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Facilitators and barriers to long acting reversible contraceptives within twelve weeks post-abortion in an outpatient abortion clinic in Atlanta, Georgia.

By

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Master of Public Health

Global Epidemiology

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BS, Virginia Tech, 2009

PhD, University of Alabama at Birmingham, 2014

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An abstract of

A thesis submitted to the Faculty of the

Rollins School of Public Health of Emory University

in partial fulfillment of the requirements for the degree of

Master of Public Health in Global Epidemiology

2016

Abstract

Facilitators and barriers to long acting reversible contraceptives within twelve weeks post-abortion in an outpatient abortion clinic in Atlanta, Georgia.

By Katherine Gisella Michel

Objective: Post-abortion, many women consider switching to or starting a new contraceptive method. This study aims to characterize factors that affect uptake of a long acting reversible contraceptive (LARC) post-abortion in women from the southeastern United States.

Study Design and Setting: 126 English-speaking women aged 18 years or older completed a baseline survey on the day of their elective 1st or 2nd trimester surgical abortion at the Atlanta Women's Center. Bivariate associations between uptake of LARC and predictors were examined using logistic regression. Unadjusted odds ratios (ORs) and 95% confidence intervals (CIs) are reported.

Results: The majority of women in the population identified as black (61.2%), single (75.9%), employed full-time (54.8%) with private insurance (47.3%) who had less than 3 children in their household (80.9%). Fifteen of the 126 women began a LARC method within 12-weeks (12%) post-abortion. Those that started a LARC method were more likely to be a full time student (OR 4.0; 95% CI 1.2, 13.1), married or cohabitating (OR 4.6; 95% CI 1.4, 15.0) have a pre-counseling interest in starting a LARC method (OR 8.6; 95% CI 2.7, 28.7), and have heard of the contraceptive implant from a friend (OR 4.8; 95% CI 1.2, 19.5). Women who started a LARC method did not differ significantly from those who did not uptake LARC by age, ethnicity, education level, gravidity, parity, or prior abortion status.

Conclusions: Within 12 weeks post abortion, women uptake LARC methods at a high proportion compared with national prevalence, with some indication that social influence prior to the clinic visit playing a role.

Keywords: LARC, abortion, contraception, IUD

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Table of Contents

Chapter I—Background/Literature Review

Abortion and Contraception in the United States

Over 1 million abortions are performed in the US annually, half of which occur in women who have previously had an abortion (1, 2). It is estimated that 1 in every 3 American women will have an abortion during her reproductive lifespan (3). Although the unintended pregnancy rate is declining in the US, women below the federal poverty level experience a rate of unintended pregnancy nearly two times the national average (4). The Southern US showed a slight increase in abortion rate between 2005 and 2008, while simultaneously the number of abortion providers in the South declined 10% during this time period (5). Thus low-income women residing the southern US may be at high risk for unintended pregnancy and simultaneously experience low access to abortion services. Evidence suggests that most women experiencing unintended pregnancy do so because of a contraceptive failure (6) and 85% of women who conceive while using contraception are utilizing barrier methods or withdrawal (7). Conversely, women seeking abortion are very unlikely (0.6% in one recent study) to have been using highly effective hormonal contraception at conception, including long acting reversible contraceptives (8).

Much research has focused on promoting hormonal contraception to prevent repeat abortion and unintended pregnancy (9). Two of the most effective forms of contraception are the intrauterine device (IUD) and the contraceptive implant (implant); together these two methods are termed long acting reversible contraceptives (LARCs) (3, 10, 11). The LARC methods currently available in the US are the etonogestrel implant,

levonorgestrel IUD, and the copper IUD, approved for 3, 5, and 10 years of continuous use, respectively (12). LARCs are highly effective in part because they can be used continuously for multiple years and require little user involvement to maintain efficacy. Studies have also found that LARC methods are cost effective (13) and effectively reduce the risk of subsequent pregnancy termination (14). However, LARC methods are only utilized by 7.2% of American women (3). Although this represents an increase in the use of LARC methods over the past decade (15), LARCs remain underused generally, with 38% of women not currently using contraception and 9.4% of women relying on the condoms alone (3). Studies have shown that a lack of education/knowledge of LARC methods, as well as accessibility, affordability, and acceptability of LARC methods are substantial barriers for uptake among American women (8). Additionally, there is noted stigma surrounding IUD use in patients and providers that affects the acceptability and uptake of LARC methods (16).

Importance of LARC Method use Post-Abortion

Increasing access to LARC methods immediately following abortion has become a focus in abortion care for multiple reasons. The first month post-abortion has been identified as a critical time period for uptake of highly effective contraception. Ovulation can occur as soon as 8 days after abortion, with 86% of women ovulating within 1 month post-abortion (17). A 2011 study of 75 women in Atlanta, Georgia found that 54% self-reported sexual activity within 2-5 weeks post-abortion, yet almost 25% of these women reported using contraceptive methods ineffectively (18). Interestingly, women in this study who indicated in-clinic that they did not need information on contraceptives were

equally likely to be sexually active within 5 weeks after abortion compared to women that indicated a desire for contraceptive counseling in-clinic (18). Thus, many women may be at risk for unintended pregnancy soon after abortion and must have access to complete and non-coercive contraceptive education.

Research has shown that LARC methods are safe to insert and begin using immediately post-abortion. Multiple studies demonstrate that both the copper-IUD and levonorgestrel-IUD are safe for immediate insertion post-abortion (19-21) but underutilized, partially due to financial barriers (10, 22). While the 6-month rate of IUD expulsion is higher (but not inferior) in those who have immediate IUD placement, complications are similar between those that have immediate vs. delayed IUD placement post-abortion (19). The discontinuation rate of the contraceptive implant at 1-year post-abortion is similar between those that had interval or immediate placement at the abortion visit (23). A more recent study found that continuation of the implant was similar between women who had insertion in-clinic, post-abortion and those that sought out the implant not in the context of abortion care (24). Accordingly, levonorgestrel IUDs and copper IUDs are category 1 (no restrictions on use) for first trimester abortion and category 2 (advantages outweigh theoretical or proven risks) for second trimester abortion (25). Additionally, the contraceptive implant is category 1 for use immediately following first and second trimester abortion (25).

Additionally, many women consider switching or starting a contraceptive method in the period surrounding abortion care, thus provision of highly effective methods during this time is crucial. There is a growing interest among American women to start an IUD post-abortion, with one clinic reporting an increase in post-abortion demand for IUD

from 12% of patients in 2004 to 62% in the first quarter of 2009 (21). Evidence suggests that up to 26% of women may be interested in learning more about (26) or starting a LARC method (8) immediately post-abortion. Recent studies have found that most women, up to 92% in one study, desired to leave the abortion visit with a contraceptive method (26, 27) and 69% felt that the abortion setting is an appropriate venue to receive contraceptive information (27). A recent study of 199 women seeking abortion found that 31% were interested in learning about easier methods to use than their current method and 22% wanted to know where contraception can be obtained (26). However, this study was not able to link LARC perceptions to any indication of LARC or contraceptive uptake. Thus, evidence suggests that many women are receptive to learning about, discussing, and starting more effective contraceptive methods post-abortion, however little is known about how this translates into effective provision of contraceptives in clinic.

Offering highly effective contraceptives in-clinic, on the same day as the abortion procedure is not only convenient for the health care provider and client, but may reduce future unintended pregnancy. As the cervix is already dilated for surgical abortion, placement of the IUD may be faster, easier, and less painful than delayed IUD insertion (21). There is substantial evidence that provision of LARC methods post-abortion can reduce repeat abortion (14, 23, 24, 28). Post-abortion provision of IUD is associated with decreased repeat abortion over three years compared to uptake of other, less effective methods (34.6 vs. 91.2 abortions per 1000 woman-years) (10). Additionally, Reeves et. al. modeled that 20,000 repeat abortions would be prevented if 20% of American women chose immediate post-abortion IUD within one year (29).

Previous studies have shown discrepancies between the number of women who want to start an IUD at the time of abortion and number of women that receive an IUD in the first 6 weeks following a termination (30). Over 27% of women with delayed contraception after abortion became pregnant in the following year, while only 15% of women with immediate contraception became pregnant (31). Studies have also found that women who delay contraception post-abortion are more likely to experience additional abortions compared to women who had contraception provided same day as the abortion procedure (10, 31). One study found that women offered immediate post abortion contraception were over 3 times as likely to choose IUD and 50% more likely to choose implant than women without recent abortion (32). Additionally, this study also found that women who delayed starting a contraceptive method post-abortion had similar contraceptive choices to women that did not have a recent abortion within the last 90 days (32). The impetus to start a new contraceptive method may be short lived post-abortion, thus efforts should be made to provide contraceptive education and methods same day as abortion visit. One study found that only 38% of clients returned to the clinic for their follow up procedure at 2-4 weeks, when IUD insertion had been scheduled—thus emphasizing the importance of immediate IUD provision (21). However, immediate IUD insertion can be delayed by user hesitance to begin the method, cervicitis, or holding an insurance plan that requires pre-authorization for IUD placement (21). The cost of a LARC can also be a significant barrier, particularly for women who struggle to pay for the abortion procedure.

Factors that Affect LARC Uptake Post-Abortion

Many factors have been associated with uptake of highly effective methods post-abortion, including reproductive history, socioeconomic and demographic factors, as well as social influence. One study found that women who have had one or more prior abortions were 2.3 times as likely as women with no prior abortions to indicate an interest in LARC methods post-abortion (27). A retrospective cohort study of 7,466 women seeking a first trimester abortion also found that women with a history of abortion were more likely to select a highly effective contraceptive method post-abortion compared to women with no recent history of abortion (OR 1.19, 95% CI: 1.06-1.33) (8). Multiparous women are more likely to start a LARC method post-abortion (8, 32), although one study found that parity was only associated with IUD uptake specifically (32).

There are also noted differences in demographic factors and LARC uptake, however the direction of influence does not appear clear cut. One study found that women who identified as black or African American were half as likely to indicate interest in leaving an abortion clinic with a LARC method (27), while another study found that black race was associated with increased LARC uptake post-abortion (RR 1.35, 95% CI 1.10 1.64) (32). Women younger than 21 are more likely to choose the implant compared to older women (RR 1.82, 95% CI 1.48 2.23), although older women may be more likely to start the IUD (RR 1.41, 95% CI 1.15 1.72) (32). Married women were also more likely to start the IUD (RR 1.38, 95% CI 1.18 1.62) compared to single women (32). Uptake of LARC methods may also depend on financial factors such as insurance status. Women on Medicaid, which provides LARCs with no cost sharing,

were more likely to want contraception post-abortion compared to those on other insurance types (27).

Interestingly, social factors have been linked to uptake of LARC methods. Wanting to start an IUD before clinic visit (OR 25.5, 8.2-79.4) has predictably been found to associate with uptake of IUD in clinic (12). A recent study of 253 women attending an urban abortion clinic found that women experiencing high levels of stress pre-abortion were more likely to select a highly effective contraceptive method post-abortion (33). Additionally, a recent report by Benson et. al. found significant associations between social factors and LARC uptake post-abortion. Having a counselor or other clinic worker share a personal IUD experience (OR 8.1, 3.8-17.2) was predictive of client IUD choice in clinic—this relationship remained significant when controlling for whether the counselor was actually using the IUD ($p=0.03$) (12). A sub analysis of 74 women that started an IUD in-clinic found that these women were more likely to have heard of IUDs previously (96% vs. 70%, $p<0.001$), know someone with an IUD (69% vs. 51%, $p=0.032$), or know someone with a positive IUD experience (49% vs. 17%, $p<0.001$) (12). Thus, social influence, as well as socioeconomic status and reproductive history, may affect a woman's decision to start a LARC method.

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Chapter II—Manuscript

A. Title, Authors, Abstract

Title: Facilitators and barriers to long acting reversible contraceptives within twelve weeks post-abortion in an outpatient abortion clinic in Atlanta, Georgia.

Authors: Michel KG, Nielsen TC, White R, et. al.

Abstract

Objective: Post-abortion, many women consider switching to or starting a new contraceptive method. This study aims to characterize factors that affect uptake of a long acting reversible contraceptive (LARC) post-abortion in women from the southeastern United States.

Study Design and Setting: 126 English-speaking women aged 18 years or older completed a baseline survey on the day of their elective 1st or 2nd trimester surgical abortion at the Atlanta Women's Center. Bivariate associations between uptake of LARC and predictors were examined using logistic regression. Unadjusted odds ratios (ORs) and 95% confidence intervals (CIs) are reported.

Results: The majority of women in the population identified as black (61.2%), single (75.9%), employed full-time (54.8%) with private insurance (47.3%) who had less than 3 children in their household (80.9%). Fifteen of the 126 women began a LARC method within 12-weeks (12%) post-abortion. Those that started a LARC method were more likely to be a full time student (OR 4.0; 95% CI 1.2, 13.1), married or cohabitating (OR 4.6; 95% CI 1.4, 15.0) have a pre-counseling interest in starting a LARC method

(OR 8.6; 95% CI 2.7, 28.7), and have heard of the contraceptive implant from a friend (OR 4.8; 95% CI 1.2, 19.5). Women who started a LARC method did not differ significantly from those who did not uptake LARC by age, ethnicity, education level, gravidity, parity, or prior abortion status.

Conclusions: Within 12 weeks post abortion, women uptake LARC methods at a high proportion compared with national prevalence, with some indication that social influence prior to the clinic visit playing a role.

Keywords: LARC, abortion, contraception, IUD

B. Introduction

It is estimated that one in every three American women will have an abortion during her reproductive lifespan (1). Although the unintended pregnancy rate is declining in the US, women below the federal poverty level experience a rate of unintended pregnancy nearly twice the national average (2). Much research has focused on promoting hormonal contraception to prevent repeat abortion and unintended pregnancy. Two of the most effective forms of contraception are the intrauterine device (IUD) and the contraceptive implant (implant); together these two methods are termed long acting reversible contraceptives (LARCs) (3, 4). LARCs are highly effective in part because they can be used continuously for multiple years and involve little user involvement to maintain efficacy. However, LARCs are only utilized by 7.2% of American women (1).

Increasing access to LARC methods immediately following abortion has become a focus in abortion care for multiple reasons. The first month post-abortion has been identified as a critical time period for uptake of highly effective contraception. Ovulation

can occur as soon as 8 days after abortion, with 86% of women ovulating within 1 month of abortion (5). A 2011 study of 75 women in Atlanta, Georgia found that 54% self-reported sexual activity within 2-5 weeks post-abortion, yet 31% of these women reported not using contraception or using contraceptive methods ineffectively (6). Additionally, studies have shown that both the copper-IUD and levonorgestrel-IUD are safe for immediate insertion post-abortion (7-9) and have similar expulsion rates compared to delayed placement of LARC (9).

Offering highly effective contraceptives in-clinic on the same day as the abortion procedure is not only convenient for the health care provider and client, but may increase method uptake and adherence to reduce future unintended pregnancy. As the cervix is already dilated for surgical abortion, placement of the IUD may be faster, easier, and less painful than delayed IUD insertion (9). Previous studies have shown discrepancies between the number of women who want to start an IUD at the time of abortion and the number of women that receive an IUD in the first 6 weeks following a termination (10). Over 27% of women with delayed contraception after abortion became pregnant in the following year, while only 15% of women with immediate contraception became pregnant (11). Additionally, Reeves et. al. modeled that 20,000 repeat abortions would be prevented if 20% of American women chose immediate post-abortion IUD within one year (12).

Multiple factors have been explored as possible predictors of LARC uptake post-abortion, including parity (13), insurance status (14), previous abortion (14), and desire for a LARC method before the abortion visit (15). Interestingly, social factors have also been explored as potential factors that influence contraceptive uptake. Counselor or other

clinic worker sharing a personal IUD experience (OR 8.1, 3.8-17.2) was predictive of IUD choice in clinic (15). A subanalysis focused on 74 women that started an IUD in clinic found that these women were more likely to have heard of IUDs previously (96% vs. 70%, $p<0.001$), known someone with an IUD (69% vs. 51%, $p=0.032$), or known someone with a positive IUD experience (49% vs. 17%, $p<0.001$) versus women who did not start an IUD in clinic (15).

However, studies that have investigated predictors of LARC uptake have not recruited women from regions in the southeastern US, where social norms about contraceptive use may differ from other US regions. In this study, we will characterize potential predictors of LARC uptake for women living in the southeast and contrast these with the current literature.

C. Methods

Study Design. Participants were recruited from women presenting to the Atlanta Women's Center (AWC) for abortion services from October to December 2015. The AWC is a freestanding abortion clinic in metro-Atlanta that offers abortion services up to 21.6 weeks gestation. The study involved two surveys, one administered in-clinic and one administered through phone or email at 12 weeks (3 months) post-procedure. The in-clinic survey was self-administered on a tablet computer after contraceptive counseling and before the abortion procedure. The follow-up survey at 12 weeks was self-administered online if completed by email, or input directly by study staff using a standardized telephone script.

Study Participants. Patients over 18 years old, fluent in English, and seeking first or second trimester surgical abortion at the AWC were eligible for the study. Additionally, participants must have had capacity to provide informed consent and provide an email and/or phone number for follow-up. Women receiving abortion care primarily due to a fetal or maternal condition, rape, or incest were excluded. This study only included women eligible for LARC uptake, defined as women who did not seek sterilization within 12 weeks post-abortion and those not seeking to become pregnant within the next year. This study was reviewed and approved by the Emory University Institutional Review Board (IRB).

Measurement. The primary outcome was uptake of an intrauterine device (IUD) or contraceptive implant (implant) either in-clinic or within 12 weeks (3 months) of abortion. LARC uptake in-clinic was assessed by self-report and corroborated by AWC medical records; LARC uptake at 3 months was assessed by self-report. When LARC methods are offered in clinic at the AWC, they are available for a reduced cost per a fellowship with Grady hospital—thus financial barriers are lessened for women who wish to receive a LARC method on the same day at the clinic. Twenty factors were selected as potential predictors of LARC uptake, including demographic factors (age, race/ethnicity, education, student and employment status, marital status, and difficulty paying expenses in the last year), reproductive factors (number of children in house, parity, gravidity, prior abortion, desire for future pregnancy, ever use of LARC, contraceptive use at last pregnancy, gestational age) as well as general knowledge of LARC methods (intent to start a LARC method before contraceptive counseling in clinic, ever heard of or known

someone with a LARC method, satisfaction with in-clinic counseling, or personal disclosure of LARC use by a clinic counselor).

Client age, gestational age, and contraceptive uptake in clinic were extracted from the clinic medical record; all other variables were client self-report. All study data were collected and managed using REDCap electronic data capture tools hosted on a secure server at Emory University.

Analysis. Descriptive statistics by outcome status were calculated using Fisher's exact and student's t tests. Bivariate logistic regression was used to assess predictors of LARC uptake within 12 weeks post-abortion. Given the rarity of the outcome, multivariate logistic regression was not considered for this analysis. Unadjusted odds ratios (ORs) and 95% confidence intervals (CIs) are reported. All analyses were performed using SAS version 9.4 (Cary, NC).

D. Results

Approximately 624 women were notified of the study while at the clinic during the study period. Of those enrolled, 126 did not seek sterilization and were not seeking to become pregnant in the next year, thus potentially eligible for uptake of a LARC method. The majority of women in the population identified as black (61.2%), single (75.9%), employed full-time (54.8%) with private insurance (47.3%) who had less than 3 children in their household (80.9%). The mean age of the population was 27 years old, with a mean gestational age at the time of clinic visit at 10.7 weeks. 39.7% of women reported a previous abortion and 15.9% had previously used either an IUD or implant. Knowledge

of the IUD was relatively high in this population (84.1%), although only half of these clients reporting they had previously heard about the contraceptive implant (54%). Fifteen women (11.9%) started using a LARC method within 12 weeks post abortion.

Demographic and reproductive characteristics stratified by LARC uptake within 12 weeks are presented in Table 1. LARC uptake was more likely among full time students (53.8% vs. 22.5%, p=0.04) and those married or cohabitating (53.8% vs. 20.4%, p=0.01). LARC uptake also varied significantly by insurance status (Table 1). There were no statistically significant differences in age (p=0.40), race/ethnicity (p=0.76), employment status (p>0.99), difficulty paying expenses in the last 12 months (p=0.77) or number of children living in the household (p>0.99) between those that started LARC and those that did not. Women that started LARC methods were slightly more likely to have beyond a high school education (92.3%) and be at a later gestational age (10.8 weeks vs. 9.1 weeks), but neither of these relationships were statistically significant. Reproductive history factors (gravidity, parity, prior abortion, desire for future pregnancy, previous LARC use) and baseline LARC knowledge (previously heard of or knew someone who used LARC) were not associated with LARC uptake.

In bivariate logistic regression, LARC uptake was associated with full time student status (OR 4.01; 95% CI 1.23, 13.11) and marriage or cohabitation (OR 4.56; 95% CI 1.39, 14.99) (Table 2). When considering factors relating to previous LARC knowledge and use, hearing of the contraceptive implant from a friend (OR 4.82; 95% CI 1.19, 19.53), knowing a friend who has used a contraceptive implant (OR 3.10; 95% CI 1.01, 9.50), and pre-clinic visit intent to start a LARC method (OR 8.57; 95% CI: 2.65, 27.73) were all associated with LARC uptake (Table 2).

E. Discussion

This study aimed to characterize facilitators and barriers to uptake of long acting reversible contraceptives in a cohort of women residing in the southeastern United States. We found that LARC uptake in this cohort is associated with full time student status, marriage or cohabitation, and insurance status. Additionally desire to start a LARC method before attending the clinic as well as hearing about the contraceptive implant from a friend was associated with LARC uptake within 12-weeks post-abortion.

The association between insurance status and uptake of a LARC method within 12 weeks is unexpected. All LARCs placed at the AWC are available for no cost same day as the abortion procedure and thus should not depend on insurance status of the client. However, the outcome is categorized as LARC uptake within 12 weeks, which includes women that had a LARC placed after the AWC visit. Women seeking LARC method placement after the abortion visit would need to contend with their insurances' coverage or lack thereof for LARC methods. Nearly 20% of women in this study reported that they lacked any insurance, which represents a massive hurdle in accessing reproductive health care. A recent report at an Appalachian clinic found that, over 9% of women reported LARC placement costs of over $1,100 (16). Also consider that women seeking LARC post-abortion face the cost of the abortion procedure itself, which the majority of women pay for out of pocket (17). In 2009, the median charge for a surgical abortion at 10 weeks gestation was $451 (17). Thus, uninsured women may face substantial financial barriers to accessing LARC placement in the ensuing months post-abortion.

Within this cohort, factors related to reproductive history have little association with uptake of LARC methods. This is in contrast to results finding that parity (13) and previous abortion (14) are linked to uptake of more effective contraceptive methods post-abortion. Interestingly, we were able to establish an association between starting a LARC method and insurance status (14) or desire for a LARC method before the abortion visit (15). Whether this pattern of associations represents a fundamental difference in facilitators to LARC methods for women in the southeast remains to be seen.

Hearing about the contraceptive implant from a friend or having a friend that uses the contraceptive implant was associated with LARC uptake in our study. As the outcome of our study was uptake of IUD or implant, it's unexpected that knowledge of the implant alone, and not the IUD alone, was predictive of any LARC uptake. It may be that knowledge of the contraceptive implant is a marker for a broader predictor of LARC uptake. It could be that women who know a friend using the implant have a higher overall knowledge of contraceptive methods. Based on this association and that women in this cohort who started a LARC method were likely to come to the clinic with an intent to start a LARC method, it seems that much of the influence that affects contraceptive uptake is absorbed before the abortion clinic visit. Whether this "social influence" is uniquely heightened in the southeast should be further investigated, as this could shift the importance of contraceptive education outside of a clinical setting. Interestingly, a recent report by Benson et. al. found significant associations between social factors and LARC uptake post abortion. Having a counselor or other clinic worker share a personal IUD experience (OR 8.1, 3.8-17.2) was predictive of client IUD choice in clinic—this relationship remained significant when controlling for whether the counselor was actually

using the IUD (p=0.03) (15). A sub analysis of 74 women that started an IUD in-clinic found that these women were more likely to have heard of IUDs previously (96% vs. 70%, p<0.001), know someone with an IUD (69% vs. 51%, p=0.032), or know someone with a positive IUD experience (49% vs. 17%, p<0.001) (15). Thus there is potential for more peer-based contraceptive education to be effective in promoting uptake of LARC methods.

The women recruited for this study differ somewhat from the general population of American women seeking abortion. Our population was of a similar age range (58% of US abortion clients are in their 20s vs. 63% in this study) but slightly more likely to be married (15% of US abortion clients are married vs. 24% in this study) (1). The women in this study were more likely to identify as black or African American compared to the average American woman seeking abortion services (1). Additionally, our sample was more likely to report private insurance compared to the general population of women seeking abortion in the US (47.3% vs. 30%) (1).

This study is limited by the small sample size, which prevents multivariate logistic regression and assessment of interaction between exposure variables. Additionally, all potential exposures (except age and gestational age) as well as uptake of LARC methods in the follow up survey were recorded by self-report, thus the outcome and exposure measurements are vulnerable to information bias. The AWC is currently not using insurance for coverage of LARC methods and is only offering provision of LARC methods on certain days for no cost. Thus, the discrepancy between those who desired a LARC method but did not uptake in clinic (17% of the 126 clients) and those who receive LARC in clinic could be reduced. This study only sampled clients seeking

surgical abortion, thus this study is not generalizable to women seeking medical abortion. Although clients in this study reported home residences in Alabama, Georgia, Tennessee, and South Carolina, the majority of clients reside in the Atlanta metro area and may not represent the opinions of women in the southeast broadly. Due to our inclusion criteria, we are not able to characterize facilitators and barriers to LARC methods for those under 18 or those who do not speak English. Adolescents and non-English speakers likely face additional barriers to LARC uptake, thus our estimates for LARC uptake within 12 weeks may be inflated. An analysis of those who completed follow up compared with those who did not shows that women with private insurance and those with over a high school education were more likely to complete the follow up survey. We would thus expect a bias in our odds ratios towards the null, thus the reported associations between insurance and LARC uptake may be underestimated in this study.

F. Conclusions

In this study, evidence is presented that key demographic and social factors may influence uptake of highly effective contraceptive methods post-abortion, although factors relating to reproductive history may play a lesser role in this cohort. These facilitators could be potentially utilized in future contraceptive education interventions, as social influence from peers may play a more important role for women in the southeastern US than contraceptive counseling from a clinician. Future research will need to determine if the associations reported here hold broadly for women in the Southeast.

As 17% of clients surveyed stated an interest in starting a LARC method, more measures should be put in place in southeastern clinics to assist women in obtaining their

preferred method in the period after abortion care. A key barrier to LARC uptake is the financial burden and complexity of the reimbursement process for clinics, including separate funding sources for abortion and contraceptive care (18). Resolving this issue would involve clinics working with insurance companies to offer methods same-day and negotiating prior authorization requirements (9). Although out of the scope of the clinic's purview, there has been a call to remove prior authorization requirements for highly effective contraceptive methods to increase LARC method uptake (9). Furthermore, clinics that receive federal funding, through Title X or Family Planning Expansion Project (FPEP), are limited because these funds cannot be used to provide contraception on the day of abortion (10). Access to reproductive healthcare in the days and weeks following abortion represents another barrier to uptake of LARC methods. A previous study found that only 26% of women intending to use IUD post abortion had started using the method at 6 weeks (10). 41% of the women surveyed indicated that the main barrier to starting a LARC method was the time needed to seek an additional visit for LARC placement (10). This stresses the importance of offering same day LARC placement to reduce time that a woman must set aside for seeking reproductive care.

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H. Tables

Table 1: Demographic and reproductive characteristics of women in an urban abortion clinic in Atlanta, Georgia (n=126[‡])

	LARC uptake		**No LARC**		**Total**		**p Value[§]**
	n	(%)	n	(%)	n	(%)	
Demographics	**15**	**11.9**	**111**	**88.1**	**126**		
Age in years (mean, SD)	28.0	7.5	26.6	6.0	26.7	6.2	0.40
Gestational age in weeks (mean, SD)	10.8	4.1	9.1	4.2	10.7	4.2	0.12
Race/ethnicity **							0.76
Black	7	53.8	64	62.1	71	61.2	
White	4	30.8	25	24.3	29	25.0	
Other	2	15.4	14	13.6	16	13.8	
Education **							0.18
High school or less	1	7.7	27	26.2	28	24.1	
Beyond high school	12	92.3	76	73.8	88	75.9	
Full time student? ***							
Yes	7	53.8	23	22.5	30	26.1	**0.04**
Employment status ***							>0.99
Full time	7	58.3	56	54.4	63	54.8	
Part time	3	25.0	23	22.3	26	22.6	
Unemployed	2	16.7	24	23.3	26	22.6	
Insurance status[‡]							**0.06**
Private	9	69.2	44	44.4	53	47.3	
Public	4	30.8	33	33.3	37	33.0	
Uninsured	0	0.0	22	22.2	22	19.6	
Difficulty paying expenses in last year?**							0.77
Yes	5	38.5	47	45.6	52	44.8	
Number of children in house ***							>0.99
Less or equal to 2	10	83.3	83	80.6	93	80.9	
Over 2	2	16.7	20	19.4	22	19.1	
Marital status **							**0.01**
Single	6	46.2	82	79.6	88	75.9	
Married/Cohabitating	7	53.8	21	20.4	28	24.1	
Reproductive history							
Multigravid	9	60.0	73	65.8	82	65.1	0.77
Multiparous **	5	38.5	35	34.0	40	34.5	0.76
Prior abortion **	6	46.2	40	38.8	46	39.7	0.76
No desire for future pregnancy	5	35.7	25	23.1	30	24.6	0.33
Previously used LARC	3	20.0	17	15.3	20	15.9	0.71
Baseline LARC knowledge							
Previously heard of IUD	12	80.0	94	84.7	106	84.1	0.71
Previously heard of the Implant	10	66.7	58	52.3	68	54.0	0.41
Knew someone with an IUD	12	80.0	80	72.1	92	73.0	0.76
Knew someone with an Implant	7	46.7	34	30.6	41	32.5	0.25

‡ Subset for analysis includes women eligible for LARC

* LARC: long acting reversible contraceptive, Implant: Contraceptive implant, IUD: intrauterine device

** 10 missing data points; ***11 missing data points ‡15 missing data points

§ Pooled t-test used for continuous variables; Fisher's exact test used for categorical variables

Table 2: Bivariate association between predictors and post-counseling LARC uptake in an urban abortion clinic in Atlanta, Georgia[‡§]

LARC[*] uptake	**% LARC uptake**	**Unadj. OR**	**95% CI**		**p-value**
Demographics			**LL**	**UL**	
Age in years (mean, SD)	28.0 (7.55)	1.04	0.95	1.13	0.40
Gestational age in weeks (mean, SD)	10.7 (4.23)	0.87	0.73	1.04	0.13
Race/ethnicity					
Black	53.8	0.68	0.18	2.54	0.57
White	30.8	Reference			
Other	15.4	0.89	0.15	5.50	0.90
Education					
High school or less	7.7	Reference			
Beyond high school	92.3	4.26	0.53	34.35	0.17
Full time student?					
Yes	53.8	**4.01**	**1.23**	**13.11**	**0.02**
Employment status					
Full time	58.3	1.50	0.29	7.75	0.63
Part time	25.0	1.57	0.24	10.24	0.64
Unemployed	16.7	Reference			
Difficulty paying expenses in last year?					
Yes	38.5	0.75	0.23	2.43	0.63
Number of children					
Less or equal to 2	83.3	Reference			
Over 2	16.7	0.83	0.17	4.09	0.82
Marital status					
Single	46.2	Reference			
Married/Cohabitating	53.8	**4.56**	**1.39**	**14.99**	**0.01**
Reproductive history					
Multigravid	60.0	0.78	0.26	2.36	0.66
Multiparous	38.5	1.21	0.37	3.99	0.75
Prior abortion	46.2	1.35	0.42	4.31	0.61
No desire for future pregnancy	35.7	1.84	0.57	6.01	0.31
Previously used LARC	20.0	1.38	0.35	5.42	0.64
Contraceptive use at last pregnancy					
None	61.5	Reference			
Pills	23.1	2.09	0.49	9.04	0.32
Condoms	15.4	0.76	0.15	3.86	0.74
Previous LARC knowledge/use					
Pre-counseling LARC intent	66.7	**8.57**	**2.65**	**27.73**	**<0.001**
Previously heard of IUD					

Not heard of IUD	20.0	Reference			
From friend	26.7	0.94	0.19	4.78	0.94
From doctor/counselor	40.0	0.62	0.14	2.74	0.53
Previously heard of the Implant					
Not heard of the Implant	33.3	Reference			
From friend	33.3	**4.82**	**1.19**	**19.53**	**0.03**
From doctor/counselor	33.3	1.36	0.37	5.02	0.65
Knew someone with an IUD					
Does not know someone with IUD	20.0	Reference			
Friend	66.7	1.31	0.38	4.53	0.67
Knew someone with an Implant					
Does not know someone with Implant	53.3	Reference			
Friend	46.7	**3.10**	**1.01**	**9.50**	**0.05**
Positive LARC experiences					
Disclosure of LARC use by counselor	40.0	1.58	0.52	4.78	0.42
Satisfaction with contraceptive counseling					
Unsatisfied	6.7	1.42	0.15	13.31	0.76
Satisfied	53.3	Reference			
Very satisfied	40.0	1.38	0.45	4.274	0.58

‡ Subset for analysis includes women eligible for LARC

* LARC: long acting reversible contraceptive, Implant: Contraceptive implant, IUD: intrauterine device

§ Insurance status could not be modeled

Chapter III—Summary/Public Health Implications/Future Directions

Summary

This study aimed to characterize facilitators and barriers to uptake of long acting reversible contraceptives in a cohort of women residing in the southeastern United States. We found that LARC uptake is associated with full time student status, marriage or cohabitation, and insurance status. Additionally desire to start a LARC method before attending the clinic as well as hearing about the contraceptive implant from a friend was associated with LARC uptake within 12-weeks post-abortion.

Public Health Implications

At a minimum, this study supports the current literature that women are amenable to starting highly effective contraceptive methods post-abortion. Further interventions should aim to increase access to education and in-clinic provision of LARC methods. A 2013 cost analysis found that immediate post-abortion IUD provision decreased public program expenditures by $111 per woman compared to planned IUD placement at follow up—and over 5 years the savings increases to $4296 per woman (1). Further funding is also needed to remove financial barriers to these methods. The CHOICE project, a prospective study of 9,256 Missourian adolescents and women found that no-cost provision of all contraceptive methods post abortion, with emphasis on long acting reversible contraceptives, was associated with a reduction in future abortion ($p<0.001$) and a reduction in teen births for the cohort (2). Thus, provision of LARC in-clinic is not only acceptable for women, but has been shown to be cost effective and reduce

unintended pregnancy. Currently, 96% of large, non-hospital abortion providers offer contraceptive education at the time of abortion care, although only 33% of surveyed clinics report that the IUD is available for on-site, same day placement post-abortion (3). More effort should be made to make LARC methods available, however this responsibility does not entirely fall upon clinics themselves. Many abortion providers exist in an environment where they are subject to legislative and economic constraints that affect contraceptive offerings on site (3).

Aspects of this analysis suggest that social factors outside of the clinic setting may highly influence uptake of highly effective contraceptive methods. This may have implications for reproductive health care. One possible avenue is the provision of enhanced contraceptive counseling in-clinic to promote uptake of effective methods. A 2001 study in Edinburgh found that women receiving enhanced contraceptive counseling from a specialist during abortion care increased the likelihood of leaving the clinic with contraceptive (271 vs. 115, $p<0.001$), were more likely to start a long-acting method (including DMPA, 141 vs. 78, $p<0.001$) and choose a contraceptive implant than women who received standard counseling (4). However, in this study there was no significant difference in contraceptive prevalence or continuation at 4 months for those that received the enhanced counseling compared to those that received standard of care counseling (4). Furthermore, within 2 years, 14.6% of women in the enhanced contraceptive counseling group and 10% of controls had undergone another abortion in the same hospital ($p=.267$) (4). Thus, providing a more comprehensive contraceptive counseling experience may not be beneficial for promoting uptake of highly effective methods. A 2003 review of 74 studies on contraceptive counseling practices intended to reduce unintended pregnancy

failed to find programs that provide strong support for these interventions (5). The literature suggests that alternate interventions, possibly peer-to-peer or community-based, should be investigated for efficacy in increasing education on and uptake of LARC methods.

Future Directions

This study answers a recent call for studies assessing abortion patient's perspectives regarding contraceptive services in the abortion setting (6), however there is still much work to be done on this topic. Primarily, this analysis was conducted with a subset of the enrolled cohort, as enrollment is currently ongoing at the time of this thesis publication. This will address the limitations regarding a small sample size in this analysis, hopefully allowing for multivariate analysis and assessment of interaction between variables.

We were unable to fully characterize the influence of social factors on LARC uptake. Most strikingly, we did not assess media influence on contraceptive decision making, which has shown to play a role in previous studies (7). Understanding the nuances of how peers, family, and media influences contraceptive decision making could have a large impact on uptake of effective contraception. Qualitative studies would be useful in assessing these factors in future research.

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