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Adolescent and young adult women's knowledge of and attitudes toward etonogestrel implants

Alexandra Bachorik, BA⁽¹⁾, Joy Friedman, MD⁽²⁾, Ashley Fox, PhD⁽³⁾, Anne T Nucci, MD⁽²⁾, Carol R Horowitz, MD, MPH⁽³⁾, and Angela Diaz, MD, MPH⁽²⁾

⁽¹⁾Icahn School of Medicine at Mount Sinai Department of Medical Education New York, NY

⁽²⁾Icahn School of Medicine at Mount Sinai Department of Pediatrics New York, NY

⁽³⁾Icahn School of Medicine at Mount Sinai Department of Health Evidence & Policy New York, NY

Abstract

STUDY OBJECTIVE—Long acting reversible contraceptives, including etonogestrel implants, are top tier contraceptives for adolescents, yet they remained underutilized. This study aimed to assess awareness of and attitudes toward etonogestrel implants among adolescent and young adult women.

DESIGN, MAIN OUTCOME MEASURES—This is a cross sectional study. We distributed an original, self-administered survey to a convenience sample of anonymous subjects. The survey assessed demographic information, pregnancy and sexual history, general contraceptive preferences and awareness of implants. Subjects then read a brief description of implants before completing the section assessing attitudes toward them. We used chi-squared and *t*-test analyses to identify factors associated with awareness of and positive attitudes toward implants.

SETTING, PARTICIPANTS—Women aged 10–24 attending a birth control education group at an adolescent health center in New York City.

RESULTS—Of the 129 participants, only 40% had heard of etonogestrel implants. Some (33%) reported positive attitudes toward implants. Positive attitudes were associated with preferences for birth control convenience (OR = 3.3, 95% CI= 1.1– 9.5) and privacy (OR= 2.2, 95% CI= 1.0– 4.8). Neutral or negative attitudes were associated with a preference for birth control that maintained menstrual regularity (OR= 0.4, 95% CI= 0.2– 0.8) and with having experienced at least one unintended pregnancy (OR= 0.4, 95% CI= 0.2– 0.9). Age, race and education were not associated with participants' attitudes toward implants.

CONCLUSIONS—Women who value convenience and privacy are more likely to report positive attitudes toward implants, and thus may represent especially receptive candidates for them.

Contact: Alexandra Bachorik Alexandra.bachorik@mssm.edu 1245 Park Ave Apt 9E New York, NY 10128 (240) 899-9052.

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Keywords

Contraception; Adolescent; Young adults; Awareness; Attitude

I. INTRODUCTION

Forty-nine percent of the over 6.7 million pregnancies in the United States are unintended, and adolescent and young adult women are disproportionately affected.¹ In 2006, 83 percent of pregnancies among women aged 15–19 and 64 percent among women aged 20–24 were unintended.¹ Socioeconomically disadvantaged young women in urban settings experience rates of unintended pregnancy even higher than the national averages in their age group. In a population of young women attending public health clinics in New York City, 90 percent of pregnancies experienced by women ages 10–19 and 80 percent among women aged 20–29 were unintended.²

These high rates of unintended pregnancy prevail despite high rates of reported contraceptive use among these same populations. According to data reported by the National Survey of Family Growth in 2011, 86 percent of unmarried women aged 15–19 reported using some form of contraception during their last sexual encounter. Among these women and those aged 20–24, oral contraceptive pills or condoms were by far the most widely used forms of contraception.³ These methods have relatively high failure rates with typical use; in a study of 943 women using oral contraceptives, nearly half of all participants missed one or more pills monthly.⁴

Long acting reversible contraceptives (LARC), including etonogestrel implants and intrauterine devices, retain very low failure rates with typical use, due to their user independence. Unfortunately, implants in particular are highly underutilized; less than 0.7 percent of women in the United States currently use contraceptive implants as their form of birth control.⁵

Although etonogestrel implants were first approved in 2006, little is known about adolescent and young adult women's knowledge of the implant or the attitudes that drive this population to adopt or reject this form of birth control. Understanding these factors may provide important information for patient counseling and education, and potential improvements in utilization of this method. To that end, we designed a survey to assess whether adolescent and young adult women are familiar with contraceptive implants, what their attitudes are toward the implants and what demographic characteristics or reproductive preferences are associated with knowledge of and positive attitude toward etonogestrel implants.

II. MATERIALS AND METHODS

This is a descriptive, cross-sectional, anonymous survey with a convenience sample of adolescent and young adult women. We recruited women who attended a birth control education group between June and August 2012 at an adolescent health center that serves a population mainly of young people of color from medically underserved areas of New York City. All contraception offered at this clinic is provided at no charge to the patient. The

study procedures and survey instrument were approved by the Mount Sinai Medical Center Program for the Protection of Human Subjects (PPHS).

English speaking women aged 10–24 years who had the ability to give assent or consent and to read were considered eligible for the study. After eligible patients indicated their willingness to participate and signed assent or consent forms, we distributed a self-administered questionnaire. All questionnaires were administered before the birth control education began, to assess the participants' baseline knowledge of etonogestrel implants. We did not track patients who were screened and declined to participate.

We developed an original survey based on the aims of this research study. We tailored elements from Whitaker et al's 2008 survey of knowledge and attitudes toward the IUD to assess implant-specific knowledge and attitudes. Physicians, social workers and health educators at the project site also provided input for survey development.⁶ The survey model is depicted in Figure 1. Our survey contained 42 items that assessed demographic information, pregnancy and sexual history, familiarity with various forms of contraception and contraceptive preferences. It contained closed-ended, open-ended and Likert-scale-type questions and was written at a 6th grade level on the Flesch-Kincaid scale.⁷ As part of the survey, we asked participants if they had ever heard of contraceptive implants (referred to as Implanon® in the survey), as well as six other forms of birth control, including condoms, patches, rings, pills, IUD and injectables. We assessed implant specific knowledge depth with an 11-question true/false test. The knowledge test included questions regarding implant effectiveness, insertion and removal processes, frequency of use, effect on fertility, menstrual side effects and length of use.

We then assessed general contraceptive preferences with six Likert-scale-type questions and one multiple-choice question: the preferences included maintenance of menstrual regularity, privacy, reliability, ease of use and length of duration. Next, participants read a short, seven sentence description of the implant based on the NYC Department of Health's patient education materials, including its mechanism of action, efficacy, length of use, side effects and insertion and removal processes. Participants responded to six Likert-scale-type questions about their general interest in implants and their attitudes toward particular characteristics of this form of birth control; many of these questions paralleled the earlier questions on general contraceptive preferences, but were tailored to the implant's particular characteristics. Participants also ranked the seven forms of contraception discussed in the survey by their order of preference.

We used the Statistical Package for Social Sciences, version 20 (SPSS, Inc., Chicago, IL) for data entry and analysis. We assigned each survey participant a knowledge score as the percent of correct answers to the 11 questions on the knowledge test. Positive attitude toward the implants was defined as answering the question of “How much do you like the idea of having Implanon® for yourself?” as either 7 on a scale of 1–10 (where 0 is “I do not like the idea” and 10 is “I really like the idea”) or ranking implants as a first or second choice form of birth control of the seven forms of contraception discussed in the survey [6]. Similarly, prioritizing a particular feature of contraception—privacy, convenience, etc—was defined as answering the question “How important is [X feature] to you?” as either 7 on a

scale of 1–10, or selecting that feature as one of the three most important qualities in birth control. We used demographic and general contraceptive preference variables to assess significant univariate relationships with having ever heard of implants and having a positive attitude toward them. We applied chi-squared analysis to assess the statistical significance of categorical variables, and *t* test analysis for that of continuous measures.

III. RESULTS

We surveyed 129 adolescent females. Our study population represented a population at high risk for unintended pregnancy; the participants were mostly sexually active (i.e. reported intercourse in the last four weeks [88%]) adolescent and young adult women identifying as Latina (54%) or Black (33%), nearly 40% of whom had already experienced at least one unintended pregnancy (Table 1). Participants were aged 14–24, mean age was 19.3 years; age as a variable was normally distributed.

Awareness of etonogestrel implants in the study population was low, both relative to more common forms of birth control (such as the birth control pill) and relative to other forms of LARC (Depot-Provera/DMPA, IUD). Only 41.1% of the population had ever heard of the implants. Overall awareness and attitudes are presented in Table 2.

Even among those who reported having heard of the implant before, knowledge scores were low and not significantly higher than the knowledge scores among those who had never heard of the implant prior to the study. Interestingly, nearly 60% of all participants—both those who reported having heard of the implant before and those who reported never having heard of the implant—correctly identified that it does not protect against STDs and HIV. Knowledge depth scores, as well as scores on individual questions, are presented in Table 3.

One third of the participants reported positive attitudes toward the implants. The most highly rated characteristics of the implants were reliability and convenience of this method. The least highly rated characteristic was the potential side effect of irregular bleeding (Table 4). Univariate analysis revealed that no demographic variable beyond prior unintended pregnancy was associated with positive attitude toward the implants (Table 5). Those participants who reported positive attitudes were more likely to prioritize convenience (OR = 3.3, 95% CI= 1.1–9.5, *p* = 0.02) and privacy (OR= 2.2, 95% CI= 1.0– 4.8, *p* = 0.05) in their general contraceptive preferences. Those participants who did not report positive attitudes were more likely to report regular menses as an important factor in contraceptive choice (OR= 0.4, 95% CI= 0.2– 0.8, *p* = 0.02), and to have experienced at least one unintended pregnancy (OR= 0.4, 95% CI= 0.2– 0.9, *p* = 0.02). Age, race, education and previous awareness of the implants were not associated with participant attitude toward the implants.

All data were stratified to assess differences in awareness, knowledge, general contraceptive attitudes and implant-specific attitudes between adolescent (defined by the WHO as 10–19 years old) participants and young adult participants (20–24 year old). No statistically significant differences existed in any of these domains between the two cohorts.

IV. DISCUSSION

Etonogestrel implants are an excellent form of contraception for adolescent and young adult women; they are reliable, convenient, private and safe. They are equally suitable for nulliparous and parous women. In a 2012 bulletin, the American College of Obstetrics and Gynecology identified both the implant and the IUD as “top tier contraceptives” for the adolescent population.⁷

Only a minority of women aged 14–24 years had heard of this safe and effective form of birth control. This finding is consistent with Spies et al's 2010 survey of LARC knowledge among young adult women aged 18–30, where only 8 percent of participants had heard of the implant.⁸ Furthermore, we found that knowledge scores among those who reported having heard of the implant were not significantly higher than knowledge scores among those who had never heard of the implant, and neither group responded to more than 50% of the true/false questions correctly. Thus, among participants who reportedly “knew” about implants, their knowledge was incomplete or incorrect. This finding from our study qualifies the meaning of “awareness,” and indicates that it is a poor measure of true knowledge about the implant. With awareness but no in-depth knowledge, women may be hesitant to ask providers about this form of contraception, or may harbor misconceptions which providers must be prepared to address.

The most highly rated attributes of the implants among all participants were their reliability, convenience and privacy; the least popular attribute was the potential side effect of irregular bleeding. These findings are consistent with Lewis et al's survey of postpartum 12–18 year olds using Implanon®, where over 90 percent of participants identified convenience as something they liked about Implanon® and 40 percent identified irregular bleeding as a characteristic they disliked.⁹

One third of all participants reported positive attitudes toward the implants, and this group was more likely to value convenience and privacy from their form of birth control. Participants who did not report a positive attitude were more likely to value regular menses. Other studies of etonogestrel implants to date have focused on demographic predictors, or on satisfaction among patients who are already using the implant; our study is unique in its examination of the relationship between general contraceptive preferences and willingness to adopt the implant. The only demographic factor significantly associated with attitude—positive or negative—toward the implant was history of unintended pregnancy: participants who reported a neutral or negative attitude were more likely to have experienced at least one unintended pregnancy. This is consistent with findings from the CHOICE project, where participants with a history of unintended pregnancy were less likely to adopt the implant among a number of contraceptive options.¹⁰ This may represent a preference among parous women for the IUD over the implant, rather than an isolated negative attitude toward the implant: the invasiveness of IUD placement may be less anxiety provoking for women who have given birth or undergone abortion than for those who have not. That history of unintended pregnancy is the only demographic factor associated with attitude suggests that providers may not be able to identify strong candidates for implants on demographic

information alone. Rather, all patients should receive counseling on this form of birth control.

Our study has several limitations. As a cross-sectional study, associations identified in the survey should not generate inferences of causation. Additionally, participants in the birth control group from which we recruited represented a convenience sample, and patients awaiting results of pregnancy tests were often excluded from recruitment to the birth control group out of consideration for the sensitivity of that moment in their health care. Thus, our sample may have excluded some of those teens at the very highest risk for unintended pregnancy. Additionally, the age distribution across our study population was not even, but rather represented a bell curve peaking at approximately 20 years old. Because this was an anonymous study, all data were self reported and no medical records were used to corroborate reproductive health histories or demographics. Additionally, our survey tool is not a validated instrument, as none existed; it was, however, modeled very closely after a survey on which previously published studies were based, including Whitaker et al and Barrett et al.^{6, 11} Finally, this was a one-time survey with no follow up. We cannot say if any reported positive attitudes translated into persistent positive attitudes or increased use upon more patient-driven information gathering.

Despite these limitations, our survey has important clinical implications. Patients cannot make choices about contraceptive methods of which they are not aware and knowledgeable. To improve knowledge and awareness of etonogestrel implants, clinicians, adolescent health centers, family planning centers, public health agencies and professional associations must make education about this safe and effective form of birth control a priority. Furthermore, because neither race, nor age, nor education are associated with patient attitude, all adolescent and young adult women should be considered potential candidates for implants. Finally, when working with young women to select a contraceptive method, clinicians should bear in mind that patients who express a desire for a convenient, private form of birth control may be especially strong candidates for these implants.

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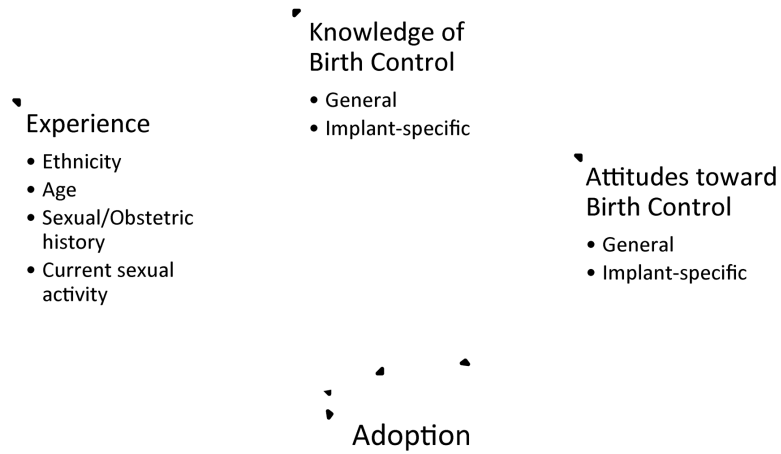


Fig. 1.

Survey Model: Each box represents a domain contributing to the ultimate adoption of a given form of birth control; our survey included questions interrogating each domain.

Table 1

Participant characteristics

Characteristic	N= 129 (%)
Age, in years [mean (range)]	19.3 (14–24)
Ethnicity	
- African American	42 (32.6)
- Hispanic	70 (54.3)
- Other ^a	16 (12.5)
Level of Education	
- Finished >1 semester high school	31 (24)
- Graduated from high school	34 (26.4)
- Finished >1 semester college	60 (46.5)
Ever had sexual intercourse	125 (96.9)
Age at coitarche [mean +/- SD]	15.5 +/- 1.5
Currently sexually active ^b	113 (87.6)
Ever experienced unintended pregnancy	49 (38)
Ever had abortion	40 (31)

^aOther includes White, Asian and “Other.”

^b“Currently sexually active” defined as sex in the last four weeks.

Table 2

Knowledge & attitudes toward the implant among all participants

All participants	Total (N=129)
Ever heard of the implant	53 (41.1)
Positive attitude toward the implant (after reading brief description)	39 (33.1)
Rated the implant as one of top two choices	21 (17.6)
Rated the implant 7–10 on Likert Scale	30 (23.4)

Table 3

Awareness and knowledge depth among those who had heard of the implant (N = 53)

Participants who had heard of the implant prior to survey	Total (N=53)
Knowledge score ^a [mean +/- SD]	49 +/- 23.62
Participants who had heard of implant and correctly identified the following statements as true or false with regard to the implant	
Does not require daily action	42 (79.2)
Appropriate for nulliparous women	25 (47.2)
Does not affect ability to have children in the future	27 (50.9)
Does not protect against STDs or HIV	48 (90.6)
Can prevent pregnancy for up to 3 years	23 (43.4)
Can cause irregular bleeding	22 (41.5)

^a Knowledge score is the number of correct answers out of 11 questions.

Table 4

Ratings of implant characteristics among all participants

Characteristic	0– 10 score on Likert scale ^a (Mean +/- SD)
Is almost 100% effective at preventing pregnancy	7.3 +/- 2.7
Works by releasing hormones	5.0 +/- 2.8
Can cause irregular bleeding	3.0 +/- 2.6
Works for 3 years without having to think about it	7.8 +/- 2.8
Is private	7.7 +/- 2.8

^aWhere 0 corresponds to “I strongly dislike this characteristic” and 10 corresponds to “I really like this characteristic.”

Table 5

ORs of having a positive attitude toward the implant

	OR	P
<i>Demographics</i>		
Aged >19 years	1.3 (0.6–2.9)	.47
African American race	0.8 (0.3–1.7)	.51
Hispanic race	1.2 (0.6–2.6)	.64
Graduated high school	0.7 (0.3–1.7)	.40
Ever unintentionally pregnant	0.4 (0.2–0.9)	.02**
Coitarche <16 years old	0.6 (0.3–1.3)	.22
Heard of the implant prior to study	1.0 (0.4–2.1)	.97
<i>Contraceptive Preferences^a</i>		
Convenience	3.3 (1.1–9.5)	.02**
Privacy	2.2 (1.0–4.8)	.05**
Reliability	1.0 (1.0–1.1)	.15
No hormones	0.9 (0.3–2.4)	.84
Regular menses	0.4 (0.2–0.8)	.02**

^aPreference for each one of these characteristics in a contraceptive method was defined as rating characteristic 7 on a scale of 0–10 where 0 corresponds to “not important” and 10 corresponds to “extremely important” when asked how important that characteristic was to the participant in their form of birth control.