (summer 2018) to ensure CAP participants had the opportunity to participate in CAP for an entire year, including any group or individual training and/or mentoring. We reached

out to the each of the thirteen CAP Mentors via email to ask for the names and email addresses of those meeting our inclusion criteria. A link to the online survey as well as study details were sent in emails to all clinical staff who included in list of staff provided by the CAP Mentors. Since the survey did not collect identifying information (e.g. name), follow-up emails were sent to *all* clinical staff (identified by the CAP Mentor) an additional three times to increase the number of responses. The study protocol was reviewed by the University of Nebraska Medical Center Institutional Review Board and determined to be exempt.

Measures

A 51-item survey self-administered survey was developed to assess 1) knowledge of IUDs and Implants (research question 1); 2) likelihood of clinical staffs' provision of IUDs and/or Implants to adolescent and young adult women (research question 3); 3) clinical staffs' concerns for providing IUDs and/or implants to adolescent and young adult women (research question 2); and 4) clinical staffs' comfort in prescribing contraception to adolescent and young adult women (research question 2) (Appendix E). Survey items concerning knowledge and attitudes were adapted from several different instruments used in previous studies (Kohn et al., 2012; Rubin et al., 2013; Rubin et al., 2010; Swanson, 2013). During survey development items were reviewed by AHP and CAP project managers as well as members of the CAP evaluation team for face validity. Demographic questions assessed gender, age, race, ethnicity, professional title, number of years as a licensed practitioner, type of medicine currently practiced (if applicable), area of medical training (if applicable), name of the Title X-funded organization where employed, number of days during the week providing only SRH, frequency of patients 15-24 that are seen during the week, employment at another healthcare organization, and if so, what type of organization.

IUD and implant knowledge items adapted from prior surveys included eight true/false statements and summary scores were computed to assess overall IUD knowledge and overall implant knowledge (Kohn et al., 2012). The IUD and implant knowledge scores are the total number of correct responses on the eight knowledge questions with a maximum score of eight if all questions were answered correctly. Clinical staffs' patient selection practices for providing IUDs and/or Implants to adolescent and young adult women was assessed through seven statements describing different patient characteristics adapted from prior surveys (Kohn et al., 2012). Respondents were asked to rate the level of likelihood for recommending an intrauterine device (IUD) or intrauterine contraception (IUC) to young women aged 15-19 and to young women aged 20-24 using a 5-point Likert Scale (1 – Very unlikely, 5 – Very likely). Clinical staff were also asked the likelihood of providing same-day insertion of an IUD/IUC to patients aged 15-19 and again for patients aged 20-24 using the same 5-point Likert Scale (1 – Very unlikely, 5 – Very likely) with the addition of a non-applicable category for those clinical staff who are not trained to insert IUDs/IUCs. This category was thought to be necessary since clinical staff such as CNAs, CMAs, and RNs do not have the ability to be trained to insert IUDs because of rules and regulations concerning patient care.

The survey also included eight statements adapted from a study by Swanson and colleagues (2013) to assess clinical staffs' concerns about providing IUDs and/or implants to adolescent and young adult women (Swanson, 2013). In the original survey, respondents were specifically asked to consider providing contraception to a 14-year-old girl. Statements included concerns over liability, side effects, patient non-compliance, future infertility, medical risks, risk of pregnancy with proper use, risk of STIs with proper use, and encouraging sexual promiscuity. For our study, we adapted these statements into four separate questions by LARC method and age group (e.g. Rate your level of agreement with the following statements about concerns

providing IUDs/IUCs to women 15-19 years old). Respondents were asked to rate their level of agreement with each concern on a 5-point Likert Scale (1 – Strongly Disagree, 5 – Strongly Agree). A new measure was created for the purposes of this study to assess clinical staffs' level of comfort in prescribing other methods of contraception (e.g. condoms, oral birth control pills, vaginal ring, etc.) for women aged 15-19 and again for women aged 20-24. Respondents were asked to rate their level of comfort prescribing non-LARC methods to young women using a 5-point Likert Scale (1- Very uncomfortable, 5 – Very comfortable).

Urban-rural status of each county was based the National Center for Health Statistics (NCHS) 2013 urban-rural classification scheme of metropolitan and nonmetropolitan counties, which utilizes the Office of Management and Budget (OMB) standards for defining metropolitan statistical areas (MSAs) (Ingram & Franco, 2014). Within the classification of metropolitan there are three distinct groups: 1) large metro (e.g. MSAs with a population of 1 million or higher); 2) medium metro (e.g. MSAs with a population of 250,000 – 999,999); and 3) small metro (e.g. MSAs with a population less than 250,000) (Ingram & Franco, 2014). The nonmetropolitan classification is divided into two groups: 1) micropolitan (e.g. areas with an urban cluster of 10,000 – 49,999) and 2) noncore or rural (Ingram & Franco, 2014). Using these definitions we referred to the U.S. Census Bureau's 2010 Census report for Nebraska (US Census Bureau, 2012) in order to categorize whether the location of each Title X organizations' main clinic location in Nebraska is metropolitan/urban or nonmetropolitan/rural. If Title X-funded organizations maintained satellite clinics in different counties, the location of the main site was used to determine urban-rural status. All sites categorized as urban have satellite locations in urban areas and do not have satellite locations in rural areas.

Statistical Analysis

Data were analyzed using SAS version 9.4 (SAS Institute Cary, NC). Observations missing the name of the Title X-funded organization were excluded from analysis because they could not be categorized as either urban or rural. Descriptive statistics were computed for demographic characteristics, while univariate analyses were computed for individual survey items including frequencies of responses and mean summary scores when appropriate. Independent samples t-tests and chi-square tests were conducted to analyze response differences between rural and urban clinical staff. A *p-value* of 0.05 was used to assess statistical significance.

Results

The online survey was sent to 129 individual clinical staff working in one of the thirteen Title X-funded organizations across Nebraska participating in CAP. Of the 129 individuals who were sent the survey, 68 completed the survey giving a response rate of 53%. Of the 68 clinical staff who responded to the survey, six respondents did not indicate the Title X-funded organization where they were employed and subsequently were excluded from analysis leaving a total sample of 62 individuals included in the final sample. Of those 62 clinical staff, the majority were from rural areas (60%), female (75%), between 25 and 44 years of age (49%), and non-Hispanic White (71%) (Appendix F). Moreover, almost half (46%) of the staff had a nursing background (e.g. RN, LPN, APRN, NP, CNM), 31% had been practicing with a license less than 10 years, 26% practiced family medicine, and 35% worked least one to two days a week at the Title X organization while only 18% worked most of the week (5-6 days) at the Title X organization. Additionally, of the 62 clinical staff, 45% had not participated in any group trainings with the CAP Mentor, 45% had not participated in one-on-one mentoring with the CAP Mentor, and 61% had not participated in any trainings with the Contract Nurse Clinician.

Intrauterine Devices: Knowledge and Attitudes of Clinical Staff

Clinical staff were asked to indicate whether a series of statements about IUDs were true or false. Of the 62 clinical staff who completed the survey, 52 responded to questions about IUD knowledge. Of these 52 clinical staff, the majority answered each statement about IUDs correctly (Table 7). On average, urban clinical staff answered 7 out of 8 of the statements correctly compared to rural clinical staff who on average answered 6.54 out of 8 of the statements correctly. However, there were no significant differences between rural and urban clinical staff for any item despite differences in responses. For example, there was no difference in the proportion of rural and urban clinical staff who correctly answered the statement, IUDs are safe to be inserted immediately postpartum ($\chi^2 = 2.95$, $p = 0.09$).

Table 7. Clinical staffs' knowledge of IUDs (n=52)

Survey Item	Correct Response	% Correct All respondents (n=52)	% Correct Urban (N=24)	% Correct Rural (N=28)
Currently available IUDs are safe.	TRUE	96%	92%	100%
IUDs increase the long-term risk of cervical dysplasia	FALSE	90%	92%	89%
IUDs must be inserted when a woman is menstruating.	FALSE	92%	96%	89%
IUDs can be used in patients with no previous pregnancies.	TRUE	92%	92%	93%
IUDs increase the risk of infertility.	FALSE	90%	92%	89%
IUDs do not increase the long-term risk of pelvic inflammatory disease (PID)	TRUE	69%	79%	61%
IUDs are a safe method for teens	TRUE	90%	92%	89%
IUDs are safe to be inserted immediately postpartum	TRUE	54%	67%	43%
Summary Score		All respondents	Urban	Rural
Mean IUD Knowledge score (out of 8)		6.75	7	6.54

When asked the likelihood of recommending an IUD to patients aged 15-19 and to patients 20-24 years old, significant differences were found between rural and urban clinical staff with urban staff more likely to provide IUDs to 15-19 year olds who presented with different characteristics (Table 8). On average, urban clinical staff were significantly more likely to recommend an IUD to young women aged 15 to 19 than a clinical staff member from a rural location if the young woman reported she has never been pregnant ($p=0.025$), has a history of Pelvic Inflammatory Disease (PID) ($p=0.014$), has had a recent history of a sexually transmitted infection ($p=0.048$), has had an abnormal pap smear in the past year and has not had a colposcopy ($p=0.011$), or has a history of ectopic pregnancy ($p=0.039$).

Table 8. Likelihood of recommending an IUD to women 15-19 according to different patient characteristics (1 - Very Unlikely, 5 - Very Likely)

Patient Characteristics	Urban (n=24)			Rural (n=28)		
	Mean	SD	95% CI	Mean	SD	95% CI
Has never been pregnant*	4.00	1.02	3.57-4.43	3.29	1.18	2.83-3.74
History of PID*	3.21	0.98	2.80-3.62	2.46	1.10	2.04-2.89
Recent history of STI*	3.46	1.06	3.01-3.91	2.82	1.19	2.36-3.28
Not in a monogamous relationship	4.04	0.91	3.66-4.43	3.61	1.26	3.12-4.09
Abnormal pap smear in the past year and has not had a colposcopy*	3.50	1.22	2.99-4.01	2.68	1.02	2.28-3.07
History of ectopic pregnancy*	3.21	1.02	2.78-3.64	2.54	1.23	2.06-3.01
Unmarried	3.96	1.08	3.50-4.42	3.68	1.16	3.23-4.13

* $p<0.05$

Comparatively, when clinical staff reported likelihood of recommending an IUD to a woman aged 20-24, fewer patient characteristics were found to be significantly different

between urban and rural clinical staff. On average, urban clinical staff were significantly more likely to recommend an IUD to young adult women aged 20 to 24 than a clinical staff member from a rural location if the young woman reported she has had an abnormal pap smear in the past year and has not had a colposcopy ($p=0.045$). Additionally, when asked about providing same-day insertion of an IUD to women aged 15-19, almost half (42%) of clinical staff said they were likely or very likely provide same-day insertion of an IUD to a young woman aged 15-19 years old while almost a third (32%) of clinical staff said they were unlikely or very unlikely. Of the 52 respondents, 17% did not think this question applied to them and there were no differences in responses between urban and rural clinical staff. When asked about providing same-day insertion of IUDs to women aged 20-24, over half (52%) of clinical staff said they were very likely or likely to provide same-day insertion of IUD, while only 15% of clinical staff said they were unlikely or very unlikely. Similarly, 17% of staff did not think this question applied to them and there were no differences in responses between urban and rural clinical staff.

When asked to rate their level of agreement with concerns about providing IUDs/IUCs to women aged 15-19, on average clinical staff across the state of Nebraska disagreed with statements such as concerns with patient non-compliance, future infertility, and risk of pregnancy without proper use. However, further analysis revealed that differences do exist between rural and urban clinical staff across the state. On average, urban clinical staff were significantly less concerned providing IUDs/IUCs for women aged 15-19 compared to rural staff. Particularly, urban clinical staff were less concerned about liability ($p=0.003$), side effects ($p=0.0043$), patient non-compliance ($p=0.0173$), future infertility ($p=0.0032$), medical risks ($p=0.0112$), or encouraging sexual promiscuity ($p=0.0006$) (Table 9).

Table 9. Level of agreement with statements about concerns for providing IUDs/IUCs to women aged 15-19. (1 - Strongly Disagree, 5 - Strongly Agree)

Concerns	Urban (n=24)			Rural (n=28)		
	Mean	SD	95% CI	Mean	SD	95% CI
I am concerned about liability*	2.21	0.83	1.86-2.56	3.04	1.04	2.63-3.44
I am concerned about side effects*	2.29	1.08	1.83-2.75	3.14	0.97	2.77-3.52
I am concerned about patient non-compliance*	2.08	1.02	1.65-2.51	2.79	1.03	2.39-3.19
I am concerned about future infertility*	1.79	0.83	1.44-2.14	2.61	1.03	2.21-3.01
I am concerned about medical risks*	2.25	1.07	1.80-2.70	3.04	1.07	2.62-3.45
I am concerned about risk of pregnancy with proper use	2.00	0.98	1.59-2.41	2.46	1.00	2.08-2.85
I am concerned about risk of STIs with proper use	2.46	1.14	1.98-2.94	2.96	1.00	2.58-3.35
I am concerned about encouraging sexual promiscuity*	1.67	0.87	1.30-2.03	2.54	0.84	2.21-2.86

*p<0.05

Similarly, on average clinical staff across the state of Nebraska disagreed with statements characterizing concerns for providing IUDs/IUCs to young adult women between the ages of 20 and 24 years old. However, further analysis revealed that differences do exist between rural and urban clinical staff across the state. On average, urban clinical staff were significantly less concerned providing IUDs/IUCs to women aged 20-24 compared to rural staff. Particularly, urban clinical staff were less concerned about liability ($p=0.0098$), side effects ($p=0.0021$), patient non-compliance ($p=0.0316$), future infertility ($p=0.0016$), medical risks ($p=0.0033$), risk of STIs with proper use ($p=0.0035$), or encouraging sexual promiscuity ($p=0.0003$) (Table 10).

Table 10. Clinical staffs' level of agreement with statements about concerns for providing IUDs/IUCs to women aged 20-24. (1 - Strongly Disagree, 5 - Strongly Agree)

Concerns	Urban (n=24)			Rural (n=28)		
	Mean	SD	95% CI	Mean	SD	95% CI
I am concerned about liability*	2.13	0.99	1.71-2.54	2.86	0.97	2.48-3.23
I am concerned about side effect*	2.17	1.01	1.74-2.59	3.04	0.92	2.68-3.39
I am concerned about patient non-compliance*	1.96	1.08	1.50-2.42	2.61	1.03	2.21-3.01
I am concerned about future infertility*	1.79	0.83	1.44-2.14	2.61	0.92	2.25-2.96
I am concerned about medical risks*	2.08	1.02	1.65-2.51	2.96	1.04	2.56-3.37
I am concerned about risk of pregnancy with proper use*	2.00	1.02	1.57-2.43	2.50	0.92	2.14-2.86
I am concerned about risk of STIs with proper use	2.13	1.08	1.67-2.58	3.00	0.98	2.62-3.38
I am concerned about encouraging sexual promiscuity*	1.63	0.82	1.28-1.97	2.54	0.84	2.21-2.86

*p<0.05

Subdermal Implants: Knowledge and Attitudes of Clinical Staff

Clinical staff were asked to indicate whether a series of statements about implants were true or false. Of the 62 clinical staff who completed the survey, 49 responded to questions about implant knowledge. Of these 49 clinical staff, the majority of statements about implants correctly. On average, urban clinical staff answered 7.48 out of 8 of the statements correctly compared to rural clinical staff who on average answered 7.15 out of 8 of the statements correctly, however, there were no significant differences between rural and urban clinical staffs knowledge (Table 11). For example, when asked whether implants decrease dysmenorrhea, we found there was no significant difference between the proportion of rural and urban clinical staff who responded to this statement correctly ($\chi^2 = 1.87$, $p = 0.17$). Similarly, there was no difference in the proportion of rural and urban clinical staff who correctly answered the statement, implants are safe to be inserted immediately postpartum ($\chi^2 = 1.11$, $p = 0.29$).

Table 11. Clinical staffs' knowledge of Implants (n=49)

Survey Item	Correct Response	% Correct All respondents (n=49)	% Correct Urban (N=23)	% Correct Rural (N=26)
Currently available implants are safe.	TRUE	100%	100%	100%
Implants decrease dysmenorrhea	TRUE	73%	83%	65%
Insertion of the implant requires stitches	FALSE	97%	100%	96%
Implants can be used in patients with no previous pregnancies	TRUE	96%	96%	96%
Implants increase the risk of infertility	FALSE	96%	96%	96%
Implants have side effects similar to other hormonal contraceptive methods such as headache, nausea, and weight gain	TRUE	86%	87%	85%
Implants are a safe method for teens	TRUE	96%	96%	96%
Implants are safe to be inserted immediately postpartum	TRUE	86%	91%	81%
Summary Score		All respondents	Urban	Rural
Mean Implant Knowledge score (out of 8)		7.31	7.48	7.15

When asked the likelihood of recommending an implant to patients aged 15-19 and to patients 20-24 years old, we found no differences and that both rural and urban clinical staff were likely to recommend an implant to adolescents and young adults. Of the 49 clinical staff who responded to this question, over half (53%) of clinical staff said they were likely or very likely to provide same-day insertion of an implant to a young woman aged 15-19 years old while only 16% of clinical staff said they were unlikely or very unlikely and 16% of respondents did not think this question applied to them. We found no differences between urban and rural clinical staff. Similarly, of the 49 clinical staff who responded to this question, over half (59%) of clinical staff said they were likely or very likely to provide same-day insertion of an Implant to a young adult woman aged 20-24 years old while only 12% of clinical staff said they were unlikely or very

unlikely and 14% of respondents did not think this question applied to them. We also found no differences between urban and rural clinical staff.

Overall, on average clinical staff across the state of Nebraska disagreed with statements characterizing concerns for providing implants to young women between the ages of 15 and 19 years old. However, further analysis revealed that differences do exist between rural and urban clinical staff across the state. On average, urban clinical staff were significantly less concerned about providing Implants for women aged 15-19 compared to rural staff. Particularly, urban clinical staff were less concerned about liability ($p=0.014$), patient non-compliance ($p=0.028$), future infertility ($p=0.029$), medical risks ($p=0.012$), or encouraging sexual promiscuity ($p<0.0001$) (Table 12).

Table 12. Clinical staffs' level of agreement with statements about concerns for providing implants to women aged 15-19. (1 - Strongly Disagree, 5 - Strongly Agree)

Concerns	Urban (n=23)			Rural (n=26)		
	Mean	SD	95% CI	Mean	SD	95% CI
I am concerned about liability*	2.09	0.95	1.68-2.50	2.81	1.02	2.40-3.22
I am concerned about side effects	3.04	1.22	2.51-3.57	3.19	0.98	2.80-3.59
I am concerned about patient non-compliance*	2.00	1.00	1.57-2.43	2.65	1.02	2.24-3.06
I am concerned about future infertility*	1.96	0.98	1.53-2.38	2.58	0.95	2.20-2.96
I am concerned about medical risks*	2.13	1.06	1.67-2.59	2.92	1.06	2.50-3.35
I am concerned about risk of pregnancy with proper use	1.96	0.98	1.53-2.38	2.42	0.90	2.06-2.79
I am concerned about risk of STIs with proper use	2.35	1.30	1.79-2.91	3.00	1.10	2.56-3.44
I am concerned about encouraging sexual promiscuity*	1.57	0.84	1.20-1.93	2.65	0.89	2.29-3.01

* $p<0.05$

Similarly, clinical staff across the state of Nebraska disagreed with statements characterizing concerns for providing Implants to young women between the ages of 20 and 24 years old. However, further analysis revealed that differences do exist between rural and urban

clinical staff across the state. On average, urban clinical staff were significantly less concerned providing Implants for women aged 20-24 compared to rural staff. Particularly, urban clinical staff were less concerned about liability ($p=0.004$), patient non-compliance ($p=0.032$), medical risks ($p=0.008$), risk of STIs with proper use ($p=0.026$), or encouraging sexual promiscuity ($p<0.0001$) (Table 13).

Table 13. Clinical staffs' level of agreement with statements about concerns for providing implants to women aged 20-24. (1 - Strongly Disagree, 5 - Strongly Agree).

Concerns	Urban (n=23)			Rural (n=26)		
	Mean	SD	95% CI	Mean	SD	95% CI
I am concerned about liability*	2.00	0.95	1.59-2.41	2.85	1.01	2.44-3.25
I am concerned about side effects	2.91	1.12	2.43-3.40	3.19	0.98	2.80-3.59
I am concerned about patient non-compliance*	2.00	1.04	1.55-2.45	2.65	1.02	2.24-3.06
I am concerned about future infertility	1.91	0.95	1.50-2.32	2.42	0.86	2.08-2.77
I am concerned about medical risks*	2.04	0.98	1.62-2.47	2.85	1.05	2.42-3.27
I am concerned about risk of pregnancy with proper use	1.91	0.90	1.52-2.30	2.42	0.90	2.06-2.79
I am concerned about risk of STIs with proper use*	2.30	1.26	1.76-2.85	3.08	1.09	2.64-3.52
I am concerned about encouraging sexual promiscuity*	1.57	0.84	1.20-1.93	2.65	0.89	2.29-3.01

* $p<0.05$

Other Contraceptive Methods and Institutional Barriers

When asked about other contraceptive methods, both urban and rural clinical staff were comfortable providing condoms, oral birth control pills, and the hormonal injection to adolescent and young adult women aged 15 to 24 (Table 14). Urban staff were more comfortable than rural staff providing the vaginal ring and birth control patch to adolescents and young adult women aged 15 to 24, however there were no significant differences between groups. We did find that urban clinical staff were significantly more comfortable providing emergency contraception to adolescent women aged 15-19 compared to rural clinical staff

($p=0.045$), yet there were no significant differences between rural and urban clinical staff when considering emergency contraception for women aged 20 to 24. On average, both urban and rural clinical staff were not comfortable providing a diaphragm or cervical cap to adolescent and young adult women aged 15 to 24, however there was no statistically significant difference between urban and rural clinical staff.

Table 14. Clinical staffs' level of comfort providing other contraceptive methods to women aged 15 to 24. (1 - Very Uncomfortable, 5 - Very Comfortable)

	Adolescent Women aged 15-19						Young Adult Women aged 20-24					
	Urban (n=23)			Rural (n=26)			Urban (n=23)			Rural (n=26)		
	Mean	SD	95% CI	Mean	SD	95% CI	Mean	SD	95% CI	Mean	SD	95% CI
Condom	4.48	0.67	4.19-4.77	4.19	1.20	3.71-4.68	4.48	0.67	4.19-4.77	4.38	1.02	3.97-4.80
Diaphragm or cervical cap	2.91	1.20	2.39-3.43	2.77	1.14	2.31-3.23	3.30	1.40	2.70-3.91	3.19	1.30	2.67-3.72
Oral Birth Control Pills	4.52	0.59	4.27-4.78	4.23	1.14	3.77-4.69	4.57	0.59	4.31-4.82	4.42	0.99	4.02-4.82
Injectable birth control	4.52	0.67	4.23-4.81	4.12	1.18	3.64-4.59	4.52	0.79	4.18-4.86	4.31	1.05	3.88-4.73
Vaginal Ring	4.30	0.97	3.88-4.73	3.69	1.26	3.18-4.20	4.52	0.79	4.18-4.86	3.96	1.22	3.47-4.45
Birth Control Patch	4.35	0.88	3.97-4.73	3.81	1.20	3.32-4.29	4.48	0.79	4.14-4.82	4.00	1.17	3.53-4.47
EC*	4.43	0.95	4.03-4.84	3.73	1.37	3.18-4.29	4.43	0.95	4.03-4.84	3.88	1.31	3.36-4.41

EC = Emergency Contraception

* $p<0.05$

Discussion

The initial study conducted by researchers in 2015 was only implemented in Omaha, and despite opportunities for clinical staff to participate in both individual and group trainings through CAP over the first two years, it remained unclear whether misconceptions about contraception for adolescents persist in the state. Additionally, it was also unclear whether providers' attitudes about contraception for young people present additional barriers to youths' access to their contraceptive method of choice across the state. The primary purpose of this study was to understand Title X clinical staffs' knowledge and attitudes about contraception for

youth and young adults and their perceived barriers to providing a young person's contraceptive method of choice. We first sought to determine if there are misconceptions about contraception for adolescents and young adults among Title X clinical staff in Nebraska, including identifying the most common misconceptions, and whether there were differences between rural and urban clinical staff. Similar to other studies, we found that overall knowledge of IUDs was high (Dehlendorf, Levy, et al., 2010; Kohn et al., 2012; Madden, Allsworth, Hladky, Secura, & Peipert, 2010; Vaaler et al., 2012). Despite high overall knowledge, like other studies, we found that there is a lack of knowledge among clinical staff as to the relationship between IUDs and risk of pelvic inflammatory disease (Dehlendorf, Levy, et al., 2010; Kohn et al., 2012). For example, in a study by Kohn et al. (2012), which examined level of IUD knowledge among clinical and nonclinical staff among school-based health centers in New York City, among clinicians, only 55% correctly answered the statement that IUDs do not increase the risk of long-term PID (Kohn et al., 2012), which is slightly lower than our study's sample (69%).

While we did not find differences in overall knowledge about IUDs and risk of PID between rural and urban clinical staff, we did find that rural clinical staff were significantly less likely to recommend an IUD to an adolescent female aged 15-19 if she reported a history of PID. Clinical staff in rural locations were also less likely to recommend an IUD to young adult women aged 20-24 if they reported a history of PID, but there was no significant difference between the two groups. Despite reports from ACOG debunking the association between IUDs and PID ("ACOG Practice Bulletin No. 121: Long-acting reversible contraception: Implants and intrauterine devices," 2011; "Committee Opinion No 672: Clinical Challenges of Long-Acting Reversible Contraceptive Methods," 2016), the misunderstanding that IUDs cause PID continues to exist among providers, even those in a family planning setting. Moreover, while another study by Dehlendorf et al. (2010) found that providers aged 35 years and younger and those

who specialized in obstetrics and gynecology were more likely to know that IUDs do not increase the risk of PID than providers who were older or practice family medicine, the age range of our sample – 49% of staff reported being between the ages of 25 and 44 years old – suggests that simply being younger may not be sufficient in predicting whether a provider is knowledgeable about the relationship between PID and IUDs (Dehlendorf, Levy, et al., 2010). Since misconceptions about IUDs and PID continue to exist, it is imperative that ACOG, the CDC and other professional organizations take actions to implement an informational campaign for providers so they fully understand the relationship between IUDs and PID, particularly if this misconception is inhibiting providers from recommending one of the most effective forms of contraception.

When asked about other patient characteristics, we also found that rural clinical staff were significantly less likely to provide an IUD to a young woman aged 15-19 if she had ever been pregnant, reported a recent history of a STI, had an abnormal pap-smear without a colposcopy in the last year, or a history of ectopic pregnancy; however, the only characteristic that held true for young women aged 20-24 was had an abnormal pap-smear without a colposcopy in the last year. Past studies have also determined that age of the patient factors into whether providers will recommend a LARC method or not (Kohn et al., 2012; Vaaler et al., 2012). While one study found that only 55% of survey respondents were likely to recommend an IUD to a woman younger than 20 years old (Kohn et al., 2012), another study found that 55% of providers considered age of the client as a factor when recommending LARCs and were least likely to recommend a LARC method to young women aged 15-19 (Vaaler et al., 2012). Additionally, the second study also found that among rural providers, only 54% were willing to recommend a LARC method to adolescent women (Vaaler et al., 2012). These findings suggest that despite recommendations from ACOG, AAP, CDC, and WHO that IUDs are safe and effective

methods for adolescents and young adults, there may be other factors playing a role in whether providers and clinical staff provide IUDs among a population.

Since we know from the Ecological Model that there is an interplay between individuals and their environment (Bronfenbrenner, 1977), exploring the larger sociocultural systems in which the provider operates could help explain why barriers to IUDs continue to exist for adolescents and young adults. In other words, there may be underlying social and cultural influences within the rural communities in which the Title X organizations are located that may be influencing the provision of contraceptives to young people, however no studies have looked exclusively at this issue in relation to accessing LARCs. In a qualitative study conducted by Higgins and colleagues (2016) to assess provider bias from the perspective of 50 young adult women around access to LARCs, researchers found that participants believed racial and socioeconomic biases underlying provider recommendations for LARCs with more providers recommending LARCs to minority women, poor women, and uneducated women (Higgins, Kramer, & Ryder, 2016). The state of Nebraska tends to be a more socially conservative state as a whole, despite progressive pockets in the larger urban areas. With many of the Title X organizations located in non-urban areas within the state, it is possible that the prevalent social conservative ideals are impacting the provision of reproductive health services to young women in non-urban areas (Dreweke, 2018; Glasier, Gülmezoglu, Schmid, Moreno, & Van Look, 2006; Nash, Gold, Mohammed, Ansari-Thomas, & Cappello, 2018). Understanding these social and cultural influences could help facilitate future programmatic efforts in rural communities.

When considering misconceptions of implants among rural and urban clinical staff, we found that the majority of respondents answered questions about implants correctly and there were no significant differences between urban and rural clinical staff. Despite no significant differences, we did find that fewer clinical staff know implants decrease dysmenorrhea, are safe

to be inserted postpartum, and have side effects similar to other hormonal contraceptive methods such as headache, nausea, and weight gain. Unlike with IUDs, we found both rural and urban clinical staff were likely to recommend an implant to adolescents and young adults regardless of patient characteristics and over half were willing to provide same-day insertion of implants to young women aged 15 to 24.

While we found no differences between rural and urban clinical staff in terms of implant recommendation to young women, our findings differ from another study that found rural providers were significantly less likely to recommend a hormone implant compared to urban providers among client between the ages of 15 and 44 years (Vaaler et al., 2012). According to that study, only 60% of rural providers reported that they were likely to recommend a hormonal implant compared to 90% of urban providers (Vaaler et al., 2012). However, our study aligns with results from another study examining whether knowledge and practices around hormonal implants differs between women's health, adolescent primary care and adult primary care providers (Collier et al., 2014). In the Collier et al. (2014) study, researchers found that women's health and adolescent primary care providers were more knowledgeable about implants and more likely to recommend an implant to adolescent and nulliparous women compared to adult primary care providers (Collier et al., 2014).

If we take the findings from these two previous studies and compare our findings, it is possible that we did not find differences between rural and urban providers due to the fact that our study population is comprised of clinical staff practicing in Title X family planning clinics and almost a quarter report practicing reproductive health, women's health, or obstetrics and gynecology. It is also possible that our respondents consider implants to be less risk-averse than IUDs because of where they are placed on the body and the lower likelihood of causing adverse complications due to insertion and removal. Another possible reason to explain the differences

in knowledge between our study and prior studies could be the implementation of CAP, in which all participants had at least one year to participate in CAP strategies such as training and mentoring with the CM and CNC. Conducting follow-up interviews or focus groups with clinical staff from our study population could further help identify differences in knowledge and likelihood of recommending implants compared to IUDs.

In addition to understanding misconceptions about LARC methods among Title X clinical staff in Nebraska, we also sought to determine common attitudes and beliefs toward effective contraception for young people among this sample and whether rural and urban clinical staff have different attitudes and beliefs towards the use of effective contraception among young people. We found that Title X clinical staff overall are not concerned about providing LARCs to adolescent and young adult women aged 15 to 24. However, when comparing urban to rural clinical staff, we found that there were differences between the two populations for both providing IUDs and implants. When asked about concerns for providing IUDs to young people age 15 to 24, rural clinical staff were more concerned about liability, side effects, patient non-compliance, future infertility, medical risks and encouraging sexual promiscuity. For young adult women, rural clinical staff were more concerned about risk of STIs with proper use. Similarly, when asked about concerns providing implants to adolescent and young adult women, rural clinical staff were more concerned about liability, patient non-compliance, medical risks, and encouraging sexual promiscuity. In a study conducted by Swanson et al. (2013), researchers found that among physicians who reported prescribing at least one contraceptive method to a 14-year-old girl, those who prescribed an IUD were most concerned about infertility, medical risks, and STIs, while those who prescribed implants were most concerned with non-compliance, medical risks, STIs, and patient unfamiliarity with method (Swanson, 2013). To expand upon the findings from our study, conducting a qualitative inquiry to expand upon the idea of sexual

promiscuity and provision of LARC would be warranted and useful to those conducting programs or implementing policies.

We also found that clinical staff are, on average, comfortable or very comfortable with providing most other contraceptive methods (e.g. condoms, ring, patch, and injection) to adolescent and young adult women, however, were less comfortable providing a diaphragm or cervical cap. Additionally, when asked about emergency contraception for adolescent women aged 15 to 19, rural clinical staff were less comfortable than urban clinical staff providing this type of contraception. While there was low concern in general across the state, rural clinical staff tended to have not only more medically associated concerns such as future infertility but were also more concerned about promoting or encouraging sexual promiscuity. However, studies have shown that access to different birth control methods, including LARCs, does not encourage sexual risk behavior among adolescents and young adults (Secura, Adams, et al., 2014). Additionally, access to birth control methods has been shown to increase the likelihood of adolescents using at least one form of hormonal contraception during their last sexual intercourse (Fisher & Luong, 2016).

Strengths and Limitations

There are several strengths to our study including the ability to draw comparisons between rural and urban clinical staff in Title X family planning clinics, a population that has not been studied in depth. Additionally, we divided the study population into adolescents 15 to 19 years old and young adults 20 to 24 years old in order to garner a better understanding of how clinical staff perceive these two groups. Despite these strengths, this study has a few limitations. One limitation is the small sample size, which limits our understanding and limits the generalization of the results to all Title X clinical staff in the state or beyond. Additionally, the exclusion of observations because they could not be categorized as either urban or rural could

have influenced our results. Third, our sample only includes those in Title X facilities. To better understand the differences between rural and urban clinical staff across the state, future studies should endeavor to include staff outside of Title X facilities such as those in OB/GYN clinics, hospitals, urgent cares, pediatric clinics, as well as family medicine or primary care locations. Finally, our study population includes clinical staff that had the opportunity to participate in CAP strategies for at least a year prior to data collection introducing selection and information biases to our results. However, only 54% of our study participants reported participating in CAP-led group trainings and less than half (45%) reported participating in one-on-one mentoring. Inclusion of clinical staff outside of CAP could enhance the current information about the knowledge, attitudes, and beliefs of clinical staff to providing contraception to adolescents and young adults in Nebraska. Furthermore, additional methods such as qualitative interviews and focus groups could contribute to our understanding of the role clinical staff have in creating or removing barriers to contraception for young people across Nebraska.

Conclusion

Our study supports findings from other studies that there remains misconceptions about LARC methods among clinical staff serving adolescent and young adult women. While many studies have focused on providers in other areas of medicine, such as pediatrics or family medicine, our study specifically focuses on Title X family planning clinical staff. Moreover, our study suggests that although Title X organizations focus on providing family planning and reproductive health care, whether these facilities are in rural or urban locations, can impact the provision of those services, especially for adolescent and young adult women. Understanding differences between rural and urban providers can give insight to administrators and policy-makers wanting to reduce barriers to reproductive healthcare within Nebraska or between rural and urban areas.

Chapter 5: Discussion

“Healthy, educated, and empowered women [and girls] are well positioned for the many roles they have as mothers, caregivers, workers, volunteers, and leaders, affecting the structure of societies and advancing sustainable development.”

- Langer and Colleagues (2015, p.1169)

Unintended pregnancy during adolescence and young adulthood is an important public health issue because of the variety of adverse economic and health outcomes for the mother, their families, and their children. These adverse outcomes can include higher rates of maternal depression, intimate partner violence, low-birthweight infants, poorer behavioral, mental and physical health in children, as well as lower educational attainment in mothers, fathers and children (D. Cheng et al., 2009; D'Angelo et al., 2007; Gipson et al., 2008; Hellerstedt et al., 1998; Kost et al., 1998; Logan et al., 2007; Parks & Peipert, 2016; Santelli et al., 2003). Not only does unintended pregnancy impact the individual and their family, but unintended pregnancy can create an economic burden on societies as well as continue to the cycle of income inequality and stagnant economic mobility across generations (Frost et al., 2016; Kearney & Levine, 2012; McLanahan & Percheski, 2008). At the national and international levels, improving the sexual and reproductive health of young women has been recognized as a primary catalyst to ensuring the health and economic well-being of not only young women, but of future generations (Langer et al., 2015).

Access to quality family planning and contraception plays a substantial role in reducing the number of unintended pregnancies by giving women the autonomy to control their own fertility (Coles et al., 2011; Kavanaugh, Jerman, et al., 2013; Langer et al., 2015). Yet, despite the

evidence that shows contraception can play a key role in preventing unintended pregnancy, barriers to quality SRH services and contraceptive methods continue to exist, particularly for adolescents and young adults (Kumar & Brown, 2016; Pritt et al., 2017). Having a better understanding of the barriers to contraception that young people face can help public health professionals develop policies and programs that can address those barriers and ensure young people have access to the contraceptive method of their choice.

The purpose of this work was to examine and understand barriers to SRH services for adolescents and young adults aged 15-24 in Nebraska and the role of the Contraceptive Access Project in reducing those barriers. To accomplish this goal we conducted three separate studies, each with their own aim and associated data collection and analysis.

We first examined whether different age groups and racial/ethnic groups have different preferences for contraceptive methods with the implementation of CAP strategies. While we found the proportion of young adults aged 20-24 using Tier 1 methods to be higher than adolescents aged 15-19, we found no significant differences in use of Tier 1 methods for women between these two age groups. This is contradictory to findings from past studies that showed age to be a significant predictor of whether a woman uses a LARCs such as IUDs and implants (Hoopes et al., 2018; Kramer et al., 2018; Mestad et al., 2011). This finding indicates that there may be other factors mediating the effect of age in our population, such as race/ethnicity, which we did find predictive of Tier 1 use after the first year of CAP, particularly among Hispanic women aged 15-24. This finding reflects national trends showing Hispanic women are adopting Tier 1 methods at a higher rate than non-Hispanic women (Daniels et al., 2014; Dehlendorf, Park, et al., 2014; Kavanaugh et al., 2015). In one study examining national data, for example, among women using contraception, younger Hispanics aged 15-19 were significantly more likely

to use a highly effective method of birth control rather than a moderate or less-effective method (Dehlendorf, Park, et al., 2014).

We also sought to determine the baseline implementation of quality family planning best practices within all fourteen organizations that administer Title X services across Nebraska and to further the current literature around the QFP recommendations and FPNTC Contraceptive Change package best practices. We found that across the state of Nebraska, Title X-funded organizations have adopted several *QFP Recommendations* and the FPNTC's Best Practices. However, there continue to be barriers to implementing all the QFP recommendations and best practices including, lack of trained staff to provide LARCs to patients, organizational policies that do not promote stocking all FDA-approved contraceptive methods, and lack of staff trained in patient-centered counseling.

A common theme across these barriers is that resolving these issues relies on institutional changes within the Title X organizations. It is possible that the existence of these barriers is due to the fact that many organizations have multiple satellite locations that do not have the capacity to remedy the institutional barriers that exist. Enacting institutional changes throughout the organization that build the capacity within the organization to tackle these barriers will ensure that all locations, from the main site to the satellite clinics, will be equipped to provide quality reproductive health services to adolescents and young adults in their community.

Additionally, while Title X clinics having access to the 340B Drug Pricing Program¹, additional strategies can be implemented to tackle the issue of not stocking all FDA-approved

¹ Established by Congress in 1992 through a law that requires companies to sell the drugs they manufacture to a range of safety-net providers including Title X clinics and federally qualified health centers (Sonfield, 2010)

methods of contraception. For instance, Title X organizations across the state could implement changes within their larger purchasing systems to ensure that all methods can be stocked. This would require conducting an internal assessment of the services they provide at each site to understand the feasibility of stocking all methods and whether or not patients like certain methods.

Lack of trained staff in patient-centered counseling, is echoed in the results from an exploratory study to examine family planning providers' attitudes toward and barriers to QFP adoption (Simmons et al., 2016) in which researchers found that training for providers and non-clinical staff is essential to eliminating barriers and aligning with QFP recommendations. Implementation of CAP strategies can be particularly salient in overcoming this barrier. CAP has created two roles, the CAP Mentor and Contract Nurse Clinician, specifically to build the capacity of clinical and non-clinical staff to conduct patient-centered care within the Title X organizations across Nebraska. The concept of an on-site mentor for clinical staff is a strategy that can be expanded upon throughout Title X clinics in the U.S. to ensure quality, patient-centered reproductive health care is being delivered. Ensuring all clinical and non-clinical staff are familiar and comfortable with providing patient-centered care approach to reproductive health care will guarantee adolescent and young adult women seeking services at these organizations are receiving the best reproductive health and family planning care possible.

Finally, we sought to understand Title X clinical staffs' knowledge and attitudes about contraception for youth and young adults and their perceived barriers to providing a young person's contraceptive method of choice in Nebraska. Overall we found that despite overall high knowledge of LARC methods, misconceptions about IUDs and implants continue to exist. Additional informational campaigns need to be undertaken by professional organizations such as ACOG and the Society for Family Planning, as well as the CDC in order to improve the

knowledge of LARC methods. Moreover, we included not only MDs, NPs, and APRNs who are licensed to insert IUDs and implants, but also other clinical staff such as CMAs, CNAs, and RNs who do not have the licensure to insert IUDs and implants but do have opportunities to counsel patients about these methods. As a result, it may be pertinent for the national information campaigns to target not only the clinicians who can insert LARCs, but the supporting staff as well to ensure all medical professionals working in family planning and reproductive health have the same level of knowledge and can provide quality care.

We also found that patients' age and certain patient characteristics factor into clinical staffs' decision-making practices when recommending an IUD but not when recommending an implant, particularly among staff in rural locations compared to urban sites. These findings are similar to results from another study conducted by Vaaler and colleagues (2012), which found that 55% of providers considered age of the client as a factor when recommending LARCs and among rural providers, only 54% were willing to recommend a LARC method to adolescent women (Vaaler et al., 2012). Additionally, while Title X clinical staff, overall, are not concerned about providing LARCs to adolescent and young adult women aged 15 to 24, there are significant differences in the types of concerns held by rural and urban clinical providers. Rural clinical staff tended to have not only more medically associated concerns such as future infertility but were also more concerned about promoting or encouraging sexual promiscuity. However, studies have shown that access to different birth control methods, including LARCs, does not encourage sexual risk behavior among adolescents and young adults (Secura, Adams, et al., 2014).

Finally, we found that clinical staff, on average, were comfortable or very comfortable with providing most non-LARC methods (e.g. condoms, ring, patch, injection) to young women aged 15 to 24, but were not comfortable providing a diaphragm or cervical cap. Additionally,

rural clinical staff were significantly less comfortable providing emergency contraception (EC) to adolescent women aged 15 to 19 compared to urban clinical staff. Discomfort in providing emergency contraception may stem from misconceptions among clinical staff that emergency contraception is an abortifacient, despite evidence that EC will be effective only when an egg has not yet been fertilized (Card, 2007; Noe et al., 2010). Additional studies can be undertaken to understand if misconceptions about emergency contraception as an abortifacient is in fact the reason why clinical staff are not comfortable providing this method to adolescent women, or if there are other reasons.

Limitations

Despite the many strengths of this work, there are several limitations that need to be addressed. First, cross-sectional studies were conducted which indicates that we can only assume association with CAP implementation and cannot assume results have been caused by implementation of CAP. Second, our sample consists of individuals (e.g. patients and clinical staff) from Title X-funded organizations and those from Nebraska, which may limit generalizability of the results. Additionally, these individuals were eligible to receive training that other Title X clinics across the U.S. do not have access to. Third, using secondary data limited the type of data that could be collected in the first and second studies and, as a result, how the data could be analyzed. For example, we were limited on the type of data collected within the first study which meant only a few predictor variables could be included in the multivariable logistic regression model, making it not as robust. Fourth, small sample sizes can limit our understanding and limits the generalization of the results to all Title X clinical staff in the state or beyond.

Future Implications

Overall there are several strengths to this dissertation. First, we have a better understanding of how CAP strategies are being implemented throughout the state of Nebraska. As a result, CAP programmers have a better understanding of the gaps and the strategies that need to be expanded upon moving forward. Second, in two of the studies included in this dissertation we divided the study population into adolescents 15 to 19-years-old and young adults 20 to 24 years old allowing for more information to be available not only on adolescents, but young adult women as well. Research presented herein can help future research endeavors around understanding barriers to SRH services for young people.

Additionally, we found that racial and ethnic make-up of the young women being served by CAP is influencing adoption of Tier 1 methods such as IUDs and implants. This finding also has implications for CAP designers as they move forward with implementation of the project. Additional strategies may need to focus on expanding information about the project both within and outside of the Hispanic/Latino community in Nebraska. As the project expands statewide, it may be pertinent for CAP programmers to involve the Omaha CAP organizations serving the majority of the Hispanic/Latino community to help guide Statewide CAP sites in terms of being culturally competent in the reproductive health care they deliver within their communities. Not only should there be a focus on the Hispanic community, but also on other racial and ethnic minority populations in Nebraska who did not see a high uptake of Tier 1 methods after the first year of CAP. Conducting additional analyses of the current data, as well as analyzing data collected over the second and future years of the project will speak better to trends in Tier 1 uptake among CAP clients.

Beyond CAP, these findings have implications for other pregnancy prevention programmers implementing strategies to reduce barriers to contraception, particularly for

young women. Similar to the Contraceptive CHOICE Project (Peipert et al., 2012) and the Colorado Family Planning Initiative (Ricketts et al., 2014), we have found that provision of no-cost contraception plays a role in enabling young people to access a contraceptive method of their choice. However, sustainability of these initiatives or policy work to improve contraceptive coverage within insurance plans needs further work. Translating evidence from these projects into easy-to-understand and implement policy initiatives is imperative to providing young people with access to the contraceptive method of their choice.

Second, findings have expanded upon the relatively small number of studies in the quality family planning literature and can be useful for other states around the country that are currently implementing, or want to implement, the *Quality Family Planning Recommendations* and FPNTC Best Practices. Overall, we found Title X organizations in Nebraska are building capacity to implement the Contraceptive Access Project and align with the QFP recommendations and FPNTC best practices. Alignment of the QFP and FPNTC best practices is essential to ensuring adoption of these practices are sustainable within Title X organizations not only in Nebraska but across the U.S. Other states, particularly those with large rural populations, can use the information presented in this study to help their Title X organizations, as well as other family planning providers, to implement the QFP best practices. Future studies can compare baseline data presented in this study to data collected at the end of each year of CAP to understand whether implementation of QFP best practices is occurring. Additionally, future studies can take a qualitative or mixed methods approach to understand how Title X sites have facilitated implementation of family planning best practices within their organization as a means to providing evidence of operational or institutional best practices.

Results also expand the literature examining differences in clinical staffs' provision of family planning care between urban and rural Title X-funded organizations, which is a topic that

has not been analyzed in depth. Findings support previous research showing that there remains misconceptions about LARC methods among clinical staff serving adolescent and young adult women. While many studies have focused on providers in other areas of medicine, such as pediatrics or family medicine, our study specifically focuses on Title X family planning clinical staff. Moreover, we found that although Title X organizations focus on providing family planning and reproductive health care, whether these facilities are in rural or urban locations, can impact the provision of those services, especially for adolescent and young adult women.

Understanding differences between rural and urban providers can give insight to administrators and policy-makers wanting to reduce barriers to reproductive healthcare within Nebraska or between rural and urban areas. Future studies can utilize qualitative interviews and focus groups could contribute to our understanding of the role clinical staff have in creating or removing barriers to contraception for young people across the United States.

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Appendices

APPENDIX A: QUALITY FAMILY PLANNING, INSTITUTE OF MEDICINE ATTRIBUTE

APPENDIX B: CAP MENTOR AND CONTRACT NURSE CLINICIAN BEST PRACTICES FORM

APPENDIX C: FDA-APPROVED CONTRACEPTIVE METHODS BY EFFECTIVENESS TIER

APPENDIX D: SEMI STRUCTURED INTERVIEW GUIDE STUDY 2

APPENDIX E: CAP TITLE X CLINICAL STAFF SURVEY

APPENDIX F: STUDY 3 DEMOGRAPHICS TABLE

Appendix A: Quality Family Planning, Institute of Medicine Attribute

The following table has been adapted from the Quality Family Planning (QFP) Recommendations Report (Gavin et al., 2014).

IOM Attribute and QFP Group	Description
Safety.	These recommendations integrate other CDC recommendations about which contraceptive methods can be provided safely to women with various medical conditions, and integrate CDC and U.S. Preventive Services Task Force (USPSTF) recommendations on STD, preconception, and related preventive health services.
Effectiveness	These recommendations support offering a full range of Food and Drug Administration (FDA)–approved contraceptive methods as well as counseling that highlights the effectiveness of contraceptive methods overall and, in specific patient situations, draws attention to the effectiveness of specific clinical preventive health services and identifies clinical preventive health services for which the potential harms outweigh the benefits (i.e., USPSTF “D” recommendations).
Client-centered approach	These recommendations encourage taking a client-centered approach by 1) highlighting that the client’s primary purpose for visiting the service site must be respected, 2) noting the importance of confidential services and suggesting ways to provide them, 3) encouraging the availability of a broad range of contraceptive methods so that clients can make a selection based on their individual needs and preferences, and 4) reinforcing the need to deliver services in a culturally competent manner so as to meet the needs of all clients, including adolescents, those with limited English proficiency, those with disabilities, and those who are lesbian, gay, bisexual, transgender, or questioning their sexual identity (LGBTQ). Organizational policies, governance structures, and individual attitudes and practices all contribute to the cultural competence of a health-care entity and its staff. Cultural competency within a health-care setting refers to attitudes, practices, and policies that enable professionals to work effectively in cross-cultural situations (14–16).
Timeliness	These recommendations highlight the importance of ensuring that services are provided to clients in a timely manner
Efficiency	These recommendations identify a core set of services that providers can focus on delivering, as well as ways to maximize the use of resources
Accessibility	These recommendations address how to remove barriers to contraceptive use, use the family planning visit to provide access to a broader range of primary care and behavioral health services, use the primary care visit to Recommendations and Reports MMWR / April 25, 2014 / Vol. 63 / No. 4 3 provide access to contraceptive and other family planning services, and strengthen links to other sources of care
Equity	These recommendations highlight the need for providers of family planning services to deliver high-quality care to all clients, including adolescents, LGBTQ persons, racial and ethnic minorities, clients with limited English proficiency, and persons living with disabilities. These recommendations highlight services (i.e., contraception and other clinical preventive services) that have been shown to be very cost-effective (17–19).

Appendix B: CAP Mentor and Contract Nurse Clinician Best Practices Form
 CAP Mentor and Contract Nurse Clinician Best Practices Form

Best Practice #1: Stock a broad range of contraceptive methods	During the last month, which FDA approved contraceptive methods were not carried on-site at this location (check all that apply)				
	Example	Oct-17	Nov-17	Dec-17	Jan-18
Copper IUD					
Implantable Rod	X				
Oral Contraceptives					
Oral Contraceptives – Progestin Only					
Vaginal Ring					
Sponge with Spermicide					
Male Condom					
Spermicide					
IUD with Progestin					
Shot/injection					
Combined Oral Contraceptives – Continuous/Extended Use					
Combined Pill					
Patch					
Diaphragm with Spermicide					
Cervical Cap with Spermicide					
Female Condom	X				
Emergency Contraception – Levonorgestrel					
Emergency Contraception – Ulipristal Acetate					
Please make any additional comments about contraceptive availability at this location:					

Best Practice #2: Discuss pregnancy intention and support patients through evidence-informed, patient-centered counseling	Approximately what number and percentage of staff are trained in each of the following topics out of all staff at this location who interact with Title X clients (e.g. front desk, billing, doctor, nurse, health educator, etc.)?	DEFINITIONS: # Clinical Staff = TOTAL # of staff that provide Title X services at the site % Title X Clinical Staff = % of total clinical staff that provide Title X services that are proficient in approach Clinical Staff = Doctors, Nurses, NPs, APRNs, CNAs, CNAs, MAs, lab techs Non-Clinical Staff = Billing, Receptionist/Front Desk, Pharmacy staff, Social Worker, Behavioral Health, Health Educator,	Oct-17		Nov-17		Dec-17	
			# Clinical Staff	% Non-Clinical Staff	# Clinical Staff	% Non-Clinical Staff	# Clinical Staff	% Non-Clinical Staff
			% Clinical Staff	# Non-Clinical Staff	% Clinical Staff	# Non-Clinical Staff	% Clinical Staff	# Non-Clinical Staff
Topic								
Patient-centered contraceptive counseling								
Medical eligibility criteria for contraceptive methods								
Managing common issues regarding initiation and use of specific methods								
The range of methods and associated effectiveness, benefits, myths, and potential side effects								
Reproductive justice and strategies to avoid coercion								
Reproductive life planning								
Insertion and removal of IUDs								
Insertion and removal of implants								
Sexual coercion								
Talking to parents about sex								
What are the current training priorities at this location?								
Are there any barriers to addressing the current training needs at this location?								
Other comments about this location's ability to provide evidence-informed, patient-centered counseling:								

Best Practice #3: Develop systems for same-visit provision of all contraceptive methods, at all visit types	At any time in the past 30 days, have any of the following FDA approved contraceptive methods not been available to women the same day as their visit at this location? (check all that apply)				
	Oct-17	Nov-17	Dec-17	Oct-17	Nov-17
Copper IUD					
Implantable Rod					
Oral Contraceptives					
Oral Contraceptives – Progestin Only					
Vaginal Ring					
Sponge with Spermicide					
Male Condom					
Spermicide					
IUD with Progestin					
Shot/Injection					
Combined Oral Contraceptives – Continuous/Extended Use					
Combined Pill					
Patch					
Diaphragm with Spermicide					
Cervical Cap with Spermicide					
Female Condom					
Emergency Contraception – Levonorgestrel					
Emergency Contraception = Ulipristal Acetate					
If any of the above contraceptive methods were not available at this location, what is the reason?					
What are the barriers to same-visit/same-day provision of contraception at this location?					
What, if anything, is this location currently doing to improve the same-visit/same-day provision of contraception?					
Other comments about same-visit/same-day provision of contraception at this location:					

<p>Best Practice #4: Utilize diverse payment options to reduce cost as a barrier for the facility and the patient</p>	<p>Oct-17</p>	<p>Nov-17</p>
<p>At this location, how knowledgeable are clinical staff about CAP payment procedures for patients?</p>		
<p>At this location, how knowledgeable are other staff about CAP payment procedures for patients?</p>		

Appendix C: FDA-Approved Contraceptive Methods by Effectiveness Tier

Figure 2. FDA-Approved Contraceptive Methods by Effectiveness Tier ^a	
Tier 1 Methods	<ul style="list-style-type: none"> • Copper IUD • IUD with Progestin • Implantable Rod
Tier 2 Methods	<ul style="list-style-type: none"> • Oral Contraceptives • Oral Contraceptives – Progestin Only • Combined Oral Contraceptives – Continuous/Extended Use Combined Pill • Patch • Vaginal Ring • Shot/Injection • Diaphragm with Spermicide • Cervical Cap with Spermicide
Tier 3 Methods	<ul style="list-style-type: none"> • Sponge with Spermicide • Male Condom • Spermicide • Female Condom
<p>^aThe Centers for Disease Control and Prevention’s Effectiveness of Family Planning Methods was used to divide contraceptive methods into Tiers of effectiveness. According to the CDC, Emergency Contraception can substantially reduce the risk of pregnancy, however, it is not part of the Tiers of effectiveness.</p>	

Appendix D: Semi Structured Interview Guide Study 2

Semi Structured Interview Guide

Interview Guide

Note – questions focus on 15 – 24-year-olds as the main population of interest to CAP. It would be challenging to cover 25 and over in detail for each question in the interview, but Q7 is a general question for this age group.

Introduction:

- Reiterate interview purpose: Progress and challenges in forwarding organizational practices to implement CAP, including the contribution of Quality Family Planning Best Practices, the Learning Collaborative, and Guiding Principles in supporting practices change.
- Clarify that when asking about clients or potential clients (15-24 years), *we are referring to those presumed to find CAP services helpful.*
- Review confidentiality and audio-recording
 - Will be synthesizing what is shared across CAP interviews to include in AHP evaluation reports.
 - We would like to use de-identified quotes that would not connect the audience to you or your organization. Verify comfort with this. (Do not use quotes for anyone who is uncomfortable.)
 - Would like to audio-record the interview – this audio-recording is only used to help with typing notes and is not shared. Verify comfort with this. (Do not record if uncomfortable – take detailed notes.)
- Ask if any questions before beginning the interview.

Part 1 – Pathway Capacity and Related Structural Barriers

Review AHP Pathways model, specifically the systems box, to provide context (p7).

1. Capacity/Scale
 - a. What are examples of successful approaches employed by (organization) in the past 6 months to engage (a) adolescents 15 to 19 years and (b) young adults 20 to 24 years in accessing the contraceptive services offered by CAP?
 - b. What are examples of populations (a) adolescents 15 to 19 years and (b) young adults 20 to 24 years that (organization) has found challenging to engage in accessing the contraceptive services offered by CAP? (That is, those who remain underserved)

- c. What are practices that (organization) could implement to help engage young people to solve their challenges to access? What are plans, if any, for this implementation?
 - d. What are practices that CAP as a larger system could implement to help engage young people to solve their challenges to access?
2. (a) Does (organization) have internal champions for CAP? (b) If so, who/title and what are examples of how they champion CAP? If not, why do you think there is no champion?

Part 2: Quality of organizational practices and institutional structures

1. The following questions focus on (organization's) institutional structures and organizational practices that encourage or challenge young people 15 – 24 years in engaging in CAP services.

(Interviewer: Ask a – d for each step: scheduling appointment, intake process, clinical visit, follow up care. Prompt for any differences between 15-19 yo and 20-24 yo)

For CAP services:	Scheduling an appointment	Experiencing a positive intake process	Experiencing a positive clinical visit	Receiving positive follow up care, including warm hand-off for other services
a. What practices at (organization) support young people in...				
b. What practices at (organization) might discourage (constrain) young people in...				
c. What would need to change at (organization) to better meet the needs of young people in...				
d. What gets in the way of making this change to better meet the needs of young people in...				

(Interview coding will include crosswalk to AHP Guiding Principles and Best Practices for Quality Family Planning.)

2. Coordination/connections between steps in the pathway
 - a. Thinking about the connections between scheduling, intake, clinical visit, and follow up care - what are places where young people could fall through the cracks within your organization and not successfully move from one step to the other?
 - b. What improvements could be made to allow clients to move successfully from one step to another?
 - c. What gets in the way of making these improvements?

(Note: when using a similar question for the STD grantee interviews, responses to Q4 a – b often emerged when asking Q3.)

3. Incorporating Quality Family Planning Best Practices
 - a. How does (World Health Organization Department of Reproductive Health and Research et al.) approach incorporating Quality Family Planning Best Practices into the CAP visit?
 - b. What are any challenges to incorporating Quality Family Planning Best Practices into the CAP visit?
 - c. What improvements could be made to address these challenges?
 - d. What gets in the way of making these improvements?
4. Incorporating STD testing
 - a. How does (organization) approach incorporating STD testing and treatment (as needed) into the CAP visit? What is (organization) approach to notifying and treating partners?
 - b. What are any challenges to incorporating STD testing and treatment into the CAP visit?
 - c. What improvements could be made to address these challenges?
 - e. What gets in the way of making these improvements?
5. Patients 25 years and older served by CAP:
 - a. How has CAP supported (organization) in providing patients 25 years and older with contraceptive access? (What new populations in this age group has CAP engaged?)
 - b. What are any challenges (organization) has experienced in in providing patients 25 years and older with contraceptive access through CAP? (That is, populations in this age group who remain underserved)
 - c. What improvements could be made to address these challenges?
 - d. What gets in the way of making these improvements?

6. Cross- coordination

- a. In the past 6 months, in what ways has (World Health Organization Department of Reproductive Health and Research et al.) coordinated with (1) other AHP grantees, (2) private providers, and (3) other community-based agencies to enhance offering CAP services? *(This is not to collect names of organizations as grantees list these in the partner database, but rather changes/growth in coordinating to bring about larger systems change.)*
- b. What opportunities do you see in the next year to increase coordination with (1) other AHP grantees, private providers, and (3) other community-based agencies?
- c. In what ways do you view cross-organization coordination as important (or not) to bringing about change in the AHP system and reducing teen births?
- d. What stands in the way of cross-organization coordination and what are potential solutions?

Part 3: AHP Guiding Principles

Provide copy of principles (p6)

1. In what ways has implementation of the AHP Guiding Principles by (World Health Organization Department of Reproductive Health and Research et al.) changed (organization's) approach to providing contraceptive services?
2. In what ways do the AHP Guiding Principles support (World Health Organization Department of Reproductive Health and Research et al.) (or not) in reaching the goal of reduced teen pregnancy?
3. (a) How does (World Health Organization Department of Reproductive Health and Research et al.) communicate the AHP Guiding Principles to all staff involved in the care of CAP patients, and (b) ensure the principles are adopted? (Organizational diffusion)
4. In what ways is (World Health Organization Department of Reproductive Health and Research et al.) having challenges implementing the AHP Guiding Principles when providing CAP services?
5. What improvements could be made to address these challenges?
6. What gets in the way of making these improvements?

Part 4: Learning Collaborative (as applicable to participation)

I have a few closing questions about the Learning Collaborative. In early October, we will ask all Learning Collaborative members to complete a questionnaire about participation in the Learning Collaborative to provide more detail.

1. What are your thoughts on how well the Learning Collaborative has identified clear goals as a member partnership? What are suggestions for improvement?
2. In what ways has being part of the AHP Learning Collaborative (a) helped you meet (organization's) CAP goals, (b) hindered meeting your organization's AHP goals?
For (a) and (b): Prompts - Role of the ad-hoc subcommittees (outreach, media/messaging) as applicable to CAP, and role of the evaluation data; e.g., data trends report, YPAR findings
3. In what ways is the AHP Learning Collaborative contributing to progress in building a system to reduce teen pregnancy and STD rates?
4. In what ways could we improve how the Learning Collaborative is structured and functions to support more effective progress in building a system to reduce STD and teen pregnancy rates?
5. Is there anything else you would like to add about your participation in the Learning Collaborative?

Closing:

Is there anything else you would like to share about your participation in CAP before we close?

Appendix E: CAP Title X Clinical Staff Survey

Introduction:

The purpose of this survey is to better understand Title X providers' knowledge, attitudes and beliefs around contraceptive methods for adolescents and young adults aged 15-24 years old. The survey will help guide the Contraceptive Access Project's (CAP) strategies to reduce barriers to a young person's contraceptive method of choice. Please answer each question to the best of your ability. There are no right or wrong answers to the questions in this survey. Your answers will be kept confidential and any reports will have aggregated data with no individually-identifying information. Completion of the survey will indicate consent to taking the survey and having the data reported in aggregate.

Contraceptive Access Project Activities

1. Since the start of CAP have you participated in any CAP-led group trainings (e.g. trainings with other clinical and/or non-clinical staff) at your organization?
 - a. Yes (Go to Question 2)
 - b. No (Go to Question 4)
2. If yes, how often have you participated?
 - a. At least once per month
 - b. 2 – 3 times per month
 - c. 4 or more times per month
3. If yes, what types of group training have you participated in?
4. Have you had one-on-one mentoring (via phone, internet or in-person) with the CAP Mentor at your organization?
 - a. Yes (Go to Question 5)
 - b. No (Go to Question 6)
 - c. I am the CAP Mentor (Go to Question 6)
5. If yes, how often have you had one-on-one mentoring with the CAP Mentor?
 - a. At least once per month
 - b. 2 – 3 times per month
 - c. 4 or more times per month
6. Have you had any trainings with the Nurse Consultant for your organization?
 - a. Yes (Go to Question 7)
 - b. No (Go to Question 9)
 - c. I am the Nurse Consultant (Go to Question 9)

7. If yes, how often have you participated?
 - a. At least once per month
 - b. 2 – 3 times per month
 - c. 4 or more times per month

8. If yes, what types of training have you participated in with the Nurse Consultant?

Quality Family Planning Best Practices

9. Have you read the document, *“Providing Quality Family Planning Services: Recommendation from the Centers for Disease Control and Prevention and the US Office of Population Affairs (QFP)”* published in 2014?
 - a. Yes
 - b. No
 - c. I’m not sure

10. Are you familiar with the National Family Planning Training Center’s Quality Family Planning (QFP) App that is available for providers?
 - a. Yes, and I have used it
 - b. Yes, but I have not used it
 - c. No
 - d. I’m not sure

11. Are you familiar with the National Family Planning Training Center’s Contraceptive Access Change Package?
 - a. Yes, and I have read it
 - b. Yes, but I have not read it
 - c. No
 - d. I’m not sure

12. How comfortable are you talking to parents of patients who are minors about sex, if requested by the minor? (In Nebraska, minors are age 18 years old and younger).
 - a. Very uncomfortable
 - b. Uncomfortable
 - c. Neutral
 - d. Comfortable
 - e. Very Comfortable

13. How familiar are you with the confidentiality laws governing Title X facilities?

- a. Not at all familiar
- b. Slightly familiar
- c. Somewhat familiar
- d. Moderately familiar
- e. Extremely familiar

14. Please rate how often you engage in the following activities when providing SRH care to young women between the ages of 15-19 years old

Activity	Never	Rarely	Sometimes	Often	Always
Use patient-centered counseling techniques.					
Use Reproductive Life Planning					
Discuss how abstinence from sex can help prevent pregnancy and STIs					
Provide condoms without taking a medical history or physical exam					
Encourage the young woman to discuss sexual/reproductive health with parents or guardians					
Help the young woman select an effective and appropriate contraceptive method when they indicate they will be sexually active					

15. Please rate how often you engage in the following activities when providing care to young women between the ages of 20-24 years old

Activity	Never	Rarely	Sometimes	Often	Always
Use patient-centered counseling techniques.					
Use Reproductive Life Planning					
Discuss how abstinence from sex can help prevent pregnancy and STIs					
Provide condoms without taking a medical history or physical exam					
Encourage the young woman to discuss sexual/reproductive health with parents or guardians					
Help the young woman select an effective and appropriate contraceptive method when they indicate they will be sexually active					

16. Under what circumstances would you discuss contraception with a female between the ages of 15 and 19? (please select all that apply)
- Every encounter
 - Every well-child visit
 - When patient discloses that she is sexually active
 - When patient is treated for a STI
 - When patient discloses that she is thinking about becoming sexually active
 - When patient asks about contraception
 - When parent asks about contraception
 - Never
 - Other (please specify) _____
17. Under what circumstances would you discuss contraception with a female between the ages of 20 and 24? (please select all that apply)
- Every encounter
 - When patient discloses that she is sexually active
 - When patient is treated for a STI
 - When patient discloses that she is thinking about becoming sexually active
 - When patient asks about contraception
 - Never
 - Other (please specify) _____

Long-Acting Reversible Contraceptives (LARCs)

Intrauterine Devices (IUD) / Intrauterine Contraceptive (IUC)

18. Please indicate whether each of the following statements about Intrauterine Contraception are True or False.

Currently available IUDs are safe.	True	False
IUDs increase the long-term risk of cervical dysplasia (abnormal cell growth on the cervix)	True	False
IUDs must be inserted when a woman is menstruating	True	False
IUDs can be used in patients with no previous pregnancies.	True	False
IUDs increase the risk of infertility	True	False
IUDs do not increase the long-term risk of pelvic inflammatory disease (PID)	True	False
IUDs are a safe method for teens.	True	False
IUDs are safe to be inserted immediately postpartum	True	False

19. How likely are you to recommend an *IUD/IUC* to a woman between the ages of 15-19 according the following characteristics?

Characteristic	Very unlikely	Unlikely	Neutral	Likely	Very likely
Has never been pregnant					
History of PID					
Recent history of STI					
Not in a monogamous relationship					
Abnormal pap smear in the past year and has not had a colposcopy					
History of ectopic pregnancy					
Unmarried					

20. How likely are you to recommend an *IUD/IUC* to a woman between the ages of 20-24 according the following characteristics?

Characteristic	Very unlikely	Unlikely	Neutral	Likely	Very likely
Has never been pregnant					
History of PID					
Recent history of STI					
Not in a monogamous relationship					
Abnormal pap smear in the past year and has not had a colposcopy					
History of ectopic pregnancy					
Unmarried					

21. How likely are you to provide same-day insertion of an *IUD/IUC* if the patient is 15-19 years old?

- a. Very Unlikely
- b. Unlikely
- c. Neutral
- d. Likely
- e. Very Likely
- f. Not applicable

22. How likely are you to provide same-day insertion of an *IUD/IUC* if the patient is 20-24 years old?
- Very Unlikely
 - Unlikely
 - Neutral
 - Likely
 - Very Likely
 - Not applicable

23. Rate your level of agreement with the following statements about concerns for providing *IUDs/IUCs* to women 15-19 years old.

Statement	Strong Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly Agree
I am concerned about liability					
I am concerned about side effects					
I am concerned about patient non-compliance.					
I am concerned about future infertility.					
I am concerned about medical risks.					
I am concerned about risk of pregnancy with proper use.					
I am concerned about risk of STIs with proper use.					
I am concerned about encouraging sexual promiscuity.					

24. Rate your level of agreement with the following statements about concerns for providing *IUDs/IUCs* to women 20-24 years old.

Statement	Strong Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly Agree
I am concerned about liability					
I am concerned about side effects					
I am concerned about patient non-compliance.					
I am concerned about future infertility.					
I am concerned about medical risks.					
I am concerned about risk of pregnancy with proper use.					
I am concerned about risk of STIs with proper use.					
I am concerned about encouraging sexual promiscuity.					

Single Rod Implant

25. Please indicate whether each of the following statements about *Implants* are True or False.

Currently available Implants are safe.	True	False
Implants decrease dysmenorrhea.	True	False
Insertion of the implant requires stiches.	True	False
Implants can be used in patients with no previous pregnancies.	True	False
Implants increase the risk of infertility.	True	False
Implants have side effects similar to other hormonal contraceptive methods such as headache, nausea, and weight gain.	True	False
Implants are a safe method for teens.	True	False
Implants are safe to be inserted immediately postpartum	True	False

26. How likely are you to recommend an *Implant* to a woman between the ages of 15-19 according the following characteristics?

Characteristic	Very unlikely	Unlikely	Neutral	Likely	Very likely
Has never been pregnant					
History of PID					
Recent history of STI					
Not in a monogamous relationship					
Abnormal pap smear in the past year and has not had a colposcopy					
History of ectopic pregnancy					
Unmarried					

27. How likely are you to recommend an *Implant* to a woman between the ages of 20-24 according the following characteristics?

Characteristic	Very unlikely	Unlikely	Neutral	Likely	Very likely
Has never been pregnant					
History of PID					
Recent history of STI					
Not in a monogamous relationship					
Abnormal pap smear in the past year and has not had a colposcopy					
History of ectopic pregnancy					
Unmarried					

28. How likely are you to provide same-day insertion of an *Implant* if the patient is 15-19 years old?

- a. Very Unlikely
- b. Unlikely
- c. Neutral
- d. Likely
- e. Very Likely
- f. Not applicable

29. How likely are you to provide same-day insertion of an *Implant* if the patient is 20-24 years old?

- a. Very Unlikely
- b. Unlikely
- c. Neutral
- d. Likely
- e. Very Likely
- f. Not applicable

30. Rate your level of agreement with the following statements about concerns for providing Implants to women 15-19 years old.

Statement	Strong Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly Agree
I am concerned about liability.					
I am concerned about side effects.					
I am concerned about patient non-compliance.					
I am concerned about future infertility.					
I am concerned about medical risks.					
I am concerned about risk of pregnancy with proper use.					
I am concerned about risk of STIs with proper use.					
I am concerned about encouraging sexual promiscuity.					

31. Rate your level of agreement with the following statements about concerns for providing Implants to women 20-24 years old.

Statement	Strong Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly Agree
I am concerned about liability.					
I am concerned about side effects.					
I am concerned about patient non-compliance.					
I am concerned about future infertility.					
I am concerned about medical risks.					
I am concerned about risk of pregnancy with proper use.					
I am concerned about risk of STIs with proper use.					
I am concerned about encouraging sexual promiscuity.					

Other Contraceptive Methods

32. How comfortable do you feel prescribing the following contraceptive methods to young women between the ages of 15 and 19?

Contraceptive Method	Very uncomfortable	Uncomfortable	Neutral	Comfortable	Very comfortable
Condom					
Diaphragm or cervical cap					
Oral Birth Control Pills					
Injectable birth control					
Vaginal Ring					
Birth Control Patch					
Emergency Contraception					

33. How comfortable do you feel prescribing the following contraceptive methods to young women between the ages of 20 and 24?

Contraceptive Method	Very uncomfortable	Uncomfortable	Neutral	Comfortable	Very comfortable
Condom					
Diaphragm or cervical cap					
Oral Birth Control Pills					
Injectable birth control					
Vaginal Ring					
Birth Control Patch					
Emergency Contraception					

Institutional Barriers

34. Please rate your level of agreement with the following statements

Statement	Strong Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly Agree
There is not enough time in my clinic schedule to go in-depth with a patient about her contraceptive method of choice.					
There is a lack of adequate clerical/clinical resources to safely dispense a specific contraceptive method.					
The Title X-funded organization where I work does not have every method stocked on-site.					
Policies at the Title X-funded organization where I work do not allow for same-day insertion of an IUD or implant.					

Demographics

35. Please indicate your gender
- Male
 - Female
 - Non-binary
36. Please indicate your age.
- ≤24 years of age
 - 25-34
 - 35-44
 - 45-54
 - ≥55
37. Please indicate your race (select all that apply)
- White
 - Black or African American
 - Asian
 - Native Hawaiian or Pacific Islander
 - Alaska Native or Native American
 - Other_____
38. Please indicate your ethnicity (please select one)
- Hispanic or Latino
 - Not Hispanic or Latino
39. Please indicate your professional title.
- Physician
 - Physician's assistant
 - Nurse practitioner
 - Certified nurse-midwife
 - Nurse
 - Certified Nursing Assistant or Certified Medical Assistant
 - Other_____
40. How many years have you been a licensed practitioner?
- <1 year
 - 1-9
 - 10-19
 - ≥20
41. What type of medicine do you currently practice? (select all that apply)
- Obstetrics and/or gynecology
 - Family medicine

- c. Pediatrics
- d. Other _____

42. What medical specialty did you receive training in?

- a. Family medicine
- b. Obstetrics - Gynecology
- c. Pediatrics
- d. None
- e. Other _____

43. Have you participated in any non-CAP educational trainings in reproductive health prior to July 2016?

- a. Yes
- b. No

44. If yes, what types of educational trainings in reproductive health did you participate in?

45. Have you participated in any non-CAP education trainings in adolescent medicine prior to July 2016?

- a. Yes
- b. No

46. If yes, what types of education trainings in adolescent medicine did you participate in?

47. Which Title X-funded organization do you work in Nebraska?

- a. OneWorld Community Health Centers
- b. Charles Drew Health Centers
- c. Planned Parenthood of the Heartland
- d. Mary Lanning Community Health Center
- e. Good Neighbor Community Health Center
- f. Midtown Community Health Centers
- g. People's Family Health Services
- h. Family Health Services
- i. Choice Family Health Care
- j. Community Action Partnership of Western Nebraska
- k. Three Rivers Public Health Department
- l. Western Community Health Resources

48. How many days per week do you work at the Title X clinic (e.g. providing *only* SRH care)?
- 1-2 days per week
 - 3-4 days per week
 - 5-6 days per week
 - 7 days per week
49. How often do you see a patient between the ages of 15-24 at the Title X clinic?
- At least once a week
 - 2-3 days during the week
 - 4-7 days during the week
50. Do you also work at another health care organization outside of the Title X organization where you are employed?
- Yes (Go to Question 49)
 - No (Thank you for completing the survey)
51. If yes, where else do you work?
- Private practice
 - Hospital
 - Federally Qualified Health Center
 - Public Health Department
 - Other_____

Appendix F: Study 3 Demographics Table

Demographics of Sample (N=62)

Demographics of Sample (N=62)		
Location		
	Urban	40%
	Rural	60%
Staff Role		
	Medical Doctor	5%
	Physician Assistant	5%
	Nurse Practitioner	21%
	Certified Nurse Midwife	3%
	Registered Nurse	8%
	Certified Medical Assistant/Certified Nursing Assistant/Medical Assistant	14%
	LPN	11%
	APRN	3%
	Clinic Manager	5%
	Other	2%
	Missing	23%
Gender		
	Male	2%
	Female	75%
	Missing	23%
Age (years)		
	19 – 24	3%
	25 – 34	23%
	35 – 44	26%
	45 – 54	6%
	55 or older	19%
	Missing	23%
Race/Ethnicity		
	Non-Hispanic White	64%
	Non-Hispanic Black	3%

Non-Hispanic Other or Multiple Races	2%
Hispanic	8%
Missing	23%
Years with License	
Less than 1 year	8%
1 – 9 years	31%
10 – 19 years	13%
More than 20 years	14%
Other	11%
Missing	23%
Type of Medicine Practiced	
Obstetrics and Gynecology	14%
Family Medicine	26%
Pediatrics	2%
Reproductive Health and/or Women’s Health	10%
Other	4%
N/A	21%
Missing	23%
Number of Days work at Title X organization	
1-2 days/week	35%
3-4 days/week	24%
5-6 days/week	18%
Missing	23%
Participation in Group Trainings with CAP Mentor	
Yes	55%
No	45%
Participation in One-On-One Mentoring with CAP Mentor	
Yes	42%
No	45%

I am the CAP Mentor	13%
Participation in Trainings with the Contract Nurse Clinician	
Yes	39%
No	61%
