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Use of Intrauterine Contraception among Nulliparous Adolescents: A Qualitative
Approach to Identifying Counseling Needs

By

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A thesis submitted in partial satisfaction of the

Requirements for the degree of

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in

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Abstract

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Professor Colette Auerswald, Chair

Purpose: To describe the IUC adoption process among nulliparous adolescents and to identify the role of the medical provider in this trajectory.

Methods: We conducted semi-structured interviews with a clinic-based sample of twenty nulliparous adolescents (ages 15-24 years) with a history of IUC use. Interviews were analyzed using modified grounded theory and cross-case analysis to reveal a process model for IUC adoption with a focus on the role of the medical provider.

Results: The model includes the following stages: awareness, initial reaction, information gathering, adoption, and adjustment and assessment. It is influenced by personal preferences and experiences, friends, family, sexual partner(s), and medical providers. Interactions with medical providers that study participants found helpful in navigating the adoption process included the use of visuals; tailored counseling to address specific contraceptive needs; assurance that IUC discontinuation was an option; information on a wide range of side effects; medical provider self-disclosure regarding use of IUC; and addressing and validating concerns both before and after IUC insertion.

Conclusions: Nulliparous adolescents in this study described a complex IUC adoption process in which the medical provider played a substantial supportive role. Findings from this study may be used to counsel and support future nulliparous adolescents regarding IUC use.

Dedication

I dedicate this thesis to my Auntie Barb and my future niece or nephew

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I would like to acknowledge my thesis committee, the staff at New Generation Health Center, Dr. Tina Raine-Bennett, Dr. Jody Steinhauer, Jessea Greeman, and the study participants for helping me make this thesis possible.

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PART ONE: Review of the Literature

Scope of the Problem

Unintended pregnancy—defined as either mistimed or unwanted—disproportionately affects young, low-income, minority women and is considered a major public health problem in the United States (1, 2). In the 2002 National Survey of Family Growth (NSFG), 82% of pregnancies among women under twenty years of age were unintended as were 60% of pregnancies among 20-24 year olds. This is a significant disparity given that 43% of pregnancies among 25-29 year olds and 33% of pregnancies among 30-34 year olds were unintended in the same survey. Data from the 2002 NSFG also showed that 69% of pregnancies among African American women and 54% of pregnancies among Hispanic women were unintended compared to 40% of pregnancies among White women. With regards to income, 52% of unintended pregnancies occur among women living between 0-99% of the poverty level compared to only 22% of unintended pregnancies occurring among women living at 300% or more of the poverty level. Based on these statistics, being young, low-income or a minority woman are independent risk factors for experiencing an unintended pregnancy (1, 3).

Unintended pregnancy can have negative consequences for women of all ages and for their future children, including a delay in pre-natal care, increased exposure to teratogens and increased economic hardship (4). Adolescents, particularly those under 20 years of age, face these challenges as well, in addition to many others. For example, adolescents that choose to abort an unintended pregnancy may face strict parental consent laws and an undue financial burden associated with the procedure (5). Those who choose to carry a pregnancy to term are more likely to drop out of school and to be single parents, while their children are more likely to be born prematurely, have lower cognitive attachment, and display behavior problems (6). On a societal level, adolescent childbearing costs taxpayers at least 9.1 million dollars annually (6). Given these outcomes, it is a public health imperative to study interventions aimed at reducing adolescent unintended pregnancy in the United States.

In developing such interventions, the autonomy of individual women—and the cultural norms to which they subscribe—must also be considered. From a public health perspective, adolescent unintended pregnancy is considered detrimental for individual women and society at large. However, the meaning of unintended pregnancy is culturally circumscribed and varies across different racial/ethnic groups. For example, Geronimus argues that “in communities such as high-poverty, urban areas, where income is low and precarious, and healthy life expectancy is uncertain, the vitality of the community may be enhanced by early childbearing norms *coupled with* a normative family structure that is multigenerational and extends the responsibility for children’s well-being beyond the biological parents” (7). In other words, the public health imperative to decrease adolescent pregnancy must also include recognition that young women are making decisions about their reproduction within the context of their local cultural norms and individual preferences. It is, therefore, imperative to balance the larger public health goal

of reducing unintended pregnancy with respect for a young woman's individual right to make autonomous decisions about her reproduction.

In addition to high rates of unintended pregnancy, it is also essential to acknowledge the prevalence of sexually transmitted infections (STIs) among adolescents. In 2009, females ages 15-19 years and 20-24 years had the highest and second highest rates of Chlamydia in the US, at 3329.3 per 100,000 and 3273.9 per 100,000, respectively (8). A common concern is that adolescents who use hormonal methods to prevent pregnancy may not also use condoms—known as “dual contraception”—which protect against STIs. In fact, only 8.7% of 15-19 year olds in the 2002 NSFG stated that they employed dual contraception at last intercourse (1). Though not the focus of this thesis, a comprehensive approach to supporting healthy adolescent sexual development must also include STI prevention.

Most successful interventions to decrease rates of unintended pregnancy have involved supporting the use of abstinence or contraceptives as opposed to promoting abstinence only (9). Adolescents use a variety of birth control methods including, but not limited to, male condoms, oral contraceptive pills (OCPs), the contraceptive injection (DMPA), the patch, the progestin implant, the vaginal ring, and intrauterine contraception (IUC) (10). Of these methods, the most popular are the male condom and the OCP. In 2002, 83.2% of 15-19 year old females used a method of contraception at last intercourse, with the OCP being used by 30.5% of adolescents and the male condom being used by 54.7%. These numbers were comparable among 20-24 year olds (1).

While many adolescents use contraception, a significant contributor to unintended pregnancy in this population is contraceptive method misuse and discontinuation (11-13). For example, adolescents are at high risk for inconsistent OCP use, missing an average of up to three pills each cycle. In addition to inconsistent use, up to 50% of adolescents discontinue OCP use within the first three cycles (14). With regard to other methods, a recent longitudinal prospective study found that only 32.3% of ring, 12% of DMPA and 11.3% of patch users, ages 15-24 years, were still using these methods one year after initiation. Though fifty-eight percent of those that discontinued proceeded to switch to another method, risk of pregnancy during this transition period was increased (3, 15). In addition to young age, race/ethnicity and income also affect consistency of contraceptive use. Studies have found that minority women and low-income women experience higher rates of method discontinuation and failure than white women and women with higher income, respectively (16).

In considering contraceptive misuse and discontinuation, the type of contraceptive method used must be taken into account. While the best contraceptive method is one that an adolescent feels comfortable with and will use consistently and continuously, most young people use a birth control method that does not facilitate proper use. For example, the oral contraceptive pill and male condom require daily or coital-level adherence, and thereby provide many opportunities for method misuse and discontinuation (14, 17). On the other hand, long-acting reversible methods practically eliminate the risk of misuse (14, 17).

One such method is intrauterine contraception (IUC). This T-shaped device, which was recently approved for adolescents, is inserted into the uterus by a trained health practitioner and can offer up to 12 years of pregnancy prevention (18). Though it has recently been cited as having potential to reduce rates of unintended pregnancy in the United States (19), very few adolescents use the method (20). In addition to approval for use by adolescents, eligibility for IUC has recently expanded to include women who have not given birth, referred to as nulliparous. Due to these changes in eligibility, there is interest in the medical community to support nulliparous adolescent use of IUC (21, 22). However, little is known regarding how to effectively counsel nulliparous adolescents about this device in a clinical setting.

Given the paucity of research in this area, this thesis will 1) assess experiences with and preferences for IUC counseling among a nulliparous population of predominantly low-income minority adolescents with a history of IUC use, and 2) draw from these experiences and preferences to support counseling that facilitates informed decision-making about use of the device. In the following sections, literature from several disciplines will be synthesized in order to frame the significance of this research.

Understanding Adolescent Contraceptive Decision-Making

What is adolescence?

Adolescence is a dynamic period of life marked by biological, social and cognitive development. Historically, it has been closely tied to the structure of adult society. In the Agrarian society of early modern Europe, “youths” (as they were referred to at this time) took on a prescribed and semi-independent role that was defined in relation to the family, the basic economic and social unit of the era (23). The term “adolescence” emerged in the age of industrialization at the end of the nineteenth century, and became associated with a far more uncertain and ambiguous time period. Individual choice and initiative took precedent over the family unit. Institutions—such as schools—were created that, in many ways, redefined adolescence as a time of exploration and identity formation. As a reflection of these changing definitions, there is currently disagreement about the exact age range associated with this period of life. For example, the Center for Disease Control defines adolescence as between 10-24 years, while the United Nations considers adolescence to occur between 10-19 years (23).

Although the age range is not clearly defined, present day medical professionals and psychologists agree that adolescence is a time of significant biological, social and cognitive development. Each of these components may develop at different times and is influenced by the larger context in which an adolescent lives. Recent developments in neuroimaging techniques have pointed to this contextualized asynchronous development as a possible explanation for the risk-taking—in the form of unprotected sex, for example—and reduced ability to regulate behaviors that are often associated with adolescence (24).

During adolescence brain maturation is “occurring in areas associated with response inhibition, the calibration of risk and reward, and emotional regulation” (24). Much of this maturation occurs in the pre-frontal cortex (an area responsible for cognition) and involves synaptic pruning (the elimination of synapses that are rarely used) and myelination of nerves, both processes which improve information processing and continue well into the twenties (24). Importantly, the areas of the brain responsible for arousal and motivation precede the maturation of the cortex. This asynchronous development creates a disjunction between an adolescent’s ability to regulate motivation and arousal in response to an affective experience and can influence decision-making regarding risk-taking.

There is still disagreement as to why some adolescents take more risks than adults. Older and controversial theories have cited adolescents as lacking the appropriate knowledge to make competent decisions, while others have supported the perception that adolescents think they are invulnerable to the consequences of risk-taking (25). Steinberg (2005) hypothesizes that, by middle adolescence (around the age of 16 years) many young people have the same logical competencies as adults, but are more influenced by individual, emotional, and contextualized factors in the environment when making decisions (24).

Because adolescent decision-making is likely not the same as adults (26), it is important for clinicians to understand how adolescents make decisions about contraceptive use. Though multiple theories exist to describe this process, several of the more prominent ones are presented in the following section.

The process of adolescent decision-making

Decision-making can be defined as “the process of making [a deliberate choice] among competing courses of action” (27). Beyth-Marom and Fischhoff (1997) describe three elements that are important in explaining and predicting adolescent decision-making: cognition (what an adolescent believes), cognitive process (how an adolescent thinks while making choices), and metacognition (what an adolescent thinks about her knowledge and thought process).

The cognitive aspect of adolescent decision-making involves taking into account all available and relevant information. This includes exploring the possible options associated with a decision, assessing the possible consequences associated with each option, and evaluating the desirability and probability of each consequence. For example, when an adolescent makes a decision about contraceptive use, she will first explore her possible options based on her knowledge of the contraceptive options available (Depo, OCP, IUC, etc). The experience of psychological stress at this stage may constrain full consideration of these options (28). From here, she will assess the “consequences” associated with each method (e.g., what are the side effects associated with a method and how effective is it at preventing pregnancy?) and the desirability of these consequences (e.g., is it desirable to have an effective method? Is it desirable to experience the side effect of gain weight associated with a method?). Assessing desirability of a consequence is an inherently subjective process that is dependent on what an individual adolescent

values. These values are often culturally mediated and may not necessary align with the values that drive larger public goals (such as reducing adolescent unintended pregnancy). Finally, an adolescent will weigh the probability of these consequences occurring (what is the probability of this method being effective for me and how likely is it that I will gain weight with this particular method?).

In addition to cognition, the cognitive process than an adolescent goes through when making a decision must also be taking into account. This requires a closer examination of how an adolescent thinks and is closely related to cognitive development. One aspect of cognitive development that is vital to effective decision-making is described by Jean Piaget and involves being able to consider the long-term consequences of decisions. Piaget's developmental model of formal operational thinking describes adolescence as a time when one goes from concrete thought (literal) to formal operations (abstract). Formal operations allow an adolescent to consider what is possible in the future when making a decision, thereby allowing them to hypothesize how their own actions might result in future consequences (for example, being sexually active and not using contraception) (29). While there is disagreement regarding the exact age(s) associated with the development of formal operations (27), completion of the final stage of cognition involves mastery of four skills: complexity (the ability to consider many options simultaneously), thinking about possibilities (the ability to image abstract possibilities), solving problems (the ability to generate solutions to problems), and relativistic thinking (the ability to recognize other's perspectives). Once these components have been mastered, an adolescent is thought to be a competent decision maker.

The role that the cognitive process plays in adolescent contraceptive decision-making has been explored in the literature. In a study of urban African American adolescents by Sachs (1985), stage of cognitive development was the single best predictor of decision-making abilities in both contraceptive and non-contraceptive situations (30). The author of this paper argues that screening for level of cognition prior to a contraception counseling visit may help providers gauge decision-making competence and tailor counseling appropriately.

Metacognition—what an adolescent thinks about her thoughts—is the final element in Beyth-Marom and Fischhoffs' theory. This involves knowing the extent of one's knowledge and, therefore, being able to accurately assess when to make a decision confidently versus when to ask for help. Mann et al. (1989) also describes metacognition as an important component of effective decision-making. In this review of the literature, nine elements of competent adolescent decision-making are discussed, some of which include: the willingness to make a choice; the ability to understand the activity of decision-making as a cognitive process (metacognition); the ability to clarify a goal and conceptualize steps for moving toward that goal; willingness to modify an unobtainable ideal for a less favorable and viable option; and the ability to assess credibility of information sources when making a decision (28). Clearly, many components contribute to this complex process.

While these theories offer a framework for understanding adolescent decision-making, the process that every young woman goes through when making a decision about contraception is highly variable and individualized. This comes, in part, from the fact that an adolescent is making decisions about contraceptive use in the context of her environment. Bronfenbrenner's "Ecological Systems Theory" states that adolescents develop and make decisions in the context of four nested systems, ranging from the individual to larger societal norms and cultural values (31). These systems influence and are influenced by one another. Numerous factors embedded in each of these systems—ranging from individual attitudes toward contraception to media portrayals of healthy sexual behavior—have been found in the literature to influence contraceptive use among adolescents and are congruent with Bronfenbrenner's model. Integrating these factors into a counseling visit may help adolescents explore their underlying motivations for choosing a method of contraception and assist them in making a more informed choice (32-34).

Factors that influence adolescent contraceptive decision-making

Individual Level Factors

At the individual level, pregnancy intention, contraceptive knowledge and attitudes, and race/ethnicity and socioeconomic status are shown to influence adolescent contraceptive decision-making (11, 35-41).

Pregnancy Intention

The effect of pregnancy intention on contraceptive use has received increased attention over the years. In the past, pregnancy intention was measured as a dichotomous variable (intended vs. unintended), however, it is now recognized that ambivalence toward pregnancy has a significant effect on contraceptive use (42). This was displayed in a longitudinal study by Zabin et al. (1993), which used a multi-item questionnaire to assess how a young women's desire for pregnancy and the strength of that desire influenced her contraceptive behavior. Results showed that only adolescents with a consistent and unequivocal desire to avoid pregnancy took steps to do so (i.e., use contraception consistently), while ambivalence about pregnancy (measured as inconsistent desire) was as strongly associated with conception as a positive intention to conceive (41).

Pregnancy intention is influenced by many factors, including race/ethnicity. An investigation by Schwarz et al. (2007) found that Hispanics and Blacks were more likely to report ambivalence toward pregnancy compared to Whites (43). These differences may be explained in part to cultural understandings of young motherhood based on racial/ethnic background. For example, in a study of 332 African American 13-19 year olds, young motherhood was seen as an opportunity to get closer to one's family and sexual partner. It was also viewed as a vehicle in which to pursue one's career goals. The authors also state that these findings support previous work, which posit that a "combination of forces including poverty, the absence of the institution of marriage, the more rapid deteriorating health of African-American women over the life course, and an alternative life course strategy in which women fulfill multiple roles, such as motherhood and career, at the same time" contributes to early childbearing in this population (44).

With regards to socioeconomic status, Brucker et al. (2004) found that sexually active 15-19 year olds who expressed anti-pregnancy attitudes were more likely to have a high maternal education, live with both biological parents and have a high family income compared to adolescents that expressed ambivalence or pro-pregnancy attitudes (11). One possible reason for these discrepancies is that adolescents from a lower socioeconomic background often have fewer economic opportunities available to them and, therefore, may be less likely to feel in control of their lives or to have long-term goals that require a delay in childbearing (41).

As alluded to earlier, the *strength* of one's pregnancy intentions (not just the direction) is paramount to understanding contraceptive behavior (41). Drawing from the Health Belief Model, Nathanson and Becker (1983) state that, while many factors influence contraceptive decision making, an adolescent must have a strong desire to prevent pregnancy and feel that it is a true "threat" in order to act on her desire to prevent it (i.e., use contraception) (45). The decision to use contraception can be facilitated by some external factors—such as easy access to a family planning clinic—and inhibited by others—such as a partner's desire for children and cultural norms that support early childbearing. Zabin et al. (1993) theorize that external factors may have a more significant impact on contraceptive use among adolescents who are ambivalent about pregnancy compared those with a strong desire to prevent conception (41). Race/ethnicity and socioeconomic status may impact this relationship because low-income minority women often grow up in environments that do not give them the same "strong hopes for economically self-sufficient adult lives that will help them deal with their ambivalence" (41).

Given the impact that pregnancy intention has on a young person's contraceptive use—and the complex interaction this intention has with race/ethnicity and socioeconomic status—it is crucial to explore this topic during the contraception counseling visit.

Contraceptive Knowledge and Attitudes

Studies have shown that adolescents with increased knowledge of contraception use it more consistently. For example, Sandler et al. (1991) found that 13-16 year old adolescents who used contraception consistently had higher sexual knowledge scores compared to those who did not (38). In another study, focusing specifically on urban adolescent African American females, level of sexual knowledge was found to be a significant factor in decision-making (30).

With regards to initiation, Harper et al. (2010) found that adolescents who initiated a new method (the ring) had higher knowledge about all methods of contraception than those who initiated an older method (the pill) ($p < 0.0001$). This suggests that knowledge about contraception in general may make adolescents more willing to try something new, while lack of knowledge may lead an adolescent to choose a method that is, for example, more well-known or accepted within their social network (36).

Attitudes toward contraception also play a significant role in contraceptive behavior. In a nationally representative sample of US women ages 15-44 years, consistent OCP use was more common among women who were satisfied with their method compared to women

who were not satisfied (48% vs. 35%) (35). Attitudes toward contraception play a similar role among adolescents. For example, a longitudinal cohort study of 313 African American adolescents under 17 years of age found that only those with positive attitudes toward contraception used it consistently while those with negative attitudes were significantly more likely to use their method inconsistently (41). Adolescents in this study were also more likely to use their contraception consistently if they believed it to be effective at preventing pregnancy.

Historical context of race/ethnicity and socioeconomic status

Although race/ethnicity and socioeconomic status are distinct entities, they are intimately connected in the United States and, when taken together, may play a role in decision-making about contraceptive use. This is specifically the case when considering the historical legacy of discriminatory programs and policies aimed at poor minority women in this country.

Motivated by the eugenics movement, the first sterilization law in the United States was enacted in Indiana in 1907. Over the course of the 20th Century, thirty-one other states passed sterilization laws, which targeted the “feeble minded” and those with “undesirable” traits, such as rapists, child molesters, and the mentally ill. California played a significant role in this movement, stating that sterilization was “a prophylactic measure that could simultaneously defend the public health, preserve precious fiscal resources, and mitigate the menace of the ‘unfit’ and ‘feebleminded.’” In the 1950s and 1960s, Southern States began to focus sterilization policies on minority and poor women as a punishment for bearing illegitimate children or in exchange for receiving continued support from welfare. Women were also given financial incentives for using long-acting reversible methods, such as Norplant, and others were sterilized following childbirth with a cesarean section without their consent (46).

These coercive practices continued into the 1990’s and, while they are no longer condoned in our current medical system, studies have shown that discriminatory family planning practices continue to exist in the modern medical system in a more pervasive manner. For example, Borrero et al. (2009) used data from the 2002 NSFG to determine a woman’s likelihood of receiving counseling for sterilization and other birth control methods based on her race. Results showed that African American and Hispanic women were more likely to received counseling for birth control compared to Caucasian women. Furthermore, Hispanic women were more likely to report being counseled about sterilization compared to Caucasian women (47). In another study by Dehlendorf et al. (2010), 524 medical providers were shown videos of patients of varying socioeconomic statuses and race/ethnicities to investigate potential differences in IUC recommendations based on these variables. Results showed that providers were more likely to recommend IUC to low-socioeconomic Blacks and Latinas compared to low-socioeconomic Whites (48). Interestingly, when examining differences by socioeconomic status (SES), researchers found that providers were less likely to recommend IUC to low SES whites compared to high SES whites. This pattern was similar for African Americans stratified by SES, though no differences in recommendations were found between Latinas in high and low SES groups. While examining the reasons for these disparities is beyond the

scope of this paper, the aforementioned study does show that provider recommendations for IUC vary based on both patient socioeconomic status and race/ethnicity. They also show that, though likely not intentional, family planning healthcare disparities continue to exist in current clinical practice.

The effect that these healthcare disparities have on a woman's perception of her care is significant and can act as a barrier to contraceptive use (49). Among a sample of 1,852 women living below 200% of the federal poverty level, African Americans had 2.3 times the odds of reporting having ever been pressured to use contraception during a medical visit compared to White women (50). Furthermore, in a cross-sectional phone survey of 326 African American women, 67% reported race-based discrimination when receiving family planning services (51). Thornburn and Bogart (2005) found that many African American women who reported discrimination in a family planning visit also held conspiracy beliefs about contraception (i.e., birth control is unsafe and/or used to control the fertility of Black women), and that those with stronger conspiracy beliefs were less likely to use any form of birth control (39). Distrust of the medical system has also been voiced by minority adolescents, particularly in reference to the use of long-acting contraceptive methods. In a qualitative study of primarily African American, Latina and Asian low-income adolescents (14-20 years old), participants felt "suspicious" of the contraceptive implant since it "was associated with a white medical system that had historically abused poor and minority women" (37).

Given the history of coercive family planning practices and policies in the United States, and the distrust of the medical system expressed by members of some low-income minority groups, it is imperative that family planning counseling in a clinical setting promote informed contraceptive decision-making free from coercion. This is particularly true regarding long acting methods.

Interpersonal Level Factors: The Social Network

An adolescent's social network, which includes peers and sexual partners (40), acts as a source of contraceptive information and can also play an integral role in contraceptive decision-making.

Peer Influence

Peers are a common source of information—both accurate and inaccurate—about contraception. Interviews with thirty young Latina and African American women (mean age, 26 years) found that, when making decisions about contraceptive use, peers were viewed as a more "valuable" source of contraceptive information than medical providers (40). Those who had previously used a method were seen as "experts" on that method and their opinion was highly valued by non-users when making decisions about contraceptive use. Similarly, another qualitative study of Latinas between 18-26 years of age found that friends tended to transmit information about contraception through anecdotes and personal stories (52). Myths were common—one being that oral contraceptive pills could cause death because they never dissolved in a person's body—and dissuaded some participants from using the certain birth control methods. The role of peers in transmitting contraceptive information is particularly important in the context of

race/ethnicity because minority youth may rely more heavily on their peers for information than do whites due to a distrust of the medical system (16).

Peers are also an integral normative predictor of adolescent contraceptive use. This is especially true during the high school years (ages 14-18), as this is generally the time when parental influence—though still salient in a young person’s life—is less pronounced than peer influence for short-term decisions (53). A qualitative study by Potard et al. (54) found that high-school aged adolescents who believed their peers used condoms consistently were more likely to use condoms themselves. This was the case whether or not peers were *actually* using condoms consistently. Furthermore, Lowenstein et al. (1991) found that the most important variables to influence short-term sexual activities among 14-18 year old girls was sexual behavior of peers (32). Relative to peer influence, parental influence plays a more prominent role in adolescent’s long-term decision-making, such as the continued use of contraception and future career goals (55, 56).

Clearly, peers play an integral role in both the dissemination of contraceptive information and adolescent short-term decision-making around contraceptive use.

Sexual Partner

The type of relationship an adolescent has with her sexual partner; her partner’s attitudes toward pregnancy and contraception; and the level of support she receives from him can influence her use of contraceptives (55, 57, 58).

Adolescents in long-term relationships are more likely to be knowledgeable about and utilize contraception, while those in shorter-term relationships tend to use contraception inconsistently (55). This may be partly due to the fact that adolescents in long-term relationships are more likely to communicate with their partner about contraception, which in itself has been shown to influence contraceptive use. For example, a study of 375 African American adolescents ages 14-18 years found that inconsistent contraceptive use was independently associated with less frequent communication with sexual partners about pregnancy prevention (58). While long-term relationships are generally associated with increased use of contraception, they can also act as a barrier to effective use of birth control. This may occur due to an adolescent’s desire to affirm her love to a partner by engaging in unprotected intercourse or by avoiding the discussion of contraception with her partner due to concerns that it could imply a lack of trust in the relationship (55).

In addition to type of relationship, an adolescent’s contraceptive use is influenced by her partner’s attitudes toward pregnancy and contraception, and the level of support for contraceptive use she receives from him. A longitudinal study of 289 predominantly African American adolescents (average age, 15.3 years), found that the odds of using contraception during sex decreased with increasing partner support for pregnancy (57). These findings were notable among participants who stated that they did not want to get pregnant at the beginning of the study. In a qualitative investigation of low-income 14-20 year olds, participants expressed that their male partners often discouraged contraceptive use and were unsupportive or controlling. Some participants also felt pressured by their

partner to have a baby and felt powerless to change their partner's views on this matter. Many perceived their partners' attitudes toward birth control as barriers to effective contraceptive use (37). Conversely, Weisman et al. (1991) found that adolescents were more likely to use oral contraceptive pills if their partners were supportive of contraceptive use (59).

Finally, in addition sexual partners and peers, a macro-level factor—the media—also has an impact on adolescent contraceptive decision-making.

Macro-level Factors

The Media

According to a statement by the American Academy of Pediatrics, “adolescents rank the media second only to school sex education programs as a leading source of information about sex” (60). While normative beliefs about acceptable sexual behaviors may be shaped by television, advertisements and the music industry, adolescents also utilize media sources to learn about contraception. A qualitative study of Latina and African American adolescents found that the majority of study participants utilized the internet—such as WebMD and YouTube—to obtain more information on contraception (37).

Clearly, multiple factors outside of the clinical setting impact contraceptive use among adolescents. Integrating these into the contraceptive counseling visit may help adolescents to explore their underlying motivations for contraceptive use and aid in the decision-making process of a contraceptive method.

Diffusion Theory

Given the multiple factors that influence contraceptive use, and the recent availability of IUC to adolescents, understanding how new contraceptive methods—“innovations”—are disseminated through a population may help identify areas in which healthcare providers can offer support to young women during their contraceptive decision-making process.

Everett Roger's theory on Diffusion of Innovations defines diffusion as “the process by which an innovation is communicated through certain channels over time among members of a social system” (61). When making a decision to use an innovation, diffusion theory states that individuals go through four stages: knowledge, persuasion, decision/implementation and confirmation. In the knowledge phase, an individual learns about an innovation for the first time and gathers facts about it. The medical provider commonly fills the role of “information giver” during this time, offering objective facts about effectiveness and side effects associated with a new contraceptive method. In the persuasion phase, an individual forms an attitude toward the innovation and considers how the innovation might fit into her life. The subjective experience of others from a similar background, such as peers, plays a principal role here and helps to decrease uncertainty about the innovation. Traditionally, medical providers do not play a dominant role in this phase. For example, they often do not give a subjective opinion or offer personal information about their own experiences with a new contraceptive method.

To date, very little research has been done to assess the appropriateness and usefulness of medical provider subjectivity and self-disclosure during this phase and the role that it plays in the contraceptive decision-making process.

In the third phase, the individual makes the decision whether or not to use the innovation and implements this decision. The implementation process may be aided by support from a person that has previous experience with the innovation, such as a peer who uses the method of contraception being initiated. Finally, in the confirmation phase, an individual seeks reinforcement for the decision that was made. This reinforcement may be found through common experiences with others that use the innovation. For example, users of a new form of contraception may seek support from those that use the same method. They may do so by taking part in interpersonal communication or assessing others' experiences on online forums. In this phase users also decide whether or not they would like to continue using the innovation. Medical providers can play a role in this phase, especially if the new contraceptive method that is adopted requires removal by a health care provider.

Clearly, adolescent decision-making regarding contraception is a complex process that is influenced by an individual's development, personal goals and needs, and numerous factors in the environment. Diffusion theory—which has been used successfully in the past to understand contraceptive use among networks of women (62)—offers a framework to tie these seemingly incongruent topics together. It may help explain how new methods of contraception are spread through a social system and the role that contraceptive counseling can play in this process.

So far, we have discussed a number of factors and processes that may impact adolescent contraceptive decision-making. We have also explored the way in which these factors and processes may be related to the contraceptive counseling visit. We will now turn to the contraceptive counseling visit itself to explore the role it plays in contraceptive use.

Contraceptive Counseling: Impact on Patients and Areas for Future Research

Counseling in a clinical setting: Impact on contraceptive use and informed choice

Although no specific recommendations are provided, contraceptive counseling in a clinical setting is recommended by the United States Task Force as a tool to prevent unintended pregnancy (42). International and domestic research support this statement and have found that effective counseling can impact a patient's choice of contraception as well as continuation and satisfaction with the chosen method (35, 36, 63).

RamaRao et al. (2003) found that women in the Philippines who received high-quality contraceptive counseling had 1.62 the odds of continuing their contraceptive method six months after their visit compared to those that reported low-quality care. These findings remained significant after adjusting for pregnancy intention and socio-demographic variables (63). In terms of satisfaction, a domestic study by Frost et al. found that women who were not satisfied with their provider had 1.59 the odds of inconsistent OCP use

compared to those that were very satisfied with their provider (35). In addition to influencing satisfaction with and continuation of a contraceptive method, medical providers can also play an important role in the uptake of contraceptives. A study by Harper et al. (2010) found that adolescents (aged 15-24 years) who reported choosing their contraceptive method collaboratively with their provider were more likely to take up a newer method (the ring) than an older method (36). Though the relationship between provider-patient communication and contraceptive outcomes is complex, these studies suggest that the contraceptive counseling visit can have a positive impact on contraceptive use.

While every provide-patient interaction is undoubtedly variable, a basic tenet of the contraceptive counseling visit is to facilitate informed choice about the use of a contraceptive method (64). Supporting informed choice is an integral aspect of providing patient-centered care and involves helping a patient decide on a contraceptive method, which “best satisfies [her] personal, reproductive and health needs, based on a thorough understanding of contraceptive options” (33). While medical organizations domestically and internationally cite the importance of facilitating informed choice (65), it is difficult to determine which elements of a counseling visit contribute to this goal and how it should be measured (33). Some areas that have been cited include discussion about a patient’s reproductive goals (and how these goals align with a contraceptive option), giving accurate information about contraceptive methods, and providing instructions on how to deal with problems, should they arise (33).

Supporting informed choice means more than just giving medical information on things such as side effects and effectiveness. Studies of oncology patients show that, in addition to getting information about the medical benefits and risks of a treatment option, informed decision-making also involved integrating one’s personal experiences and values with the experiences of others (66). Given the multiple factors that influence contraceptive decision-making among adolescents, it is likely that making an informed choice about a method also includes information that spans beyond that which is purely medical to include personal values and friends’ experiences.

One reason to support informed choice in family planning counseling is that it may be associated with improved contraceptive outcomes. For example, informed decision-making likely includes an understanding of side effects associated with a particular method of contraception. Studies have shown that comprehensive information on side effects increases rates of contraceptive continuation (63, 67, 68), suggesting that contraceptive users who know what to expect prior to initiating a method are more likely to continue using the method. In this sense, advanced information is helpful. However, *too much* information can also be overwhelming and make it more difficult for a patient to make an informed choice (33). A challenge for healthcare providers is to facilitate the process of informed decision-making while accommodating for the fact that every patient may need different types and levels of support to do so.

To aid providers in this pursuit, a number of contraceptive counseling models are currently in use with aims to support informed decision-making. These models are

discussed in the following section, along with a new area of research that explores patient preferences for contraceptive counseling.

Current models of contraceptive counseling and patient preferences

The autonomous decision-making model is an example of a contraceptive counseling model that aims to support informed decision-making. In this model, providers offer objective information to the patient regarding their treatment options and patients proceed to make a decision about their care without the input of the provider. The autonomous decision-making model is widely used and promoted in family planning counseling (69), in part due to the coercive history of family planning practices in the United States and the need to ensure that women are making decisions about contraception free from inappropriate provider influence. As a result, providers who subscribe to this model will often refrain from actively helping patients assess their contraceptive decisions. They will also abstain from giving subjective information on a contraceptive option, even when requested by the patient (33).

While the autonomous decision-making model is commonly used and accepted, a controversial position statement by Moskowitz and Jennings (1996) challenges the exclusive use of non-directive contraceptive counseling specifically in regards to long-acting reversible contraceptive methods. Though the authors acknowledge a woman's fundamental right to control her reproduction and the past coercive use of these methods to control the fertility of marginalized groups, they state that "appropriate persuasion can be exerted to convince a woman to use these methods" and that the current use of non-directive counseling is "overly rigid" (70). For example, a clinician can try to encourage a woman who "has experienced a series of unintended, unwanted pregnancies resulting from unsuccessful use of other contraception methods" to use a long-acting method. This more directive approach is based on the rationale that the consequences of unintended pregnancy may outweigh the autonomy of the patient in certain circumstances; an argument that may be particularly salient among adolescents, many of who are still developing effective decision-making skills (23). However, determining who should get directive counseling is highly subjective and, though not intentional, providers may base these decisions on discriminatory principles that result in health care disparities based on patient race, ethnicity and/or income (71).

Although Moskowitz and Jennings' statements require further refinement, they do unearth a salient topic: not all women may benefit from the same type of contraceptive counseling. Studies have shown that patient preferences for health care counseling are variable and that a "one size fits all" approach does not meet the needs of every patient (72). For example, some women appreciate the subjective opinion of their provider when making decisions about contraception and others benefit from counseling that tailors to their specific needs and life situation (50). Understanding these preferences is paramount to facilitating informed decision-making, as the needs and values of each patient and may be different when choosing a contraceptive method. Research in this area is limited and greatly needed.

To date, only a small number of studies have been published on patient preferences for contraceptive counseling, and none have included exclusively the adolescent population. The few investigations focused on adults show that patient preferences for contraceptive counseling vary based on both the type of health care decision being made and personal preferences of the individual. For example, Dehlendorf et al. (2010) found that women (mean age 25 years) were more likely to prefer autonomous decision-making about contraception compared to decision-making around their general health (73). Results of this study also showed that, while the majority of women (50%) preferred autonomous contraceptive decision-making, 33% preferred the shared decision-making model and 18% preferred for their providers to make contraceptive decisions for them.

Given this variability in patient preferences and the lack of research in this area, qualitative methodology—which allows participants to describe lived experiences and feelings in their own words (50, 74)—is perhaps best suited to investigate the nuances of an individual women’s contraceptive counseling needs. Using in-depth interviews, Becker et al. (2009) assessed experiences with and values regarding contraceptive services among a racially diverse group of 18-36 year old women. Participants appreciated providers understanding their family planning needs and personalizing their care accordingly. They also expressed dissatisfaction when their specific questions were not answered and disliked feeling pressured to use a method of contraception that they did not feel informed about (50). Though more research is needed in this area, studies show that patients’ preferences for contraceptive counseling are highly personal and variable. As such, providing patient-centered care that supports informed decision-making may involve moving away from a global implementation of the autonomous decision-making model toward one that promotes tailored counseling to meet an individual woman’s specific preferences and needs.

In recognition of the variability for counseling preferences, the shared decision-making model, which involves both the provider and patient coming to a mutually agreed upon decision regarding the ultimate choice of medical treatments or tests (73), has been gaining popularity among family planning counselors. In this model, both the patient and provider exchange information and come to a consensus about a contraception option that incorporates the current medical knowledge and the needs of the patient. This model may most effectively balance respect for patient autonomy with individual preferences for decision-making, while ensuring that the physician is acting in the best interest of the patient (66).

Research on patient preferences for contraceptive counseling has made important contributions to the support of patient-centered care. As previously mentioned, however, a limitation of the current literature is that it has focused exclusively on the adult population. Given that many adolescents are still developing abstract and futuristic thinking (29), they may have different needs than those of adults to make an informed choice about a contraceptive option.

Counseling recommendations specific to adolescents

Although there is a paucity of research on adolescent preferences, contraceptive counseling recommendations do exist for this population. In the medical literature, “adolescence” is arbitrarily broken into three phases based on age: early (10-14 years), middle (15-17 years) and late (18-25 years). Fonseca and Greydanus (2007) encourage providers to take a somewhat more directive approach with those in “middle adolescence” by “negotiating choices” and “confronting (gently) about consequences and responsibilities.” As an adolescent matures into “late adolescence” the physician is encouraged to “act more as a resource” and allow for more “mature participation in decisions” (75). Feldman (2006) stresses the importance of confidentiality, in addition to promoting discussions on resisting social pressures and an understanding of a healthy sexual relationship (76). Finally, a position statement by The American Academy of Pediatrics states that discussions about sexuality should take place “in a safe, nonthreatening environment through open, honest, and nonjudgmental communication with assurances of confidentiality...and should explore the adolescent’s reasons for becoming sexually active and the effect that sexual intercourse may have on relationships with peers, parents, and significant others” (10).

The coercive history of family planning practices in the United States has prompted researchers to explore appropriate counseling techniques for minority adolescents, specifically. A qualitative study of family providers who work with predominantly with African American adolescents found that establishing a strong relationship, drawing on common background experiences and maintaining honesty were important in providing effective care. Providers also cited the importance of using the same language as the adolescent with whom they were working and spending extra time in the visit in order to build a strong relationship (77).

Although some recommendations exist, Harper et al. (2010) argues that current “patient education and counseling may be insufficient for young women to make informed voluntary choices among [contraceptive] methods, particularly new and unfamiliar ones” (36). Very little is known on how to effectively counsel adolescents about contraception (42) and, as mentioned earlier, even less research has been done to directly assess contraceptive counseling preferences in a clinical setting that supports informed decision-making. The need for research in this area becomes even more significant when considering that a long-acting method of contraception—intrauterine contraception (IUC)—has recently been approved for adolescents.

Intrauterine Contraception: Clinical Overview, Historical Background, and Relevant Research

IUC is a T-shaped device that is inserted into the uterus by a trained practitioner. While there are several forms available worldwide, the United States currently uses two versions: the Copper T380 (Copper T) and Levonorgestrel Intrauterine System (LNG-IUS).

The Copper T 380A, released in 1988, is the most popular IUC on the market worldwide. As the name implies, 380mm² of copper wire surround the arms and trunk of this device, which offers up to 12 years of pregnancy protection, and works by causing by a local, sterile, inflammatory reaction in the uterine cavity (18). This inflammatory response, which acts as a natural spermicide, is markedly increased by the presence of copper. In the rare case of fertilization, inflammation also creates a hostile site for blastocyst implantation (18). Common side effects associated with this method include increased menstrual bleeding and pelvic pain (78).

The Levonorgestrel Intrauterine System (LNG-IUS) offers up to 5 years of pregnancy protection and uses a hormonal mechanism of action. The device releases 20 µg/d of progestin into the uterus at a constant rate, which causes endometrial atrophy, suppresses ovulation and thickens cervical mucous. The LNG-IUS may also cause an inflammation response in the uterus, similar to the Copper T, which promotes a lysosomal and, therefore, spermicidal response (18). Common side effects associated with the LNG-IUS include pelvic pain, spotting between periods and eventual amenorrhea (78). For this reason, the LNG-IUS can also be used to treat menorrhagia. It has also been successful as a method of off-label hormone replacement therapy (79, 80).

Both the Copper T and LGIS must be removed by a healthcare provider. The process involves pulling on a monofilament polyethylene thread that protrudes from the cervical os and is attached to the base of the device (80).

Effectiveness

The Copper T and LNG-IUS are extremely effective methods of pregnancy prevention, with both devices having a first year failure rate of less than 1% (81). The Copper T has been found to be as effective as female (82) sterilization, vasectomy, and contraceptive implants, with 1.7% of women experiencing a pregnancy over a 12-year period and an average annual failure rate of 0.4% or less (81). The LNG-IUS has been even more successful at preventing pregnancy, with a one year failure rate of 0.1% and cumulative failure rate of 0.3% over a five year period (81).

Clearly, IUC is a highly effective method of contraception that offers long-term protection against unintended pregnancy. However, in order to gain a full appreciation for the device, it is imperative to also understand the historical legacy associated with it.

History of IUC

In the late 1920's, Dr. Ernst Graffenberg of Germany developed flexible intrauterine contraception made of silkworm gut or coiled silver wire that measured 1 inch in diameter (18, 79). IUC caught on quickly in the Europe, but physicians in the US were wary of the device; it was perceived as a vector for infection and to thought to be ineffective at preventing pregnancy. However, these negative attitudes began to shift in the late 1950s, after several scientific journals published articles on the device (83). In the early 1960's, the first plastic IUC, Gynekoil, was mass-produced and later sold commercially by Ortho Pharmaceutical Company. With the advent of malleable polyethylene plastic, a number of IUC models were developed. By the late 1960s, three

different plastic devices were on the market and rates of use were increasing by 1% each year (83).

By 1970, rates of IUC use were over 6% and rising in the United States. At the same time, the birth control pill was speculated to be associated with a number of health risks. Many women concerned about oral contraceptives turned to IUC as a safer method. This rise in demand was met with the release of a new IUC design in 1971, the Dalkon Shield, touted to be both safe and effective for all women, including nulliparae (women that had not given vaginal birth). The only contraindications for this device were pregnancy and current pelvic inflammatory disease (PID). There was little concern about STI presence at time of insertion, an oversight that would eventually lead to life-threatening complications. Rates of IUC use continued to climb, and the Dalkon Shield quickly became the most popular design on the market (83). By 1974, rates of IUC use reached an all time high of 10% in the US, with the Dalkon Shield making up 2/3 of the United States IUC market (83).

However, within a few years of its release, a disproportionate number of pregnancies were reported. In addition, alarming numbers of women with this device suffered from septic abortions, PID and, in some unfortunate cases, even death (79, 84). In the mid 1970s it became clear that the 45 million Dalkon Shields currently in use were linked to life threatening illnesses and high rates of pregnancy. In response, the Food and Drug Administration (FDA) requested that the Dalkon Shield manufacturer, A.H. Robbins, withdraw the device from the market. The public was in dismay: the very birth control method supposedly safer than the oral contraceptive pill was, instead, linked to serious health complications. Specifically, it was linked to 200,000 infections (such as PID), 18 deaths and numerous miscarriages, hysterectomies and gynecological complications (79).

The consequences of the Dalkon Shield tragedy materialized in the 1980s. It began when, in 1983, the FDA advised all women that currently used the device to have it removed (84). Soon after, A.H. Robbins declared bankruptcy due to the numerous lawsuits. By 1986, every IUC except one—the Progestasert—was withdrawn from the market due to fear of litigation on the part of IUC suppliers. In addition to decreased supply, the popularity of IUC also went down. Medical journals published studies wrought with methodological errors that linked IUC use to PID (85). Physicians and patients became fearful that even the new devices on the market would cause the same complications as the Dalkon Shield. The media also played a part in spreading fear of the Dalkon Shield and, by default, other IUC models as well (86). As a consequence, rates of use in the United States plummeted in the 1980s and 1990s.

In 1988, following the mass withdrawal of IUC from the market, the Copper T380A was introduced. Though it had a different structural design, GynoPharma released this device under the pretense that it only be available for multiparous women in monogamous relationships. The LNG-IUS was subsequently released in 2001 with similar restrictions (87); prior to 2004 IUC was only considered appropriate for multigravida monogamous (preferably married) women with no history of or current risk of STI or PID, and who could not use hormonal contraceptives (88). This language was included on the Copper

T's packaging when it was introduced in 1988 and, though it has since been amended, prescribing recommendations on LNG-IUS packaging continue to recommend its use to women that have had at least one child (22).

In response to research over the last 20 years, which has found IUC to be both a safe and effective method for nulliparous women and adolescents (4, 22, 89, 90), the WHO expanded its medical eligibility criteria availability to a wider range of women. Nulliparous women and women between menarche and 20 years are now designated at a level 2 recommendation, meaning that IUC is acceptable for these populations if the benefits of the contraception outweigh the risks. Parous women continue to be designated at a level 1 recommendation (no restrictions) (91). IUC is no longer contraindicated for women with a history of STI or PID, though it is recommended that these IUC candidates wait three months after an infection has cleared before having the device inserted (90, 91). Furthermore, IUC is recommended as an excellent choice for post-abortion and post-pregnancy contraception and the Copper T is specifically recommended for emergency contraception (90, 91).

Although the WHO Medical Eligibility Criteria continues to be somewhat conservative, several domestic medical organizations have more liberal recommendations regarding IUC. For example, the American College of Obstetricians and Gynecologists recommends IUC as a first-line method to both nulliparous and parous adolescents (90). Similarly, the Society of Family Planning states that nulliparous adolescents "desiring effective contraception should be encouraged to consider [IUC]" (22). However, despite of the liberalization of MEC, rates of IUC use continue to be low; only 1% of 15-19 year olds and 3.4% of 19-24 year olds in the United States use IUC (1).

Clearly, the expansion of the recent MEC has not been met with a compensatory increase in IUC use. As such, most research focusing on adolescent and nulliparous use of IUC has explored barriers to use, some of which include lack of awareness and misperceptions about IUC on the part of potential users (86, 92-97), and provider bias against the method (88, 98-100).

Barriers to use

Lack of awareness and misperceptions among adolescents

Recent studies have shown that many adolescents are unaware of IUC as a contraceptive option. Furthermore, those that do know about it tend to perceive it as a method for older women or one that is unsafe or ineffective (95, 97, 101). For example, a study by Whitaker et al. found that 60% of young women 14-24 years did not know about IUC (97) and, among those that did know about it, only 37.5% had a positive attitude toward the method. Stanwood and Bradley found that 50% of 14-25 year old pregnant young women had never heard of IUC and of those who had heard of it, 71% were unsure about its safety and 58% were unsure about its efficacy (95). Finally, in a recent study by Fleming et al. (2010), 252 young women aged 14-27 years were surveyed on their attitudes toward and beliefs about IUC to better understand what factors might influence their decision-making about the device (101). Nearly 85% of the sample was nulliparous.

Respondents liked that it was “very effective at preventing pregnancy” but didn’t like “the idea of something in my body.” Fifty five percent of those surveyed had not heard of IUC. These studies show that many adolescents have misperceptions about IUC or are unaware of its existence. Addressing these misperceptions in the context of a contraceptive counseling visit may help adolescents make more informed choices about IUC use.

Studies among adult women

To date, the only studies assessing adolescent attitudes toward IUC as potential barriers to use have been quantitative. Qualitative methodology can help strengthen the existing quantitative research on this topic, as it allows participants to describe experiences and feelings in their own words and appreciates nuances that may not be captured in surveys (74, 102). Several qualitative studies have been carried out on adults. These may provide further insight into adolescent perceptions of IUC.

In a UK-based study by Asker et al. (2006) ten women (mean age 36 years) without a history of IUC use were interviewed to assess the factors that made them non-users. Five dominant themes emerged, including lack of objective information about IUC, misperception about side effects, anxieties related to IUC insertion, and lack of personal control over the method (92). Participants felt that “lack of objective information” and “misperceptions about side effects” was related to a dearth of “official” information from medical providers during contraception counseling visits. They also explained that there was little information on IUC in the form of pamphlets or advertisements. Instead, most women formed their opinion of IUC based on what their friends told them, often relying on this information to make the decision about use of the method. Concerns about the insertion process were also dominant in the interviews and tended to center around the insertion process as “messy” and similar to a gynecologic examination, indicating that comfort with one’s body may be a barrier to IUC use. Finally, women felt that they lacked control over IUC because they could not see it after it was inserted. Women in this study preferred to have a method that they could visualize as well as having the freedom to discontinue use without having to visit their medical provider.

In a similar US-based study, forty women (average age 29.1 years) took part in semi-structured interviews and cited comparable concerns about IUC (103). The majority of participants mentioned that the device was both “convenient” and “effective,” but disliked that it had to be placed inside the body for an extended period. This increased concerns regarding control over the device’s removal and its ability to prevent pregnancy over time. Participants also stated that there was a lack of general discussion about IUC from both “formal” (medical providers) and “informal” (friends) sources. When it was discussed it was often brought up as an “unusual” form of contraception that was only available to certain women.

Provider bias

While barriers to use exist on the part of potential IUC users, it is also important to acknowledge that some medical providers are hesitant to support the use of IUC among nulliparous adolescents. Namely, many medical providers are concerned that nulliparous

adolescents who use IUC will have an increased risk of pelvic inflammatory disease (and subsequent infertility), uterine perforation, expulsion and early discontinuation compared to older and parous and women (22). However, recent research does not support these beliefs (22).

The relationship between IUC and pelvic inflammatory disease (PID) has been a long-standing concern in the medical community and the public in general (90, 104). These concerns largely stem from the multifilament string attached to the Dalkon Shield, which facilitated the movement of pathogenic bacteria—such as gonorrhea or Chlamydia—from the vagina into the uterus (84). The LNG-IUS and Copper T have undergone substantial restructuring and now contain a monofilament polyethylene thread that does not facilitate such movement (80). After a review of current literature, the American College of Obstetricians and Gynecologists concluded that the risk of PID associated with current IUC models was 1.4 per 1000 women years. These numbers are equivalent to the risk of PID among non-IUC users (90). The exception to this finding is in the first twenty days following insertion, when STI infected vaginal mucous can be pushed into the uterus, increasing risk of PID to 9.7 per 1000 women years (104). These statistics are significant because much of the concern about nulliparous adolescent use of IUC stems from the fact that young people statistically have a higher rate of STIs compared to their older counterparts (8). It has been argued that this puts them at higher risk of future infertility secondary to IUC use (22). Research shows, however, that as long as proper STI screening—and, if necessary, treatment—takes place *prior* to IUC insertion, risk of PID among nulliparous adolescent IUC users is similar to that of non-IUC users (105).

While there have been limited studies of PID incidence among young nulliparous IUC users as a distinct group, evidence from larger studies—that include young and/or nulliparous users—support the aforementioned statistics (22). The only study to date that focuses exclusively on IUC use among both young *and* nulliparous women was done by Suhonen et al. in 2003. This 1-year randomized study assessed the safety and acceptability of the LNG-IUS compared to oral contraceptive pills among 200 nulliparous young women between the ages of 18-25 years. Of the 94 young women that entered the LNG-IUS group, there were no cases of PID or infertility after one year (106). In another study—this one a small-scale randomized control trial of both nulliparous and parous 14-18 year old IUC users (11 Copper T and 12 LNG-IUS)—there were also no cases of PID after six months (21).

In addition to PID, there is also concern that the young and nulliparous uterus is at increased risk of perforation during IUC insertion. The risk of IUC-related uterine perforation among all women is low—between 0% and 1.3%—and is highly dependent upon provider skill during insertion (22). Though there have been no direct comparisons between parous and nulliparous IUC users, a study by Brockmeyer et al. (2008) reported no perforations during 117 insertions of non-hormonal IUC models in nulliparous women between the ages of 16-30 years (107). Similarly, no perforations were reported in a cohort study of 179 adolescents—73% of whom were nulliparous—using the LNG-IUS (108).

IUC expulsion, like perforation, is also rare; 5.7% of all women using IUC will expel it within the first year after insertion, and 2.5% will expel it in the second year. After two years, rates of expulsion level off to 2% each year until the device is removed (90). In the Suhonen et al. (2003) study, there was one partial LNG-IUS expulsion after one year of use among 94 nulliparous 18-25 year olds (106). Though there have been no studies of Copper IUC use exclusively among young nulliparous women, a review by Lyus et al. (2010) states that there may be slightly increased risk of expulsion among those that use the Copper T (22). Overall, however, both uterine perforation and expulsion are similar across age and parity.

Finally, concerns about early discontinuation among young nulliparous women may impact a provider's clinical decision-making regarding IUC (22). Continuation of IUC is important from both a pregnancy prevention and cost perspective. For example, IUC can range anywhere from 600 to 900 US dollars, but after about two years of use, the both the LNG-IUS and the Copper T become the most inexpensive methods on the market (109). Though continuation data for nulliparous adolescents is limited, the Suhonen study (106) showed that 19 out of 94 LNG-IUS users (20%) discontinued in the first year compared to 27 out of 99 (27%) in the OCP group. Among users that continued with IUC, 87% were satisfied with it and planned to continue the method.

While the consensus in the literature is that IUC is a safe, effective and acceptable method of contraception for nulliparous adolescents (17, 22, 90, 105, 106, 108, 110), concerns about infection, expulsion, perforation and early discontinuation persist among medical providers (22, 90). In a cross-sectional survey of United States OBGYNs, sixty eight percent reported that parity status had a strong effect on their selection of candidates for IUC. Furthermore, forty percent of these physicians stated that they would not insert IUC in a woman who was not married and 16% said fear of litigation had prevented them from inserting the device (99). A study by Harper et al. found that only 46% of California family planning providers considered nulliparous women to be appropriate candidates for IUC use and that 40% did not offer IUC to their patients as a contraceptive option (111). Finally, Dehlendorf et al. (2010) utilized videos of standardized patients with varying parity and PID histories to assess the impact of these factors on providers' use of IUC. Many of the 524 providers in this randomized control trial expressed concerns about pain, bleeding and perforation due to IUC. Furthermore, 30% expressed concern about infertility and 20% expressed concerns about ectopic pregnancy related to IUC (48). Clearly, many barriers to nulliparous adolescent IUC use have been identified on both the provider and patient level.

Given the misconceptions that exist about IUC, the multiple factors that influence contraceptive use, and the unique developmental changes associated with adolescence, it is imperative to facilitate informed decision-making about the use of IUC in a clinical setting. However, little is known about the type of information and interaction in the contraception counseling visit that may best prepare adolescents for use of IUC. Qualitative research focusing on nulliparous adolescent preferences for IUC counseling is best suited to address this gap in the literature and is the rationale for the following study.

PART TWO: Original Research Manuscript

Introduction

Unintended pregnancy disproportionately impacts adolescents—particularly those from racial/ethnic minority backgrounds—and is a major public health problem in the United States (112, 113). While the majority of sexually active adolescents use contraception, a significant contributor to unintended pregnancy in this age group is the fact that many use it incorrectly or inconsistently (114). Therefore, long-acting birth control methods, such as intrauterine contraception (IUC), have the potential to play an important role in meeting the public health imperative to reduce unintended pregnancy among adolescents, as they are highly effective and have a low risk of user misuse (115, 116).

Two forms of IUC are available for use in the United States: the hormonal levonorgestrel intrauterine system (LNG-IUS), which offers up to five years of pregnancy prevention, and the non-hormonal Copper T380 (Copper-T), which offers up to ten. However, likely due to unsubstantiated concerns about infertility associated with IUC (117), adolescent lack of awareness regarding the method's availability (97, 118), and provider hesitancy to insert IUC based on inaccurate knowledge of the method (48, 119-122), only 1% of 15-19 year olds and 3.2% of 20-24 year olds use IUC (123). Many of these concerns are amplified for nulliparous adolescents despite the fact that the World Health Organization and American College of Obstetrics and Gynecologists recommends IUC for both adolescents and nulliparous women (124-126).

Professional organizations and researchers agree that counseling by medical providers can play a role in supporting the use of IUC, when appropriate, among nulliparous adolescents (118, 124, 127). However, little is known about the type of information and interactions nulliparous adolescents value from their medical providers when making decisions about IUC use. Because the healthcare provider is just one of many influences on adolescent contraceptive decision-making (128), counseling efforts may be more effective if providers are informed regarding the role they can play in adolescents' decision to adopt IUC. Nulliparous adolescents with a history of IUC use are uniquely qualified to provide this information. In the current qualitative study, 20 nulliparous adolescents who have a history of IUC use and who are patients in a clinic serving a predominantly Latino and African-American population describe their IUC adoption process. In particular, they identify the role of their medical provider in navigating this trajectory.

Methods

Participants

A purposive sample of 20 study participants was recruited between November 2010 and June 2011 from an adolescent family planning clinic in San Francisco. Clinic clients were eligible to participate if they were between 15-24 years of age, female, nulliparous, spoke English, and were a current or past user of IUC (LNG-IUS or Copper T) for at least one

month within the previous two years. Participants received a \$30 gift certificate upon completion. All study procedures were approved by the Institutional Review Boards at the University of California San Francisco and the University of California Berkeley.

Approximately half of those that were eligible for and contacted to be in the study ultimately participated. Those that did not participate primarily declined due to logistical barriers, such as transportation difficulties and scheduling conflicts. We did not collect data from those that declined participation.

Procedures

A qualitative approach was chosen because little is known about nulliparous adolescent use of IUC or the context in which the method is adopted (129, 130). Participants gave written informed consent, took part in a one-hour in-person semi-structured interview, and completed a brief demographic survey. The interview guide covered decision-making regarding IUC use, influences on the process, and the role of clinical counseling experiences both before and after insertion. Questions included: “Why did you get IUC?” “What role did your provider play in helping you make your decision?” “Do you have any ideas for how providers should talk about IUC with young women?” Using principles from grounded theory, data analysis occurred simultaneously with data collection. The interview guide was modified iteratively over time to explore new themes emerging from the data. Data collection stopped when the study team felt they had reached saturation of dominant themes (131).

Data analysis

Facilitated by Atlas-TI software, modified grounded theory was used to analyze the interviews (131). Through open coding (close reading of small segments of the first five transcripts), analytic categories were developed from which a preliminary codebook was made. Modifications to the codebook reflected emerging and changing codes that arose from the data. The development of coding the scheme was iterative and collaborative, with frequent meetings with the study team to discuss emerging categories and areas of uncertainty. Summary memos regarding emerging codes and relationships between categories were drafted.

At the conclusion of preliminary analysis, a model to describe the process of IUC adoption emerged with a focus on the role of the medical provider. The preliminary IUC adoption model was tested using cross-case analysis, for which experiences described in individual interviews were compared to the provisional model (132). This comparison method allowed for a general understanding of the processes that occurred across cases while addressing the circumstances of each individual case (132).

Results

Demographic Data

See Table #1 in the “Tables” section

Qualitative Findings

The process model for IUC adoption includes the following stages: 1) first awareness, 2) initial reaction, 3) information gathering, 4) adoption, and 5) adjustment and reassessment. Each stage is described in detail below.

1. First Awareness

The majority of participants first became aware of IUC after a conversation with their healthcare provider. Remaining participants heard about IUC from a friend or family member, with a small minority being exposed to the method from a media source. Many participants described a delayed awareness of the method, which was attributed to a number of barriers. For example, providers rarely mentioned IUC during medical visits, friends and family members “never really talked about” the method (24-year-old LNG-IUS user) and the rare television and media source that advertised IUC presented it as inappropriate for nulliparous young women.

I think that it is a lack of media influence, and lack of information in these clinics that I was going to.... My gynecologist at that time was not really encouraging, or giving me information about [IUC] ...I didn't even know that it existed. 24-year-old Copper-T user

Several participants stated that they would have used the method earlier had they known about it. A 22-year-old LNG-IUS user said: “[IUC] could have been talked about a little bit more. I had no clue about it and if I’d had a clue I would have chosen it back then over the shot.”

2. Initial reaction

After hearing about IUC, the majority of participants described an initial negative reaction:

I felt like it would be really painful, hearing how it was inserted into your uterus. I thought, “Oh, I would not do that! I couldn’t do it cause it sounds so scary.” 18-year-old LNG-IUS user

A minority of study participants described a positive initial reaction. These tended to be adolescents who had primarily negative experiences with other methods of birth control prior to hearing about IUC.

3. Information gathering

During the information-gathering phase, study participants gathered information about IUC from three main sources: members of their social network (particularly friends and family), the Internet, and medical providers.

Friends and family

Most participants gathered information about IUC from both users and non-users of the method within their social network. Negative opinions of and experiences with IUC were commonly expressed, which discouraged some participants from

using the method. For example, friends of a 22-year-old LNG-IUS user told her “you’ll have a period forever.” A 24-year-old LNG-IUS user said, “I’d heard of people’s [IUC] falling out or tearing their uteruses and that kind of just freaked me out.”

Conversely, a few study participants heard positive reviews of IUC, with some even being encouraged to use the method. An 18-year-old former LNG-IUS user said, “There wasn’t too much information on it. But the more I spoke to people, the more I saw that they were really happy with it.”

Internet

As with their social network, study participants used the Internet to gather user reviews of the method. Participants also used the Internet to verify what they had learned from other sources. A 24-year-old Copper-T stated: “It was reassuring that everything I found on the Internet went with what the doctor and the [informational] pamphlet had said.”

Medical providers

A common theme in nearly every interview was the key role that medical providers played in the information-gathering phase. Providers were often cited as valuable resources for answering questions and addressing concerns about IUC. Many of these concerns had arisen following conversations with friends and family and some were based on misconceptions about the method. A 24-year-old Copper-T user named her healthcare provider as the “loudest voice of reason” among her information sources, while a 21-year-old LNG-IUS user stated that her medical provider was the most important influence for her because she was an educated person who was “really informed and knew about all the different types of birth control.”

In learning about IUC from their provider, study participants appreciated the use of visual materials and anatomical models, tailored counseling to fit personal preferences, information regarding a wide range of possible side effects, and reassurance that IUC discontinuation was an option. See the Table #2 for direct quotations regarding these aspects of counseling.

While providers were consistently valued for the informational role they played, some participants also found it helpful when their medical provider took on what they perceived as an almost friend-like role: “I’m comfortable with my doctor. I have this relationship with her and trust her not only as a doctor but, well, as a friend” (24-year-old LNG-IUS user). In this capacity, some providers self-disclosed that they used IUC themselves, which study participants cited as appropriate and comforting:

[Provider self-disclosure] actually made me feel better. To know that a person in a room also had what I was attempting to get made me feel more comfortable. 16-year-old LNG-IUS user

On a related note, several participants wished that their provider had given them more subjective input about whether they should use IUC, as described below:

[I asked my provider], “could you please give your honest opinion about what to do? That doesn’t mean I’m gonna do it, but I will take it into consideration....Like, if you were my friend, what would you say?” 17-year-old Copper-T user

Notably, the desire for subjective input from the medical provider was not expressed in every interview. Instead, participants voiced a wide range of preferences on this topic. For example, a 24-year-old LNG-IUS user stated: “I want seriously unbiased, straight up information from my provider without opinions.”

4. Adoption

Participants decided to adopt IUC after integrating their personal preferences with the information they gathered from their social network, the Internet, and their medical provider. A strong personal preference to prevent pregnancy was a prominent theme in all of the interviews, with most participants seeing pregnancy as an obstacle to their future plans. Other preferences included a strong desire to avoid higher-dose hormonal methods and a preference for convenient and long-acting contraception.

In making the decision to adopt IUC, many participants had to overcome concerns about the method that had arisen during the information-gathering phase. The ability to overcome these concerns was a key component of the IUC adoption process, and was facilitated by two factors:

“The tipping point”

The majority of study participants had experienced a profound event—referred to by one participant as the “tipping point” (24-year-old Copper-T user)—which strengthened or changed their existing personal contraceptive preferences. This experience, such as a pregnancy scare or abortion, allowed them to overcome their concerns about IUC.

I wasn’t sure if I wanted to go through the process because I’d heard experiences of the partners feeling it. So I was like, “Ok, I don’t want that.” Then I went through a scare where I was like “Oh my god, I might be pregnant.” So then I was like, “I don’t want to feel like that anymore” so I’d rather get [IUC]. 17-year-old Copper-T user

For others, personal preferences were modified after moving to a new location where access to or quality of family planning care was uncertain, as described by a 22-year-old LNG-IUS user: “I’m going to college so I needed something more permanent...I don’t know how the clinics or healthcare system works over there and I won’t know ‘til I get out there.”

“Everyone is different”

The realization that contraception is “different for different people” (22-year-old LNG-IUS user) was also a key factor in helping participants overcome their concerns. Participants adopted IUC when they were able to conceptualize their own potential experiences with the method as distinct from the negative experiences that they had heard about in the information-gathering phase:

I know that every birth control method is not gonna be the same for every girl. That's why there's so many different types. You have to pick your own. I know my body is different...from a lot of my friends because of the conversations we've had. So, I wanted to have my own experience, you know? 17-year-old Copper T-user

5. Adjustment and Reassessment

Following IUC insertion, participants went through an adjustment and reassessment period, during which they experienced IUC side effects and evaluated whether they would like to continue using the method. This period was influenced by motivation to use the method, level of preparation for IUC use, and amount of external support received by the adolescent.

Motivation

While most participants experienced side effects, the majority were considerably motivated to keep their IUC. This was partly due to a strong intention to prevent pregnancy and/or previous experience with other types of contraception. Copper-T users, in particular, expressed a high degree of motivation to continue using IUC due to dissatisfaction with previously used hormonal methods.

Preparation

Participants stated that being well prepared for potential side effects by their medical provider helped them to navigate the adjustment phase. A 24-year-old LNG-IUS user stated: “When I got [IUC], it took a month or two before my bleeding stopped. [The people at the clinic said] it takes a while, though... So, it was okay.” Friends with IUC experience were also considered a valuable preparatory resource: “[My friend] prepared me. And I guess if I hadn't talked to her about it, I would've probably been freaking out right now” (17-year-old Copper-T user).

Support

Study participants appreciated receiving support from members of their social network, medical providers and the Internet during the adjustment and reassessment phase. For example, a 17-year-old Copper-T user felt comforted knowing that her friend used IUC stating, “at least I have somebody to share this with.” The Internet was also used as a source of reassurance, as described by an 18-year-old LNG-IUS user: “I googled it and some people had the same side effects. So, I wasn't really tripping about it.”

Medical providers and clinic staff also played a prominent supportive role. A 21-year-old LNG-IUS user explained: “If I had any question or any concern, the clinic’s awesome. I just call them and I can talk to a nurse or doctor over the phone...they answer my questions.” Similarly, another 21-year-old former LNG-IUS user said, “At times I was scared ‘cause I’d heard it can fall out. I didn’t know how to check for it...I came [to the clinic] and it was great. They told me how to check for [IUC] and taught me more about it.”

Four adolescents in the study chose to discontinue IUC due to concerns about side effects. Those that chose to discontinue valued having their concerns validated by their medical provider:

I was like, “I think this [IUC] might be making me overly emotional and sensitive.” And the doctor said “if you want, you can try and keep track of how you’re feeling over the course of a couple months to see...if it correlates to situations in your life or if you think it’s just [IUC].” I thought this was really nice of her. She wasn’t like “nope, not possible, that’s not true.” She said “ok, cool. Let’s try and pay attention to this and we’ll figure out if it’s [IUC] or if you think it’s something else.” 24-year-old former LNG-IUS user

Two of the four participants who chose to remove IUC reported that their provider discouraged them from removing the method. These participants expressed a feeling of loss of control over the process and became disengaged in discussions with their medical provider. This was described by a 19-year-old former LNG-IUS user who stated, “I just felt like [IUC removal] wasn’t my decision, it was more [my provider’s].”

Discussion

Through the use of qualitative methodology, participants in this study described their IUC adoption process and identified the role of the medical provider in this trajectory. While similar studies have developed models to describe adolescent adoption of the transdermal patch and vaginal ring (130, 133), none have focused specifically on IUC use or nulliparous adolescents. The findings of our study, therefore, add to the literature and can inform future efforts to support the use of an underutilized method that has the potential to address unintended pregnancy among young people.

Suggestions for IUC counseling based on study results can be found in the Table #3. Given the limited amount of time available in a contraceptive counseling visit, it may be necessary to involve other clinic staff in the implementation of these recommendations. Though not the focus of this study, we note that our findings also provide insight into the non-clinical contextual factors influencing adolescent decision-making regarding IUC use and potential areas for further investigation.

An important qualification to implementing the aforementioned counseling recommendations is that IUC may not be the desired or appropriate contraceptive method for every nulliparous adolescent, even after counseling. This is a particularly relevant consideration when working with non-white populations, given that members of these groups have been the target of coercive public health policies aimed at controlling population growth in the United States (134) and have reported distrust of the medical system due to this history (135).

Results from this study suggest that providers can play specific and prominent roles in the first awareness, information-gathering, and adjustment and reassessment phases of the IUC adoption process. The clinical implications for each of these stages are discussed below.

1. First Awareness

Unlike past studies, which have identified the media as pivotal to spreading awareness of newly introduced contraceptive methods (130), participants in this study described a lack of IUC promotion in the media. This increases the onus on the medical provider to introduce IUC relative to other methods that may be more heavily advertised. While participants in this study reported that medical providers played a prominent role in spreading awareness of IUC, many also described a delay in introduction that may be related to providers' misconceptions about the appropriateness of this method for adolescents (48, 119, 120). This underscores the importance of educating providers about IUC, especially because past research shows that adolescents who hear about IUC from their medical provider are more likely to use the method compared to those who first hear about it from other sources (118).

2. Information Gathering

While conventional teaching holds that the medical provider should only offer information and not personal opinions regarding contraceptive selection (136), our results suggest that this philosophy may actually be a disservice to some adolescents, as many of them are still developing their decision-making skills and may benefit from more provider involvement in their adoption process (137). Results from this study and others (138) suggest that degree of provider input should vary based on each individual's counseling preferences, with some desiring that their providers play a more active role in their decision-making process than others.

A related finding regarding the information-gathering phase concerns provider self-disclosure of IUC use. There is a paucity of research on this topic in the family planning literature. Studies in other settings have yielded conflicting results regarding the utility of this type of information exchange (139, 140). The fact that some participants in this study found self-disclosure appropriate and comforting may be partially explained by the perceived "friend-like" relationship that they had with their provider. More research is needed in this area, with attention to the likelihood that preferences most likely vary depending on the individual being counseled, the method being considered, and the relationship between the patient and medical provider.

Study participants expressed concerns about IUC prior to insertion, some based on accurate information and others based on misconceptions. These concerns typically arose during the information gathering stage, after participants learned about negative experiences with and opinions of the method from members of their social network. Previous qualitative research has also found that adolescents, particularly those from non-white populations, rely heavily on the experiences of members of their social network when making decisions about contraceptive use and that some of this information is based on misconceptions (52, 141). Therefore, providers may better assist adolescent patients in making informed decisions regarding IUC use by directly inquiring about and addressing information received from social contacts in a respectful manner.

Finally, medical providers should be aware that, unlike the Copper-T, the prescribing information on the LNG-IUS manufacturer's website and packing inserts has not been amended to include nulliparous women as acceptable candidates (142). This should be explained to nulliparous adolescent IUC candidates to avoid potential confusion and concern, as many study participants used the Internet to confirm the information they received from their medical provider.

- **Adjustment and Reassessment**

Study participants stated that being prepared for IUC use prior to insertion and receiving external support facilitated their adjustment to IUC side effects following insertion. Though the actual impact of these influences cannot be conclusively demonstrated, past research has found that users of long-acting contraceptives who received comprehensive information on side effects were more satisfied with (143) and more likely to continue using these methods (144, 145). These findings underscore the importance of providing comprehensive side effect information during the information-gathering phase and ensuring that an adolescent has access to the clinic during the adjustment phase.

Finally, for four participants in the study side effects became unacceptable, leading to removal of the device. Side effects are a commonly cited reason for IUC discontinuation (146, 147). While participants appreciated their providers' validation of the experience of potential side effects, some felt that their autonomy was infringed upon when their medical provider resisted removal. Given that IUC is a provider-controlled method, it is important that nulliparous adolescent IUC users feel that removal of the device remains their decision.

This study has several limitations. First, due to our focus on non-white urban adolescents results may not be generalizable to other populations. Furthermore, as only half of those who were recruited were ultimately interviewed, study participants may not have provided an inclusive representation of experiences with IUC. Second, because only IUC adopters were recruited, nothing can definitively be said about the counseling needs of non-users. Third, given that we recruited participants from a single youth-focused clinic, it is possible that the same medical provider(s) counseled multiple study participants. However, we believe that the degree of overlap is not substantial, as participants described counseling experiences in multiple clinics throughout the California Bay Area. Finally, the counseling suggestions in this study are based on participants'

recommendations and/or have been inferred from the process model. Further studies are needed to confirm the actual impact of these suggestions on IUC use.

Our findings suggest that medical providers can influence a nulliparous adolescent's IUC adoption process. Given the misconceptions that exist about the IUC (148), providers are ideally positioned to increase awareness and knowledge of the method. The role of provider self-disclosure and subjective input regarding IUC use warrants future investigation and suggests that the degree of provider participation into the decision-making process should be based on an individual's preference rather than a standardized counseling practice. Medical providers should be aware, however, of the need for caution in encouraging IUC adoption and continuation, ensuring that the autonomy of the adolescent is not overshadowed by the clinical and public health implications of its use.

TABLES

Table #1

Participant Characteristics	Percent of Total
Age	
15-17	15
18-21	45
22-24	40
Race/ethnicity	
Latina	40
African-American	30
Asian	15
White	10
Other	5
IUC Type	
LNG-IUS	75
Copper T	25
Type of user	
Current	80
Past	20
Length of use (months)	
Mean (range)	17.5 (1-60)
Number of prior methods used	
Mean (range)	2.5 (0-5)

Table #2

Interactions	Quote
<u>Tailored counseling</u>	<p>“There was actually somebody listening to the things that I didn’t want and the things that I did want instead of just giving me a list of, you know, ‘generally this happens, generally this doesn’t.’ I didn’t wanna look at a spreadsheet of effectiveness... I needed to have like a dialogue and have it be more than just little facts.” (24-year-old LNG-IUS user)</p>
<u>Used visuals and models</u>	<p>“Not every young person knows this is your vagina, this is what’s inside and this is how it is. They might be like ‘ok, yeah yeah’ and then they might be like, ‘what was she talking about?’ Being able to actually show a picture, I think that’s really helpful. Because whether or not you know the names of each part, you can’t go wrong with seeing it.” (19-year-old Copper-T user)</p>

	<p>“I found out how small [IUC] was. That helped. Because I was wondering like, how does it stay there? How is it going to not get me pregnant? How is it going to stay there all the years? Like if I have sex, it’s not going to move? But they reassured me...and seeing it made it better.” (24-year-old LNG-IUS user)</p>
<p><u>Gave information on a wide range of side effects</u></p>	<p>“I liked that [my provider] really helped me to understand everything...and go through and the different side effects.” (16-year-old LNG-IUS user)</p>
<p><u>Answered questions and addressed concerns</u></p>	<p>“I wanted to know everything. I was like, ‘Okay, so where’s that going to go, and for how long? And is it going to be okay?’ I was asking so many questions. [My provider] actually took the time to sit there and explain everything to me, like the side effects from it, the placement, and what he needed to do to implant it.” (21-year-old LNG-IUS user)</p> <p>“My mom was on [IUC]...but she said she took it off because somebody told her that it was, like, a little machine...that made you have abortions or something...I heard that from her so that’s why I was kind of skeptical, you know? But [my provider] told me that it didn’t make you have abortions; it was just like any other birth control. So, I decided to get it.” (21-year-old former LNG-IUS user)</p>
<p><u>Assured that discontinuation was an option</u></p>	<p>“It actually did [help to be told I could take the IUD out]....You think, ‘well what if this is stuck in me forever? What if at a point I do want a child and I can’t get it out’? But [my provider] assured me that it would be able to be taken out when ready.” (16 year-old LNG-IUS user)</p> <p>“If I did want to have children later on down the road, I liked the idea that it was pretty much freely my choice on when I could take it out. I really, really liked that.” (19-year-old LNG-IUS user)</p>

Table #3

BEFORE INSERTION

1. Spread awareness of IUC

- Introduce IUC to nulliparous adolescent candidates during contraception counseling
- Stay up to date on current IUC medical eligibility criteria

2. Prioritize individual needs

- Identify personal preferences for contraception and tailor counseling according to these preferences

3. Provide comprehensive information

- Give wide range of information on possible side effects
- Consider offering personal experiences with IUC when appropriate
- Use visuals and models to explain where IUC is placed and how it works

4. Address and discuss concerns

- Remember that a negative initial reaction does not necessary mean an adolescent will not use IUC or that they will be unsatisfied with it if they adopt the method
- Discuss the role of the social network in perpetuating concerns about IUC and dispel misconceptions that the adolescent may have about the method
- Remind adolescent that “everyone is different” and that the negative experiences of friends may not be reflect their own experience
- Reassure that IUC discontinuation is an option

5. Prepare adolescent for adjustment and reassessment phase

- Discuss sources of support in case of concerns
- Explain that clinic is available to answer questions after insertion
- Discuss motivation for using IUC

AFTER INSERTION

1. Provide support

- Be available to answer questions about side effects
- Validate and discuss concerns that may arise
- Remove IUC if requested by adolescent

APPENDIX

Demographic Survey

Information About Your Background

1. How old are you? _____

2. What is your ethnicity? (check only one)
 - Hispanic or Latino
 - Not Hispanic or Latino

3. What is your race? (check the one you *most closely* identify with)
 - American Indian or Alaska Native
 - Asian
 - Black or African American
 - Native Hawaiian or Other Pacific Islander
 - White
 - Mexican American
 - Other: _____

4. What is the highest grade of school you have completed so far?
 - 7th grade
 - 8th grade
 - 9th grade
 - 10th grade
 - 11th grade
 - 12th grade (completed High School)
 - Community college degree
 - College degree (4 years)
 - Graduate school

Information About Your Health

6. How many times have you been pregnant?
 - 0
 - 1
 - 2
 - 3
 - 4 or more

7. How many times have you given birth?
 - 0
 - 1
 - 2
 - 3
 - 4 or more

8. When would be the ideal time for you to get pregnant?

- 0-1 years
- 1-2 years
- More than 2 years
- I don't know
- I never want to get pregnant

9. If you got pregnant within the next year, how would you feel?

- Very happy
- Somewhat happy
- I wouldn't care
- Somewhat unhappy
- Very unhappy
- Don't know

10. Which of the following birth control methods have you used before?			
Withdrawal (when the penis is pulled out before ejaculation)	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Birth control pills	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Vaginal ring	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
The Patch	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Lunelle (or other 1 month shot)	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
DepoProvera (3 month shot)	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Condoms	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
IUD	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Spermicides	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Film	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Diaphragm	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Natural Family Planning ("Calendar" method)	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Emergency contraception, also known as "EC" or the "morning after pill"	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know

Information about your IUD

12. Are you currently using an IUD?

- Yes (if yes, go to question 12a)
- No (if no, skip to question 12b)

12a. If yes to question 12:

- What kind of IUD do you use? (Circle one)

Mirena

Paragard (Copper T)

I don't know

- How long have you used your IUD for?
 - 0-2 months
 - 2-4 months
 - 4-6 months
 - 6-12 months
 - 1-2 years
 - More than two years

12b. **If no** to question 12:

- What kind of IUD did you use? (Circle one)

Mirena

Paragard (Copper T)

I don't know

- How long did you use your IUD for?
 - 0-2 months
 - 2-4 months
 - 4-6 months
 - 6-12 months
 - 1-2 years
 - More than two years

13. Please write down something you like about the IUD

14. Please write down something you don't like about the IUD

Thank you for completing this survey! Please hand it to your interviewer when you are finished.

Semi-structured Interview Guide

- *Thank you so much for taking your time to have this interview. Your opinions are very important to us and what you tell us here will help us provide the best services for young women like you.*
- *We want to learn about what young women who use the IUD think about, why they use it and their experiences with it.*
- *There are no right answers here; we just want to hear what you think. I encourage you to be open and honest.*
- *If at any point there is a question you don't want to answer or you want to stop the interview, just let me know. It is completely fine.*
- *This interview will be recorded, but if at any point you don't feel comfortable with this please let me know and we can stop the recorder.*
- *In order to assure maximum confidentiality I'm going to ask that when you talk about people during this interview you refer to them by their relationship to you and not their name. If you don't do this it isn't a big deal; I can always take names out of recordings later on.*

Introduction

1. First off, do you have any questions for me?
2. Briefly, what made you decide to do this interview?
3. Are you a current or past IUD user?
 - a. Follow-up: How long have you had it/did you have it?
 - b. Follow-up: What kind of IUD you have? (Minera or Paragard)

Experiences before using the IUD

1. Can you tell me about why you got an IUD?
 - a. Follow-Up: Had you used other methods before?
 - b. Follow-Up: Which ones?
 - c. Follow-Up: Why did you stop using these methods?
 - d. Follow-up: Why did you get the type of IUD that you did (Copper T vs Mirena)?
2. How did you learn about the IUD?
 - a. Follow-up: What did you learn from these places?
 - b. Follow-up: Did you value some information sources over others?
 - c. Follow-up: What role did your provider play in helping you make your decision? Did they give you an opinion?
3. When you first heard about the IUD, what was your reaction?

Experiences with and Attitudes toward the IUD

Now I'm going to ask you about what it has been like for you to have the IUD.

4. Can you tell me about the day you got your IUD?
 - a. Follow-up: How were you feeling?
 - b. Follow up: Did anything make it better for you? Worse for you?
5. What do/did you like about having your IUD?
 - a. Follow-up: How do you feel about this?
6. What do you not/didn't like about having your IUD?
 - a. Follow-up: How do you feel about this?
7. Have you talked to friends about your IUD?
 - a. Follow-up: How about sexual partners? How about parents?
 - b. Follow-up: What do/did you tell them?
 - c. Follow-up: How do/did they react?
 - d. Follow-up: Have you encouraged or discouraged people from using it?
8. Is having the IUD what you thought it would be like? Why or why not?
 - a. Follow-up: Is there anything you wish you had known about before getting the IUD?
9. *(If no longer using the IUD)* Why did you stop using the IUD?
 - a. Follow-up: What reasons did you give your provider for taking it out?
 - b. Follow-up: How did your provider react and do you feel it was appropriate?
 - c. Follow-up: How do you feel about the fact that you took your IUD out?
10. *(If still using the IUD)* Have you ever thought about taking out your IUD? If so, why?
11. I know we've already talked about this and I think I know your answer, but I want to give you a chance to explain the answer to this question in your own words: Overall, how do/did you feel about having the IUD?
 - a. Follow-up: Why do you feel this way?

Suggestions to Improve IUD Counseling

12. Do you have any ideas for how providers should talk about the IUD with young women?

Closing

13. Is there anything else you would like to add or tell me or anything I should have asked you?

Thank you so much for your thoughtful answers and for taking the time to talk with me. I want to remind you that everything you have said to me is confidential.

REFERENCES

1. Abma JC MG, Copen CE. Teenagers in the United States: Sexual Activity, Contraceptive Use, and Childbearing, National Survey of Family Growth 2006-2008: Data from the National Survey of Family Growth. 2010;23(30).
2. Finer L, Henshaw S. Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspectives on Sexual and Reproductive Health*. 2006;38(2):90-6.
3. Chandra A, Martinez GM, Mosher WD, et al. Fertility, family planning, and reproductive health of US women: data from the 2002 National Survey of Family Growth. *Vital and health statistics Series 23*. 2005(25):1.
4. Shelby J. The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families. *Journal of Amer Academy of Child & Adolescent Psychiatry*. 1997;36(3):420.
5. Davis A, Beasley A. Abortion in adolescents: epidemiology, confidentiality, and methods. *Current Opinion in Obstetrics and Gynecology*. 2009;21(5):390.
6. Hoffman S, Foster E, Furstenberg Jr F. Reevaluating the costs of teenage childbearing. *Demography*. 1993;30(1):1-13.
7. Geronimus AT. Teenage childbearing as cultural prism. *British Medical Bulletin*. 2004;69(1):155.
8. Sexually Transmitted Disease Surveillance. Centers for Disease Control and Prevention. Department of Health and Human Services. 2010.
9. Santelli J, Lindberg L, Finer L, et al. Explaining recent declines in adolescent pregnancy in the United States: the contribution of abstinence and improved contraceptive use. *American Journal of Public Health*. 2007;97(1):150.
10. Contraception and Adolescents. *Pediatrics: Official Journal of American Academy of Pediatrics*. 2007;120:1135-48.
11. Brückner H, Martin A, Bearman P. Ambivalence and pregnancy: adolescents' attitudes, contraceptive use and pregnancy. *Perspectives on Sexual and Reproductive Health*. 2004;36(6):248-57.
12. Whitaker A, Dude A, Neustadt A, et al. Correlates of use of long-acting reversible methods of contraception among adolescent and young adult women. *Contraception*. 2010.
13. Gleit D. Measuring contraceptive use patterns among teenage and adult women. *Family Planning Perspectives*. 1999:73-80.
14. Rosenberg M, Burnhill M, Waugh M, et al. Compliance and oral contraceptives: a review. *Contraception*. 1995;52(3):137-41.
15. Raine T. One-1 year Continuation and Pregnancy In Adolescent and Young Women Initiating Hormonal Contraceptives. Manuscript. 2010.
16. Dehlendorf C, Rodriguez M, Levy K, et al. Disparities in family planning. *American Journal of Obstetrics and Gynecology*. 2010;202(3):214-20.
17. Deans E, Grimes D. Intrauterine devices for adolescents: a systematic review. *Contraception*. 2009;79(6):418-23.
18. Katz. *Comprehensive Gynecology*, 5th Edition. Mosby. 2007.

19. Speidel JJ HC, Shields WC. The potential of long-acting reversible contraception to decrease unintended pregnancy. *Contraception*. 2008;73(4):197-200.
20. Mosher WD, Jones J. Use of contraception in the United States: 1982-2008. *Vital and health statistics Series 23, Data from the National Survey of Family Growth*. 2010(29):1.
21. Godfrey E, Memmel L, Neustadt A, et al. Intrauterine contraception for adolescents aged 14-18 years: a multicenter randomized pilot study of Levonorgestrel-releasing intrauterine system compared to the Copper T 380A. *Contraception*. 2009.
22. Lyus R, Lohr P, Prager S. Use of the Mirena LNG-IUS and Paragard CuT380A intrauterine devices in nulliparous women. *Contraception*. 2010;81(5):367.
23. Feldman SaE, Glen. *At the Threshold: The Developing Adolescent*: Harvard University Press; 1990.
24. Steinberg L. Cognitive and affective development in adolescence. *Trends in Cognitive Sciences*. 2005;9(2):69-74.
25. Elkind D. Egocentrism in adolescence. *Child development*. 1967;38(4):1025-34.
26. Byrnes JP. The development of decision-making. *Journal of Adolescent Health*. 2002;31(6):208-15.
27. Beyth-Marom R, Fischhoff B. Adolescents' decisions about risks: A cognitive perspective. *Health risks and developmental transitions during adolescence*. 1997:110-35.
28. Mann L, Harmoni R, Power C. Adolescent decision-making: The development of competence. *Journal of Adolescence*. 1989;12(3):265-78.
29. Piaget J. *The theory of stages in cognitive development*. 1971.
30. Sachs B. Contraceptive decision-making in urban, black female adolescents: Its relationship to cognitive development. *International Journal of Nursing Studies*. 1985;22(2):117-26.
31. Bronfenbrenner U. *The ecology of human development: Experiments by nature and design*: Harvard Univ Press; 1979.
32. Hulton L. Adolescent Sexual Decision-Making; An Integrative Review. *The Online Journal of Knowledge Synthesis for Nursing*. 2001;8(1):48-60.
33. Kim YM, Kols A, Mucheke S. Informed choice and decision-making in family planning counseling in Kenya. *International Family Planning Perspectives*. 1998;24(1):4-42.
34. Davie J, Walling M, Ashton Mansour D, et al. Impact of patient counseling on acceptance of the levonorgestrel implant contraceptive in the United Kingdom. *Clinical Therapeutics*. 1996;18(1):150-9.
35. Frost J, Darroch J. Factors associated with contraceptive choice and inconsistent method use, United States, 2004. *Perspectives on Sexual and Reproductive Health*. 2008;40(2):94-104.
36. Harper CC, Brown BA, Foster-Rosales A, et al. Hormonal contraceptive method choice among young, low-income women: How important is the provider? *Patient Education and Counseling*. 2010.
37. Kuiper H, Miller S, Martinez E, et al. Urban adolescent females' views on the implant and contraceptive decision-making: a double paradox. *Family Planning Perspectives*. 1997;29(4):167-72.

38. Sandler A, Watson T, Levine M. A study of the cognitive aspects of sexual decision making in adolescent females. *Journal of Developmental & Behavioral Pediatrics*. 1992;13(3):202.
39. Thorburn S, Bogart LM. Conspiracy beliefs about birth control: barriers to pregnancy prevention among African Americans of reproductive age. *Health Education & Behavior*. 2005;32(4):474.
40. Yee L, Simon M. The Role of the Social Network in Contraceptive Decision-making among Young, African American and Latina Women. *Journal of Adolescent Health*. 2010.
41. Zabin L, Astone N, Emerson M. Do adolescents want babies? The relationship between attitudes and behavior. *Journal of Research on Adolescence*. 1993;3(1):67-86.
42. Moos M, Bartholomew N, Lohr K. Counseling in the clinical setting to prevent unintended pregnancy: an evidence-based research agenda. *Contraception*. 2003;67(2):115-32.
43. Schwarz EB, Lohr PA, Gold MA, et al. Prevalence and correlates of ambivalence towards pregnancy among nonpregnant women. *Contraception*. 2007;75(4):305-10.
44. Afable-Munsuz A, Speizer I, Magnus JH, et al. A positive orientation toward early motherhood is associated with unintended pregnancy among New Orleans youth. *Maternal and Child Health Journal*. 2006;10(3):265-76.
45. Nathanson CA, Becker MH. Contraceptive behavior among unmarried young women: A theoretical framework for research. *Population & Environment*. 1983;6(1):39-59.
46. Stern AM. Sterilized in the name of public health: race, immigration, and reproductive control in modern California. *American Journal of Public Health*. 2005;95(7):1128.
47. Borrero S, Schwarz EB, Creinin M, et al. The impact of race and ethnicity on receipt of family planning services in the United States. *Journal of Women's Health*. 2009;18(1):91-6.
48. Dehlendorf C, Ruskin R, Darney P, et al. The effect of patient gynecologic history on clinician contraceptive counseling. *Contraception*. 2010;82(3):281-5.
49. Thorburn Bird S, Bogart LM. Birth control conspiracy beliefs, perceived discrimination, and contraception among African Americans: An exploratory study. *Journal of Health Psychology*. 2003;8(2):263.
50. Becker D, Klassen A, Koenig M, et al. Women's Perspectives on Family Planning Service Quality: An Exploration of Differences by Race, Ethnicity and Language. *Perspectives on Sexual and Reproductive Health* 2009;41(3):158-65.
51. Thorburn S, Bogart LM. African American women and family planning services: perceptions of discrimination. *Women & Health*. 2005;42(1):23-39.
52. Gilliam M, Warden M, Goldstein C, et al. Concerns about contraceptive side effects among young Latinas: A focus-group approach. *Contraception*. 2004;70(4):299-305.
53. Jay M, DuRant R, Shoffitt T, et al. Effect of peer counselors on adolescent compliance in use of oral contraceptives. *Pediatrics*. 1984;73(2):126.

54. Potard C, Courtois R, Rusch E. The influence of peers on risky sexual behaviour during adolescence. *European J of Contraception and Reproductive Healthcare*. 2008;13(3):264-70.
55. Commendador K, editor. Concept analysis of adolescent decision making and contraception. *Contraception*. 2003.
56. Short MB, Yates JK, Biro F, et al. Parents and Partners: Enhancing Participation in Contraception Use. *Journal of Pediatric and Adolescent Gynecology*. 2005;18(6):379-83.
57. Bartz D, Shew M, Ofner S, et al. Pregnancy intentions and contraceptive behaviors among adolescent women: a coital event level analysis. *Journal of Adolescent Health*. 2007;41(3):271-6.
58. Davies S, DiClemente R, Wingood G, et al. Predictors of inconsistent contraceptive use among adolescent girls: findings from a prospective study. *Journal of Adolescent Health*. 2006;39(1):43-9.
59. Weisman CS, Plichta S, Nathanson CA, et al. Adolescent women's contraceptive decision making. *Journal of Health and Social Behavior*. 1991:130-44.
60. Strasburger VC. Sexuality, Contraception, and the Media. *Pediatrics*. 2010;126(3):576.
61. Rogers E. *Diffusion of Innovations*. 4th ed. New York, New York: The Free Press; 1995.
62. Valente TW, Watkins SC, Jato MN, et al. Social network associations with contraceptive use among Cameroonian women in voluntary associations. *Social Science & Medicine*. 1997;45(5):677-87.
63. RamaRao S, Lacuesta M, Costello M, et al. The link between quality of care and contraceptive use. *International Family Planning Perspectives*. 2003;29(2):76-84.
64. French RS WK, Cowan FM. How can we help people to choose a method of contraception? The case for contraceptive decision aids. *J Fam Plann Reprod Health Care*. 2009;35(4):219-20.
65. Brennan T, Blank L, Cohen J, et al. Medical professionalism in the new millennium: a physician charter. *Ann Intern Med*. 2002;136:243-6.
66. Moulton B, King JS. Aligning Ethics with Medical Decision Making: The Quest for Informed Patient Choice. *The Journal of Law, Medicine & Ethics*. 2010;38(1):85-97.
67. Backman T, Huhtala S, Luoto R, et al. Advance information improves user satisfaction with the levonorgestrel intrauterine system. *Obstetrics & Gynecology*. 2002;99(4):608.
68. Lei ZW, Chun Wu S, Garceau RJ, et al. Effect of pretreatment counseling on discontinuation rates in Chinese women given depo-medroxyprogesterone acetate for contraception. *Contraception*. 1996;53(6):357-61.
69. EngenderedHealth.com: Choices in Family Planning: Informed and Voluntary Decision Making. 2003.
70. Moskowitz E, Jennings B. Directive counseling on long-acting contraception. *American Journal of Public Health*. 1996;86(6):787.
71. Dehlendorf C, Ruskin R, Grumbach K, et al. Recommendations for intrauterine contraception: a randomized trial of the effects of patients' race/ethnicity and socioeconomic status. *American Journal of Obstetrics and Gynecology*. 2010.

72. Stewart M. Towards a global definition of patient centred care. *British Medical Journal*. 2001;322(7284):444.
73. Dehlendorf C, Diedrich J, Drey E, et al. Preferences for decision-making about contraception and general health care among reproductive age women at an abortion clinic. *Patient Education and Counseling*. 2010.
74. Morse JR, Lyn. *ReadMe First for a User's Guide to Qualitative Methods*. Sage Publications, Inc. 2002.
75. Fonseca H, Greydanus DE. Sexuality in the child, teen, and young adult: concepts for the clinician. *Clinics in Office Practice*. 2007;34(2):275-92.
76. Feldman. Contraceptive care for the adolescent. *Prim Care*. 2006;33(2):405-31.
77. Gilliam ML, Hernandez M. Providing Contraceptive Care To Low-Income, African American Teens: The Experience Of Urban Community Health Centers. *Journal of Community Health*. 2007;32(4):231-44.
78. Blumenthal P, Voedisch A, Gemzell-Danielsson K. Strategies to prevent unintended pregnancy: Increasing use of long-acting reversible contraception. *Human Reproduction Update*. 2010.
79. Hubacher D, Grimes DA. Noncontraceptive Health Benefits of Intrauterine Devices: A Systematic Review. *Obstetrical & Gynecological Survey*. 2002;57(2):120-8.
80. Shimoni Na. Intrauterine Contraceptives: A Review of Uses, Side Effects, and Candidates. *Semin Reprod Med*. 2010;28(2):118-25.
81. Schorge JO SJ, Halvorson LM, Hoffman BL, Bradshaw KD, Cunningham FG. *Williams Gynecology*. McGraw Hill Publishing. 2008.
82. Hubacher D, Lara-Ricalde R, Taylor D, et al. Use of copper intrauterine devices and the risk of tubal infertility among nulligravid women. *The New England Journal of Medicine*. 2001;345(8):561.
83. Hubacher D, Cheng D. Intrauterine devices and reproductive health: American women in feast and famine. *Contraception*. 2004;69(6):437-46.
84. Cheng D. The Intrauterine Device: Still Misunderstood After All These Years. *Southern Medical Journal*. 2000;93(9):859&hyphen.
85. Hubacher D. The checkered history and bright future of intrauterine contraception in the United States. *Perspectives on Sexual and Reproductive Health*. 2002;34(2):98-103.
86. Sonfield A. Popularity disparity: attitudes about the IUD in Europe and the United States. *Guttmacher Policy Review*. 2007;10(4):19-24.
87. Prager S, Darney P. The levonorgestrel intrauterine system in nulliparous women. *Contraception*. 2007;75(6):S12-S5.
88. Wesson J, Gmach R, Gazi R, et al. Provider views on the acceptability of an IUD checklist screening tool. *Contraception*. 2006;74(5):382-8.
89. Grimes D. Intrauterine device and upper-genital-tract infection. *The Lancet*. 2000;356(9234):1013-9.
90. Intrauterine Device and Adolescents. ACOG Committee Opinion No. 392. American College of Obstetricians and Gynecologists. *Obstetrics & Gynecology* 2007;110(6).
91. *Medical Eligibility Criteria for Contraceptive Use, 4th Edition*. Reproductive Health and Research: World Health Organization. 2009.

92. Asker C, Stokes-Lampard H, Beavan J, et al. What is it about intrauterine devices that women find unacceptable? Factors that make women non-users: a qualitative study. *Journal of Family Planning and Reproductive Health Care*. 2006;32(2):89-94.
93. Forrest J. US women's perceptions of and attitudes about the IUD. *Obstetrical & Gynecological Survey*. 1996;51(12):30S.
94. Hladky K, Allsworth J, Madden T, et al. Women's Knowledge About Intrauterine Contraception. *Obstetrics & Gynecology*. 2011;117(1):48.
95. Stanwood N, Bradley K. Young pregnant women's knowledge of modern intrauterine devices. *Obstetrics & Gynecology*. 2006;108(6):1417.
96. Wellings K, Zhihong Z, Krentel A, et al. Attitudes towards long-acting reversible methods of contraception in general practice in the UK. *Contraception*. 2007;76(3):208-14.
97. Whitaker A, Johnson L, Harwood B, et al. Adolescent and young adult women's knowledge of and attitudes toward the intrauterine device. *Contraception*. 2008;78(3):211-7.
98. Gold M, Johnson L. Intrauterine devices and adolescents. *Current Opinion in Obstetrics and Gynecology*. 2008;20(5):464.
99. Stanwood N, Garrett J, Konrad T. Obstetrician-gynecologists and the intrauterine device: A survey of attitudes and practice. *Obstetrics & Gynecology*. 2002;99(2):275.
100. Stubbs E, Schamp A. The evidence is in. Why are IUDs still out?: Family physicians' perceptions of risk and indications. *Canadian Family Physician*. 2008;54(4):560.
101. Fleming K, Sokoloff A, Raine T. Attitudes and beliefs about the intrauterine device among teenagers and young women. *Contraception*. 2010.
102. Hesse-Biber SN LP. *The practice of qualitative research*. Thousand Oaks: Sage Publications; 2006.
103. Rubin S, Winrob I. Urban Female Family Medicine Patients' Perceptions About Intrauterine Contraception. *Journal of Women's Health*. 2010:1-72.
104. Jacobstein R. Long-acting and permanent contraception: an international development, service delivery perspective. *Journal of Midwifery & Women's Health*. 2007;52(4):361-7.
105. Yen S, Saah T, Adams Hillard P. IUDs and Adolescents--An Under-Utilized Opportunity for Pregnancy Prevention. *Journal of Pediatric and Adolescent Gynecology*. 2009.
106. Suhonen S, Haukkamaa M, Jakobsson T, et al. Clinical performance of a levonorgestrel-releasing intrauterine system and oral contraceptives in young nulliparous women: a comparative study. *Contraception*. 2004;69(5):407-12.
107. Brockmeyer A KM, Webb A. Experience of IUD/IUS insertions and clinical performance in nulliparous women—a pilot study. *Eur J Contracept Reprod Health Care*. 2008;13(3):248–54.
108. Paterson H, Ashton J, Harrison-Woolrych M. A nationwide cohort study of the use of the levonorgestrel intrauterine device in New Zealand adolescents. *Contraception*. 2009;79(6):433-8.

109. Rivera R, Best K. Current opinion: Consensus statement on intrauterine contraception. *Contraception*. 2002;65(6):385-8.
110. Toma A, Jamieson M. Revisiting the intrauterine contraceptive device in adolescents. *Journal of Pediatric and Adolescent Gynecology*. 2006;19(4):291-6.
111. Harper C, Blum M, de Bocanegra H, et al. Challenges in translating evidence to practice: the provision of intrauterine contraception. *Obstetrics & Gynecology*. 2008;111(6):1359.
112. Chandra A, Martinez GM, Mosher WD, et al. Fertility, family planning, and reproductive health of US women: data from the 2002 National Survey of Family Growth. *Vital Health Stat 23*. 2005(25):1-160.
113. Logan C, Holcombe E, Manlove J, et al. The consequences of unintended childbearing. Child Trends, Inc and National Campaign to Prevent Teen Pregnancy: Washington, DC. 2007.
114. Kost K, Singh S, Vaughan B, et al. Estimates of contraceptive failure from the 2002 National Survey of Family Growth. *Contraception*. 2008;77(1):10-21.
115. Tolaymat L, Kaunitz A. Long-acting contraceptives in adolescents. *Curr Opin Obstet Gynecol*. 2007;19(5):453-60.
116. Yen S, Saah T, Adams Hillard P. IUDs and Adolescents--An Under-Utilized Opportunity for Pregnancy Prevention. *J Pediatr Adolesc Gynecol*. 2009;23(3):123-8.
117. Hubacher D, Lara-Ricalde R, Taylor D, et al. Use of copper intrauterine devices and the risk of tubal infertility among nulligravid women. *N Engl J Med*. 2001;345(8):561-7.
118. Fleming K, Sokoloff A, Raine T. Attitudes and beliefs about the intrauterine device among teenagers and young women. *Contraception*. 2010;82(2):178-82.
119. Harper C, Blum M, de Bocanegra H, et al. Challenges in translating evidence to practice: the provision of intrauterine contraception. *Obstet Gynecol*. 2008;111(6):1359-69.
120. Stanwood N, Garrett J, Konrad T. Obstetrician-gynecologists and the intrauterine device: A survey of attitudes and practice. *Obstet Gynecol*. 2002;99(2):275-80.
121. Stubbs E, Schamp A. The evidence is in. Why are IUDs still out? Family physicians' perceptions of risk and indications. *Can Fam Physician*. 2008;54(4):560-6.
122. Dehlendorf C, Levy K, Ruskin R, et al. Health care providers' knowledge about contraceptive evidence: a barrier to quality family planning care? *Contraception*. 2010;81(4):292-8.
123. Mosher WD, Jones J. Use of contraception in the United States: 1982-2008. *Vital Health Stat 23*. 2010(29):1-44.
124. Intrauterine Device and Adolescents. ACOG Committee Opinion No. 392. American College of Obstetricians and Gynecologists. *Obstet Gynecol*. 2007;110(6).
125. Medical Eligibility Criteria for Contraceptive Use, 4th Edition. Reproductive Health and Research: World Health Organization. 2009.
126. Lyus R, Lohr P, Prager S. Use of the Mirena LNG-IUS and Paragard CuT380A intrauterine devices in nulliparous women. *Contraception*. 2010;81(5):367-71.

127. Gold M, Johnson L. Intrauterine devices and adolescents. *Curr Opin Obstet Gynecol.* 2008;20(5):464-9.
128. Hulton L. Adolescent Sexual Decision-Making; An Integrative Review. *The Online Journal of Knowledge Synthesis for Nursing.* 2001;8(1):48-60.
129. Rich M, Ginsburg KR. The reason and rhyme of qualitative research: Why, when, and how to use qualitative methods in the study of adolescent health. *J Adolesc Health.* 1999;25(6):371-8.
130. Sucato GS, Bhatt SK, Murray PJ, et al. Transdermal Contraception as a Model for Adolescent Use of New Methods. *J Adolesc Health.* 2011;49(2):357-62.
131. Charmaz K. *Constructing grounded theory: A practical guide through qualitative analysis.* Thousand Oaks, California: Sage Publications 2006.
132. Miles MB, Huberman AM. *Qualitative data analysis.* Thousand Oaks, California: Sage Publications; 1994.
133. Epstein L, Sokal-Gutierrez K, Ivey S, et al. Adolescent experiences with the vaginal ring. *J Adolesc Health.* 2008;43(1):64-70.
134. Stern AM. Sterilized in the name of public health: race, Immigration, and reproductive control in modern California. *Am J Public Health.* 2005;95(7):1128-38.
135. Thorburn S, Bogart LM. Conspiracy Beliefs About Birth Control: Barriers to Pregnancy Prevention Among African Americans of Reproductive Age. *Health Educ Behav.* 2005;32(4):474-87.
136. Kim YM, Kols A, Martin A, et al. Promoting Informed Choice: Evaluating A Decision-making Tool for Family Planning Clients And Providers In Mexico. *International Family Planning Perspectives.* 2005;31(4):162-71.
137. Fonseca H, Greydanus DE. Sexuality in the Child, Teen, and Young Adult: Concepts for the Clinician. *Behavioral Pediatrics.* 2007;34(2):275-92.
138. Dehlendorf C, Diedrich J, Drey E, et al. Preferences for decision-making about contraception and general health care among reproductive age women at an abortion clinic. *Patient Educ Couns.* 2010;81(3):343-8.
139. Beach MC, Roter D, Rubin H, et al. Is Physician Self disclosure Related to Patient Evaluation of Office Visits? *J Gen Intern Med.* 2004;19(9):905-10.
140. McDaniel SH, Beckman HB, Morse DS, et al. Physician Self-disclosure in Primary Care Visits: Enough About You, What About Me? *Arch Intern Med.* 2007;167(12):1321-26.
141. Yee L, Simon M. The Role of the Social Network in Contraceptive Decision-making among Young, African American and Latina Women. *J Adolesc Health.* 2010;47(4):374-80.
142. Mirena: Highlights of Prescribing Information. Available at: http://berlex.bayerhealthcare.com/html/products/pi/Mirena_PI.pdf. Accessed online on September 22, 2011. .
143. Backman T, Huhtala S, Luoto R, et al. Advance Information Improves User Satisfaction With the Levonorgestrel Intrauterine System. *Obstet Gynecol.* 2002;99(4):608-13.
144. Hubacher D, Goco N, Gonzalez B, et al. Factors affecting continuation rates of DMPA. *Contraception.* 1999;60(6):345-51.

145. Canto De Cetina TE, Canto P, Ordo ez Luna M. Effect of counseling to improve compliance in Mexican women receiving depot-medroxyprogesterone acetate. *Contraception*. 2001;63(3):143-6.
146. Alnakash A. Influence of IUD perceptions on method discontinuation. *Contraception*. 2008;78(4):290-3.
147. Toma A, Jamieson M. Revisiting the intrauterine contraceptive device in adolescents. *J Pediatr Adolesc Gynecol*. 2006;19(4):291-6.
148. Stanwood N, Bradley K. Young Pregnant Women's Knowledge of Modern Intrauterine Devices. *Obstet Gynecol*. 2006;108(6):1417-22.