Will It Hurt? the Intrauterine Device (IUD) Insertion Experience and Long-Term IUD Acceptability Among Adolescents and Young Women.

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Student Name: Dana G. Callahan, B.A.

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Mentor Name and Affiliations: Amy D. DiVasta, MD, MMSc, Division of Adolescent and Young Adult Medicine, Boston Children's Hospital

Collaborators, with Affiliations: Laura F. Garabedian, PhD, MPH, Department of Population Medicine, Harvard Medical School and the Harvard Pilgrim Health Care Institute; Kathleen F. Harney, MD, Department of Obstetrics and Gynecology, Cambridge Health Alliance.

ABSTRACT

TITLE: Will it hurt? The intrauterine device (IUD) insertion experience and long-term IUD acceptability among adolescents and young women.

Dana G. Callahan, Laura F. Garabedian, Kathleen F. Harney, Amy D. DiVasta

Purpose: To examine how the intrauterine device (IUD) insertion experience affects long-term IUD acceptability among adolescents.

Methods: This text-to-web survey study was conducted at Boston Children's Hospital, Boston, Massachusetts, and Cambridge Health Alliance, Cambridge, Massachusetts. English-speaking adolescents who received an IUD or etonogestrel implant between January 2012 and May 2018 and who were between the ages of 13 and 21 years and nulliparous at the time of the procedure were eligible. Main outcome measures were willingness to recommend the device and willingness to get the same device in the future.

Results: We received survey responses from 45 adolescents (n=21 IUD users, n=24 implant users, response rate = 4.10%). Mean current age (21 years) and time since insertion (2.4 years) were similar between the IUD and implant groups. Both groups anticipated moderate insertional pain, and 70% of respondents experienced moderate-to-severe pre-procedural anxiety. Compared to the implant group, significantly more IUD users reported moderate-to-severe insertional pain (85% vs 29%, p=0.001), recalled that the procedure hurt more than expected (57% vs 4%, p=0.0001), and endorsed lower pain management satisfaction (67.8 vs 90.0, p=0.03). Most would recommend their chosen method to a friend (86% IUD, 79% implant) or consider getting the same device in the future (67% IUD, 71% implant). However, when explicitly asked if dislike of the insertion procedure would prevent them from getting the same device in the future, significantly more IUD users reported that dislike of the insertion procedure might or would probably prevent them from getting the same device in the future (43% vs 8%, p=0.01).

Conclusions: Nulliparous adolescents receiving an IUD experience high rates of pre-procedural anxiety, anticipate painful IUD insertions, and experience more severe pain and lower procedural satisfaction compared to implant users. Dislike of the IUD insertion experience may negatively impact adolescents' willingness to continue using an IUD in the future. Findings can inform multimodal interventions to holistically improve the IUD insertion experience.

TABLE OF CONTENTS

GLOSSARY OF ABBREVIATIONS

IUD: Intrauterine device

LARC: Long-Acting Reversible Contraception

STUDENT ROLE

This project was an electronic survey study designed to examine how the intrauterine device (IUD) insertion experience affects long-term IUD acceptability among nulliparous adolescents. My contributions to this project are detailed below:

(1) **Project Design:** I was responsible for conceiving this project, conducting the literature review, and drafting the IRB project proposal and IRB protocol, which included designing the survey instrument. With the supervision of my faculty mentors, I was also responsible for drafting revisions to the IRB protocol, managing communications with our survey software partner (Medumo), and approving the final survey design.

(2) **Implementation:** I worked directly with Medumo to organize and execute survey distribution, including analysis of survey click rates, breakoff rates, and response rates.

(3) **Analysis**: I was responsible for the statistical analysis, data interpretation, and manuscript drafting.

Supervisor/collaborator responsibilities were as follows:

(1) **Project Design:** A. DiVasta and K. Harney reviewed and revised the IRB protocol and provided logistical support during the IRB application process. Statistical methods and study design were reviewed by L. Garabedian.

(2) **Implementation:** A. DiVasta oversaw overall study conduct as well as study conduct at Boston Children's Hospital. K. Harney oversaw study conduct at Cambridge Health Alliance.

(3) **Analysis:** Statistical analyses and conclusions were reviewed by L. Garabedian. K. Harney, A. DiVasta, and L. Garabedian reviewed and revised manuscript drafts.

Current role: Due to a low initial survey response rate, the project is ongoing. I submitted an IRB amendment request to modify our recruitment strategy, with the goal of reaching a 10% survey response rate. The amendment was approved, and data collection will be complete March 4, 2019. Therefore, the manuscript submitted here represents a preliminary analysis of survey responses received thus far. Once the second round of data collection is complete, I will be responsible for re-analyzing the complete data set, revising the manuscript, and submitting the manuscript for publication.

APPENDIX: MANUSCRIPT

INTRODUCTION

Recent declines in unintended adolescent pregnancy in the United States have been attributed to increased use of effective contraception.[1] However, unintended adolescent pregnancy rates in the U.S. remain high compared to other high-income countries, and disparities persist by race, income, and geography.[2-3] Long-acting reversible contraception (LARC), which includes intrauterine devices (IUDs) and the etonogestrel implant, is recommended for first-line adolescent contraception due to its efficacy, safety, and convenience.[4] Although IUDs meet the family planning desires of many adolescents and offer important non-contraceptive medical benefits, IUD use remains low in the adolescent population.[5-8]

Adolescents and young women consistently identify fear of a painful insertion procedure (hereafter "insertional pain") as a contributor to disinterest in the IUD.[9-12] Furthermore, adolescents who undergo IUD insertions report high rates of insertional pain, and highly effective methods for reducing insertional pain in the ambulatory setting have not been established.[13-15] The cited IUD insertion literature primarily examines: (1) insertional pain as a barrier to IUD initiation among adolescents who have never used LARC, and (2) pharmacological strategies to reduce insertional pain. One IUD initiation study reported that insertional pain severity might not affect short-term IUD acceptability; three-quarters of participants were willing to recommend the IUD at 6 months, despite reporting high levels of insertional pain.[16] However, no studies have examined how the entire insertion experience affects long-term (>1-year) acceptability, a time point at which adolescents can realistically be asked to assess whether getting an IUD was worth the discomfort of the insertion procedure.[17]

Our study expands on the existing body of work by: (1) assessing how global dislike of the insertion experience (i.e., insertional pain, anxiety, experience-expectation discrepancies, and procedural dissatisfaction) affects long-term LARC acceptability, (2) surveying nulliparous adolescents and young women (<21 years old at time of insertion) who are under-represented in LARC research[13], (3) utilizing an implant comparison group to identify barriers to IUD use specific to the insertion procedure, and (4) employing a text-to-web survey to contact individuals multiple years after their device insertion. We sought to describe how adolescents recall the overall IUD insertion experience and assess how dislike of the insertion procedure impacts long-term IUD acceptability. We expected that IUD users would recall higher rates of insertional pain

and pre-procedural anxiety and lower pain management satisfaction, as compared to implant users. We also hypothesized that individuals who experienced more insertional pain would be less willing to have another IUD placed in the future and less willing to recommend an IUD to peers.

MATERIALS AND METHODS

Study Design and Sample:

This text-to-web survey study was conducted in Winter 2019 at Boston Children's Hospital and Cambridge Health Alliance in Massachusetts. All English-speaking, nulliparous females who received an IUD or implant between January 2012 and May 2018, who were between the ages of 13 and 21 at the time of the procedure, and who provided an active mobile phone number were eligible (n=493 IUD, n=605 implant). IUD recipients received pre-procedural standard of care, including 400-600 mg ibuprofen orally at least 20 minutes prior to insertion to reduce post-procedure pain; other pain medications, anxiolytics, and sedating medications were not provided. Implant recipients received pre-procedure standard of care, including subcutaneous 1% lidocaine for local anesthesia.

The IUD and implant are the two most common LARC methods used by adolescents. Implant users were chosen as a comparison group for several reasons. Like IUD users, implant users selected a hormonal LARC method that required a potentially painful procedure for method initiation. However, subcutaneous lidocaine offers local anesthesia for implant insertion, whereas optimal insertional pain management for IUDs has not been achieved.[13-14] Therefore, implant users were selected as a comparison group in order to better identify factors specific to the IUD insertion procedure that might affect long-term device acceptability, as opposed to identifying factors that contribute to overall disinterest in LARC methods altogether.

Participants were texted an invitation to participate in a short survey to help improve patient care. The recruitment text included a link to a web-based survey, assurance that participation was voluntary, and an immediate opt-out option via SMS. Participants who clicked on the link were brought to a survey welcome page that included a general overview about the study's focus on improving adolescent health; information on the chance to receive a $25 e-gift card in appreciation of participation; assurance of the voluntary nature of participation and maintenance of confidentiality; and electronic consent to participate. Individuals who did not complete the survey after a reminder text were considered to have implicitly opted out of the study.[18] The

survey was anonymous and was administered via Medumo (https://www.medumo.com/), a HIPAA-compliant survey software platform. We limited our sample to the 45 women who opted in to the survey (Response Rate 4.10%, Table 1). This study was approved by the Boston Children's Hospital Institutional Review Board and received a waiver of parental consent.

Measures:

Demographic data collected via chart review included age, race/ethnicity, and insurance payor. Procedural details obtained from chart review included age at insertion, confirmation of nulliparity at time of insertion, and device type. Survey questions were designed based on a comprehensive review of the literature assessing long-term contraception device acceptability[19], validated pain intensity measures[19-20], validated anxiety intensity measures[21], and pain and satisfaction measures widely utilized in IUD pain management research.[22-24] The survey contained 12 items addressing: pain and anxiety related to the insertion procedure, satisfaction with insertional pain management, long-term device acceptability, and factors affecting device acceptability.

A 100-mm visual analog scale (VAS) was used for each of the following measures: expected insertional pain and experienced insertional pain (0 mm indicating no pain, 100 mm the worst pain); satisfaction with pain management (0 mm not at all satisfied, 100 mm very satisfied); and pain-related anxiety prior to the procedure (0 mm not at all anxious, 100 mm the most anxious). Pain and anxiety ratings were also described using validated categories derived from the VAS (0-4 mm none, 5-44 mm mild, 45-74 mm moderate, 75-100 mm severe).[25-26] Participants were asked how their experienced insertional pain compared to their expectations (hurt more than/the same as/less than expected). Next, participants were asked if they would be willing to get another IUD in the future (Yes/No) and if they would recommend an IUD to a friend (Yes/No). Participants were asked to identify reasons why they might not get another IUD in the future or recommend an IUD to a friend. These reasons were selected from a list of factors that commonly affect IUD acceptability (e.g., bleeding, pain during insertion, pain after insertion, other side effects, no longer need/want contraception, other). Finally, participants were asked whether overall dislike of the insertion procedure would prevent them from getting another IUD in the future (N/A, No, Maybe, Yes).

The comparison group of implant users was asked the same series of questions in reference to the implant procedure. Implant users were additionally asked to identify factors that dissuaded

them from choosing an IUD. Responses included a diverse set of reasons and participants could select more than one (e.g., concerns about painful insertion, painful removal, undesired bleeding, side effects, other). Implant users were also asked to report their willingness to receive an IUD in the future (Yes/No). An option for free text response was provided at the end of each survey.

Statistical Analysis:

Survey responses were imported into SAS statistical software (SAS 9.4, Carey, NC) for analysis. Demographic data and distributions of responses were assessed using standard descriptive statistics. Demographic and survey response data were compared between the IUD and implant groups using a Fisher's exact test for categorical data and two-tailed Student's t test for continuous data. $P < 0.05$ was considered statistically significant for all comparisons.

RESULTS

Sample Characteristics:

Characteristics of the sample (n= 21 IUD, n= 24 implant) are presented in Table 2. IUD users were significantly older at the time of insertion procedure compared to implant users (19.07 vs 17.81 years, p=0.03). Among respondents for whom race and ethnicity data were available, the majority were white. One-third of all respondents were underinsured (self-pay or public insurance). Nearly all IUD respondents used Mirena® (20/21 respondents) and nearly all implant respondents used Nexplanon® (23/24 respondents).

LARC Insertion Experience: IUD versus Implant

Respondents' recollections of the LARC insertion experience are presented in Table 2. Respondents used a 100-mm visual analog scale to report procedural pain, anxiety, and satisfaction (0 = no pain/no anxiety/not at all satisfied; 100 = the worst pain/the most anxious/the most satisfied). IUD and implant users expected to experience similar levels of insertional pain (59.25 vs. 43.30, p=0.20) for their respective procedures. However, IUD users experienced higher levels of insertional pain (64.85 vs 16.58, p<0.0001) and lower satisfaction with insertional pain management (67.75 vs 90.00, p=0.03) compared to the implant group. More IUD users recalled moderate or severe insertional pain compared to implant users (85% vs 29%, p=0.001), with 45% of IUD users reporting severe insertional pain. Additionally, more IUD users recalled that the insertion procedure hurt more than expected, compared to the implant group (57% vs 4%, p=0.0001); 83% of implant users reported that the procedure hurt less than

expected. The majority of both groups recalled feeling anxious about insertional pain, with 70% of IUD users and 67% of implant users reporting moderate-to-severe pre-procedural anxiety.

Long-Term LARC Acceptability:

Personal LARC Decision-Making

LARC acceptability data and factors affecting long-term acceptability are presented in Tables 4 and 5. Similar proportions of IUD users (67%) and implant users (71%) reported willingness to get the same device in the future. However, when explicitly asked whether dislike of the insertion procedure would prevent them from getting the same device in the future (with qualifying language in response options: Yes/Maybe/No), more IUD users than implant users reported that dislike of the insertion procedure might or would probably prevent them from getting the same device in the future (43% vs 8%, p=0.01). Among IUD users who endorsed reasons why they might not get another IUD in the future, pain after insertion was the most commonly cited reason (5/10 respondents). Among implant users who endorsed reasons why they might not get another implant in the future, dislike of bleeding/spotting (8/11 respondents) was the most commonly cited reason. Among the implant users, the most commonly cited reasons for choosing an implant over an IUD were worry about IUD insertional pain (33%) and having friends or family who had negative experiences with the IUD (33%). Three quarters (75%) of implant users reported they would not get an IUD in the future.

Peer Endorsement of LARC Method

Similar proportions of IUD users (86%) and implant users (79%) reported they would recommend their contraceptive device to a friend. Among IUD users who endorsed reasons why they might not recommend the IUD to a friend, too much insertional pain (2/4 respondents) and dislike of bleeding patterns (2/4 respondents) were the most commonly cited reasons. Among implant users who endorsed reasons why they might not recommend the implant to a friend, dislike of bleeding (7/10 respondents) and other side effects (8/10 respondents) were the most commonly cited reasons.

DISCUSSION

Among this sample of nulliparous young LARC users, women reported overwhelmingly negative recollections of the IUD insertion experience. In contrast to our hypothesis and in spite of negative insertion experiences, the vast majority of IUD users reported they would recommend the IUD to a friend or get another IUD in the future. These high levels of device acceptability

align with prior research demonstrating high LARC continuation rates among adolescents after one year of use.[4,17,27] Due to the small number of women who reported they would not recommend the IUD or would not get another IUD in the future, statistical comparison of the groups (would versus would not recommend; would versus would not get another IUD) was not possible. However, when qualifying language was used in response options (i.e. Yes/Maybe/No instead of Yes/No) to explicitly ask participants how overall dislike of the insertion procedure would inform their future contraceptive decision-making, nearly half of IUD users reported that dislike of the insertion procedure might prevent them from getting another IUD in the future. This finding suggests that insertional pain may act as a deterrent to continued IUD use (e.g., routine exchange upon device expiration), providing a reproductive health imperative for improving the insertion experience.

The severity of IUD insertional pain reported here is consistent with prior research demonstrating that moderate-to-severe IUD insertional pain is common among young nulliparous women.[13-14] Our observation that implant users and IUD users anticipated similar levels of insertional pain prior to their respective procedures agrees with LARC initiation research.[16] Others have recently claimed that the similar pain level anticipated by IUD and implant users demonstrates that insertional pain is *not* a barrier to IUD use.[16] On the contrary, we found that the willingness of many individuals to tolerate a painful procedure is *not* evidence that pain does not deter others from undergoing the same procedure. In fact, 75% of the implant users remained unwilling to get an IUD, and concern about insertional pain was their most commonly cited reason for disinterest in the IUD. This conclusion is supported by a wealth of prior data in which non-LARC users consistently identify fear of insertional pain as a barrier to IUD initiation.[9-12] Rather than serving as evidence that insertional pain is not a barrier to IUD use, our observation that most IUD users would choose the IUD again offers a powerful reminder that many young women are electing to undergo a highly uncomfortable procedure in order to access their preferred contraceptive method.[8,16] As the number of young women choosing IUDs rises despite the lack of adequate insertional anesthesia, our data should galvanize efforts to improve the IUD insertion experience so that an increasingly common procedure does not cause undue distress to a vulnerable population.

Our data also demonstrate that pre-procedural anxiety is a highly prevalent aspect of LARC insertions. The high rates of severe pre-procedural anxiety reported here suggest that local anesthetics alone (e.g., lidocaine gel, paracervical blocks)[13] are not likely to comprehensively

improve adolescents' experience of receiving an IUD. This observation is further supported by the high prevalence of anticipatory anxiety in our implant group, despite the relative painlessness of the implant procedure. Proactively offering a suite of options to reduce pre-procedural anxiety, ranging from non-pharmacological support (e.g., counseling, distraction) to sedation, will be essential for providing youth-friendly LARC insertions.[30-32] Pre-procedural counseling may be particularly important; pain expectation-reality discrepancies were extremely common in our study, consistent with other data suggesting that healthcare providers may not be appropriately counseling youth about the range of pain experienced during LARC insertions.[16,28-29] From a research perspective, the high prevalence of pre-procedural anxiety supports reframing outpatient IUD anesthesia research, which has historically focused on absolute pain reduction without much success.[13-14] Future IUD insertion studies should be designed with anxiety reduction and improved satisfaction as primary outcomes, in order to identify interventions that holistically improve the insertion experience.

Finally, our data may offer insight into negative social narratives around IUDs. Prior research has shown that negative information about IUDs is prevalent in adolescents' social communication, and information from peers strongly influences contraceptive choice.[33-39] In our study, although most IUD users were willing to recommend the device to a friend, the majority of IUD users also recalled negative insertional experiences and/or endorsed negative aspects of the IUD. Our data raise the possibility that negative social communication about the IUD experience may come in part from adolescents who endorse the IUD as a method overall. These data should further encourage efforts to create positive IUD insertion experiences, in order to facilitate the exchange of positive LARC information within peer networks.[40]

Our study has multiple limitations. First, the retrospective survey design is subject to recall bias. However, we were reassured by literature demonstrating that retrospective pain reports are generally reliable and that memory of pain (regardless of its accuracy) drives future behavior.[41-42] Second, our survey had a very low response rate (4% compared to 19% reported in a similar email-to-web survey), concerning for selection bias.[12] However, our pain rating and acceptability data align with prior research, suggesting that individuals with particularly positive or negative insertion experiences were not overly represented in our sample.[14,16] Due to our low response rate, our study was underpowered to detect statistically significant differences between groups for some outcome measures. Third, we had limited ability to control for confounding variables that can affect LARC attitudes (e.g., sexual activity, interim device reinsertion or removal) due to

our retrospective study design and the need for a short survey to maximize response rates. Fourth, although our sample was socioeconomically diverse, the majority of participants were white and all were English-speaking, limiting generalizability. Finally, we were unable to obtain complete LARC insertion procedure details (e.g., device indication, pre-procedure analgesia) due to the retrospective design.

Our findings provide powerful justification that improving the IUD insertion experience is essential for providing dignified, compassionate gynecological care to adolescents and young women. Our data clarify that pre-procedural anxiety is a major but overlooked component of the LARC insertion experience and support a movement away from interventions focused solely on insertional pain reduction. As adolescents consider their contraceptive options, fear of LARC procedures should not play a role. Future studies should assess multimodal approaches for improving the IUD insertion experience for adolescents, with an emphasis on strategies that minimize both anxiety and pain. Ultimately, we hope that such efforts will improve the acceptability of the IUD and expand access to the full suite of contraception options for adolescents and young women.

TABLES

	IUD	IMPLANT	TOTAL
	n	**n**	**N**
Eligible participants	493	605	1098
Respondents	21	24	45
Opt out	53	56	109
No response	419	525	944
	%	**%**	**%**
Opt out rate	10.75	9.26	9.93
Response Rate	4.26	3.97	4.10

Table 1. Survey response rate analysis. Results are presented as frequencies (n) and proportions (%) of eligible adolescents (N=1,098) who responded, opted out, or did not reply to a series of text-to-web survey invitations delivered to participants' mobile phones. IUD = Intrauterine device.

	IUD (n=21)		IMPLANT (n=24)		
	n	**%**	**n**	**%**	**P-Value**
Clinic site					0.12
Site 1	17	81	14	58	
Site 2	4	19	10	42	
Ethnicity					1.00
Hispanic/Latino	0	0	2	8	
Not Hispanic/Latino	4	19	8	33	
Not reported	17	81	14	58	
Race					1.00
Black	0	0	2	8	
White	3	14	5	21	
Asian	1	5	0	0	
Not reported	17	81	14	58	
Insurance Status					
Self Pay or Public Insurance	6	29	9	38	0.75
Device type					
Mirena	20	95	--	--	N/A
Skyla	0	0	--	--	
Paragard	1	5	--	--	
Nexplanon	--	--	23	96	
Implanon	--	--	1	4	
Terminated Procedures					N/A
Device not inserted	0	0	0	0	
	Mean	**SD**	**Mean**	**SD**	**P-Value**
Current age (y)	21.35	1.89	20.24	2.53	0.11
Age at procedure (y)	19.07	1.61	17.81	2.08	**0.03**
Time since procedure (mos)	27.78	15.36	29.63	15.78	0.69

Table 2. Characteristics of survey respondents. Demographic data were obtained from chart review. Categorical data are presented as frequencies (n) and proportions (%) of respondents. Continuous data are presented as mean with standard deviation. P-values are derived from two-tailed independent samples t-test for continuous data and Fisher's exact test for categorical data. P-values considered significant at alpha <0.05 are indicated in bold font. IUD = intrauterine device.

	IUD (n=21)*		IMPLANT (n=24)		
	Mean	**SD**	**Mean**	**SD**	**P-Value**
How much pain did you EXPERIENCE during the procedure?	64.85	25.78	16.58	21.92	**< 0.0001**
How much pain did you EXPECT to experience during the procedure?	59.25	33.57	43.30	29.00	0.20
How SATISFIED were you with how your pain was treated during the procedure?	67.75	38.61	90.00	26.54	**0.03**
How ANXIOUS or nervous were you about the pain you might experience during the procedure?	59.25	31.84	58.79	37.12	0.99
	n	**%**	**n**	**%**	**P-Value**
Categories of insertional pain reported					**0.001**
No pain	0	0	14	58	
Mild pain	3	15	3	13	
Moderate pain	8	40	6	25	
Severe pain	9	45	1	4	
How did the pain you experienced compare to the pain you expected?					**0.0001**
Procedure hurt LESS than expected	9	43	20	83	
Procedure hurt the SAME as expected	0	0	3	13	
Procedure hurt MORE than expected	12	57	1	4	
Categories of pain-related anxiety reported					1.00
No anxiety	1	5	3	13	
Mild anxiety	5	25	5	21	
Moderate anxiety	7	35	4	17	
Severe anxiety	7	35	12	50	

Table 3. Recollections of the LARC insertion experience among adolescents and young women. Respondents rated pain, anxiety, and satisfaction using a 100-mm Visual Analog Scale (VAS, range: integers 0-100). Pain and anxiety response categories were derived from the VAS rating (none 0-4 mm, mild 5-44 mm, moderate 45-74 mm, severe 75-100 mm). Continuous data are presented as mean with standard deviation. Categorical data are presented as frequencies (n) and proportions (%) of respondents. P-values are derived from two-tailed independent samples t-test for continuous data and Fisher's exact test for categorical data (Pain and Anxiety Categories: reports of No/Mild versus Moderate/Severe were compared; Pain Experience: reports of Hurt Less/Same versus Hurt More were compared). P-values considered significant at alpha <0.05 are indicated in bold font. LARC = Long-Acting Reversible Contraception**.** IUD = intrauterine device. *One IUD user omitted the VAS questions such that n=20 IUD users for the pain, anxiety, and satisfaction scaled ratings.

	IUD (n=21)		IMPLANT (n=24)		
	n	**%**	**n**	**%**	**P-Value**
Would you get the same device in the future?					1.00
Yes	14	67	17	71	
No	7	33	7	29	
Would you recommend the device to a friend?					0.71
Yes	18	86	19	79	
No	3	14	5	21	
Would dislike of the insertion procedure prevent you from getting the same device in the future?					**0.01**
N/A - Not *at all* bothered by procedure	5	24	16	67	
No - Dislike of the procedure would *not* prevent me	7	33	6	25	
Maybe - Dislike of the procedure *might* prevent me	8	38	1	4	
Yes - Dislike of the procedure *would probably* prevent me	1	5	1	4	
Would you get an IUD in the future? (Implant users only)					N/A
Yes	--	--	6	25	
No	--	--	18	75	

Table 4. Long-term LARC acceptability among adolescents and young women. Categorical data are presented as frequencies (n) and proportions (%) of respondents. P-values are derived from Fisher's exact test for categorical data. For dislike of the insertion procedure, reports of N/A/No versus Maybe/Yes were compared. P-values considered significant at alpha <0.05 are indicated in bold font. LARC = Long-Acting Reversible Contraception**.** IUD = intrauterine device.

If you might NOT recommend to a friend, why not?	**IUD (n=4)**		**IMPLANT (n=10)**	
	n	**%**	**n**	**%**
I had too much pain during the procedure	2	50	0	0
I didn't like bleeding/spotting/periods	2	50	8	80
I had too much pain after getting the device	1	25	1	10
Other reason	1	25	2	20
I didn't like other side effects	0	0	7	70
If you might NOT get the same device in the future, why not?	**IUD (n=10)**		**IMPLANT (n=11)**	
	n	**%**	**n**	**%**
I had too much pain after getting the device	5	50	1	10
I didn't like other side effects	4	40	7	88
I didn't like bleeding/spotting/periods	3	30	8	89
I had too much pain during the procedure	2	20	0	0
I won't need birth control in the future	2	20	1	13
Other reason	2	20	2	25
I won't want birth control in the future	1	10	5	63
Why did you decide NOT to get an IUD? *(Implant group only)*			**IMPLANT (n=24)**	
			n	**%**
I was worried it might hurt to get the IUD inserted	--	--	8	33
I had friends/family who had bad experiences with the IUD	--	--	8	33
Other reason	--	--	7	29
I was worried the IUD could fall out	--	--	6	25
I didn't like the idea of having something inside my body	--	--	6	25
I was worried the IUD could be harmful to me	--	--	5	21
I was worried about side effects from the IUD	--	--	5	21
I was worried about how the IUD might affect my periods	--	--	4	17
I was worried it might hurt to get the IUD removed	--	--	3	13
I was worried the IUD might be painful for a long time	--	--	2	8

Table 5. Factors affecting long-term LARC acceptability among adolescents and young women. Data presented are from respondents who endorsed reasons why they might not recommend their device to a friend, get the same device in the future, or get an IUD (implant group only). Respondents were able to select as many reasons as they wished. Categorical data are presented as frequencies (n) and proportions (%) of the respondents who endorsed factors affecting LARC acceptability. P-values are derived from Fisher's exact test for categorical data. LARC = Long-Acting Reversible Contraception**.** IUD = intrauterine device.

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