Factors Associated with Type of Method at Contraceptive Debut and Unwanted Pregnancy Among Current Contraceptive Users In Northwest Ethiopia

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Abstract

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Background: Modern contraception prevented over 300 million unintended pregnancies worldwide in 2017. Long-acting, reversible contraception (LARC) is highly effective at pregnancy prevention than other modern reversible methods subject to user error and reduces their unintended pregnancy and adverse maternal and child health outcomes. Yet, there may be gaps in providing a LARC supportive environment in some contexts. Characterizing current contraceptive LARC users could provide insights on how to better support LARC as a contraceptive option among women initiating contraception. We examined correlates of LARC debut among a cohort of current LARC users, as well as risk factors for unwanted pregnancy among all modern, reversible contraceptive users.

Methods: we conducted a secondary cross-sectional analysis among 1,124 current modern contraceptive users seeking family planning services in Northwest Ethiopia. Women were classified as LARC users if they used implants or intrauterine devices or non-LARC users if they used other modern, reversible methods (condoms, injectables, or oral contraceptives), at contraceptive debut. Potential correlates of LARC use at contraceptive debut among current LARC users, and wantedness of prior pregnancy (defined as last pregnancy among women with multiple pregnancies) among other modern contraceptive users, included sociodemographic characteristics, reproductive history, and family planning decision making. Odds ratios adjusted for age, marital status, education, and wealth were reported.

Results: Overall, 330 women in the study were currently using LARC; among these 74 (22%) reported LARC was used at contraceptive debut. 118 of 817 (14%) women with a prior pregnancy reported their prior pregnancy was unwanted. Factors associated with using LARC at contraceptive debut were older age (≥35 years) (aOR=3.71; 95% CI: 1.49-9.17), being married before age 18 (aOR=0.46; 95% CI:0.20-0.97), and richest wealth quartile (aOR=3.02; 95% CI: 1.24-8.24).Factors associated with a prior unwanted pregnancy were younger age (15-24 years) (aOR=2.25; 95% CI: 1.39-3.63), being single (aOR=12.74; 95% CI: 7.52-

21.88), not using the preferred method of choice (aOR=3.17 95% CI: 1.17-8.21), healthcare provider selecting current method (aOR=4.33; 95% CI: 1.55-11.73) and reporting future fertility desires were “undecided” (aOR=2.61; 95% CI: 1.53-4.36).

Conclusion: Factors associated with LARC at contraceptive debut imply an environment supportive of contraceptive choice. Women who debuted with LARC may have been exposed to national programs that focused on expanding LARC access, and sociodemographic characteristics such as age at marriage and wealth could point to a LARC supportive environment. Factors associated with a prior unwanted pregnancy suggest an environment with varying degrees of support for contraceptive choice. Demographic characteristics, provider selected method, and pregnancy ambivalence could point to a nonsupportive environment, whereas fertility intentions and recognizing limitations of prior method point to a supportive environment. Future research is needed to capture the setting and context more accurately at contraceptive debut, and implications of this environment on unwanted pregnancies.

INTRODUCTION

Long-acting, reversible contraception (LARC), including intrauterine devices (IUDs) and implants, are a subset of modern contraceptives that are effective in pregnancy prevention,[1–3] typically having a failure rate of 1 or fewer pregnancies per 100 women in 1 year.[4,5] Yet, LARC use has seen a slow increase in sub-Saharan Africa, where the need for family planning is particularly high.[6] In Ethiopia, LARC use (primarily implants) has increased from less than 1% to 8% between 2000 and 2016.[7] This increase may be attributable to national programs that bolstered the health system to deliver implants.[8] Action at the national level may have also allowed Ethiopia to make more rapid advances in LARC use compared Nigeria and The Democratic Republic of Congo, which are also high-priority countries characterized by different contraceptive markets and method mixes as reported in PMA2020 semi-annual briefs.[9] Yet, room to improve a LARC supportive environment remains, as only 61% of the demand for modern contraceptives is satisfied.[7] In the Amhara Region of Northwest Ethiopia, 73% of women have demand satisfied and 12% of contraceptive users are using implants.[7]

Though many prospective and cross-sectional studies in the Ethiopian context have shown that factors such as education,[10–14] family planning knowledge,[12,14,15] and wealth[11,14] are associated with uptake of contraceptive use, few studies have characterized method at contraceptive debut. Experience with contraception may inform future desire to use contraception, including method satisfaction, effectiveness, and side effects.[16,17] Learning about the environment and characteristics of women who are initiating contraception for the first time, but are amenable to LARC can provide important insights into supporting LARC use for women at contraceptive debut. In turn, this could have substantial impact on preventing unintended pregnancies, which consist of mistimed and unwanted pregnancies.[18]

Additionally, preventing unintended pregnancies among all contraceptive users, which include but are not restricted to LARC, is also important. Modern contraception prevented over 300 million unintended pregnancies in 2017.[19] If all women's contraceptive needs were met, an additional 67 million unintended pregnancies would be averted, along with prevention of maternal mortality and advancement of human rights.[19] Identifying correlates specifically of unwanted pregnancy among women who subsequently used LARC may help understand experiences of women who felt more strongly about their prior pregnancy intentions. Further, it may help elucidate barriers and facilitators to creating environment supportive of contraceptive choice.

To address knowledge gaps on environments at contraceptive debut and unwanted pregnancies of future LARC users, we examined correlates of using LARC at contraceptive debut and prior unwanted pregnancies.

METHODS

Study Design and Setting

We conducted a secondary cross-sectional analysis of a facility-based case control study to identify factors associated with current use of implants or IUDs (LARC). Women using birth control pills, condoms, and injectables were considered non-LARC users, and defined as controls in the case control study. Data were collected from 14 health institutions across the Amhara Region in Northwest Ethiopia, including 5 government hospitals, 7 government health centers, and 2 family guidance association (FGA) clinics. Data were originally collected between July and September 2016.

Selection of Subjects

The study population included women using modern contraception who were seeking family planning services. Women were selected in a 2:1 ratio of non-LARC users to LARC users. Women who were seriously ill and unable to communicate were excluded from the study due to expected difficulties with data collection.

Data Collection

A structured questionnaire was administered verbally in Amharic to participants. Before any data were collected, participants provided written informed consent. The questionnaire collected information on sociodemographic characteristics, reproductive history, and family planning decision making.

Among women who were currently using a LARC method at the time of the survey, women were categorized based on the method at contraceptive debut, either as LARC or a non-LARC. Women with a prior pregnancy self-reported their fertility intentions at the time of their last pregnancy and were classified as having a prior pregnancy that was either unwanted or wanted.

Participants were classified as knowledgeable about LARC if they were familiar with at least one of the LARC methods. A favorable attitude towards LARC was defined as scoring greater or equal to the median on six questions scored on a 5-point Likert scale. Early marriage was defined as married before age 18. A wealth index was constructed based on ownership of household properties using principal component analysis (PCA). The common factor scores were then summed, ranked, and divided into quartiles.

Analysis

Sociodemographic, reproductive history, and family planning decision making factors were summarized using medians and proportions. We performed subsequent analyses on 2 different subgroups: 1) current LARC users, for which we compared factors of interest between LARC and non-LARC

debut, and 2) women with prior pregnancies, for which we compared factors of interest by wantedness of the prior pregnancy. For both analyses, we used logistic regression to calculate crude odds ratios (ORs) and ORs adjusted *a priori* for age group, marital status, participant education, and wealth quartile. All analyses were conducted using R version 3.5.1[20] and RStudio version 1.2.5033[21] and tables were generated in Microsoft Excel.

Ethical Considerations

Ethical approval was obtained from the University of Gondar Institutional Review Board. A formal letter was given to the regional health bureau, zonal and city administration health bureaus, hospitals, health centers, and FGA clinics. No additional ethical considerations were obtained to perform the secondary analyses.

RESULTS

A total of 1,124 participants were included in this analysis, of whom 330 (29.4%) were current LARC users and 817 (72.7%) had a least one prior pregnancy. Rural residence and being single was reported by 14.3% and 17.4% of women, respectively. Half (52.6%) report having a secondary education or higher. Early marriage was reported by 29.1% of women. A majority of participants were multiparous; 60.7% with reported receiving family planning counseling during antenatal care (60.7%) and 83.6% during postnatal care Most (85.6%) participants report the prior pregnancy was wanted, and 85.4% reported no history of LARC use (85.4%). Only 6.3% of participants reported having a history of induced abortion (Table 1).

Correlates of LARC at Contraceptive Debut

Sociodemographic factors. Overall, 74 of 330 (22%) LARC users debuted with LARC and 256 (78%) debuted with non-LARC methods and later switched to a LARC method. The median age was similar among women who used LARC vs. non-LARC methods at contraceptive debut (25 years, IQR 22 to 29). After adjusting for confounders, we found that debuting contraception with a LARC method was associated with older age (≥35 years) (OR=3.71; 95% CI: 1.49-9.17; p=0.004), and richest wealth quartile (OR=3.02; 95% CI: 1.24-8.24; p=0.021). Although the proportion of both woman and partner achieving a secondary education or higher among those who debuted with LARC (56.6% and 66.6%, respectively) was higher than those who debuted with non-LARC (51.% and 60.5%, respectively), no significant associations with educations were found (Table 2a).

Reproductive history factors. Compared to who debuted with LARC, a larger proportion of those who debuted with non-LARC were multiparous (45.3% vs 37.8%), received family planning during ANC (63.1%

vs 56.5%) and PNC (87% vs 76.7%), and spaced births less than 2 years (15.5% vs 7.1%). Both groups had comparable proportions of wanted pregnancy and induced abortion. Those who debuted with LARC were less likely to report an early marriage (aOR=0.46; 95% CI:0.2-0.97; p=0.05).

Family Planning Decision Making factors. While both groups most commonly reported a desire to space pregnancies (39.19% vs 51.95%, respectively), women who debuted with LARC were more likely to report wanting to have a child in the near future (12.2% vs 3.9%; aOR=3.13 95% CI: 1.13, 8.55, p=0.025). When asked why they preferred using LARC rather than non-LARC methods, both groups cited fear of side effects and desire to prevent pregnancy in the near future as their top reasons, but LARC debut was associated with fear of needles and pain as a reason to select LARC over other methods (16.2% vs 5.9%; aOR=2.91; 95% CI: 1.22-6.80; p=0.014). A similar proportion of women who debuted with LARC vs. non-LARC reported not using their preferred method of choice (6.8% vs 6.3%, respectively; p=0.7), being knowledgeable about LARC (90.5% vs 95.7%, respectively; p=0.21), and having favorable attitude towards LARC (85.1% vs 87.1%, respectively; p=0.81). Religious prohibition and cultural unacceptability, and lack of method were uncommon reasons for selecting LARC over other methods in both groups. (Table 2c).

Correlates of Unwanted Prior Pregnancy

Sociodemographic factors. Among 817 women with a prior pregnancy, 118 (14%) reported their prior pregnancy was unwanted. Participants with a prior unwanted pregnancy had a lower median age of 25 years (IQR 21 to 30) compared to 27 years (IQ 25 to 30) among those with a prior wanted pregnancy, and in adjusted analyses unwanted prior pregnancy was associated with younger age (15-24 years) (aOR=2.25; 95% CI: 1.39-3.63; p=0.001). Adjusted analyses also reveal that unwanted pregnancy was associated with being single (aOR=12.74; 95% CI: 7.52-21.88; p<0.001), being in the 3rd wealth quartile (aOR=2.06; 95% CI: 1.12-3.9; p=0.022), and being a student (aOR=4.06; 95% CI: 1.58-10.46; p=0.004) (Table 3a).

Reproductive history factors. A higher proportion of women with a prior unwanted pregnancy had an early marriage (40.7% vs 29.6%; aOR=1.67; 95% CI: 1.01-2.74; p=0.043) and a history of induced abortion (39.3% vs 3.4%; aOR=8.56; 95% CI: 4.46-16.51; p<0.001). Among women reporting a prior pregnancy, 33.1% were nulliparous, which was strongly associated with unwanted pregnancy (aOR=38.11; 95% CI: 12.79, 142.73; p<0.001). No history of LARC use was more likely among those with prior unwanted pregnancy (aOR=2.17; 95% CI: 1.12-4.54; p=0.029) (Table 3b).

Family Planning Decision Making factors. A prior unwanted pregnancy was associated with a desire for birth limiting (20.3% vs 14.6%; aOR=2.03; 95% CI: 1.05-3.86; p=0.033) and being undecided about current fertility intentions (43.2% vs 12.4%; aOR=2.61; 95% CI: 1.53-4.36; p<0.001). While more women with an unwanted pregnancy reported being current LARC users (45.8% vs 35.5%), this association was not

significant. Women who reported they were not using their preferred method of choice were more likely to report a prior unwanted pregnancy (10.2% vs 2.4%; aOR=3.17; 95% CI: 1.17-8.21; p=0.019). Less than 10% of current LARC users with a prior pregnancy reported the healthcare provider selected the current method of contraception for them, but was higher among women with a prior unwanted pregnancy (9.8% vs 1.7%, aOR=4.33; 95% CI: 1.55-11.73; p=0.004). Women with a prior unwanted pregnancy were less likely to prefer their current method due to convenience (aOR=0.53; 95% CI: 0.34-0.83; p=0.006), but were more likely to prefer it because of a short visiting time at the facility (aOR=2.12; 95% CI: 1.28-3.48; p=0.003). Current LARC users with a prior unwanted pregnancy were also more likely to select LARC due to its effectiveness over other methods (aOR=3.19; 95% CI: 1.02-9.21; p=0.036) and partner's/outsider's influence (aOR=7.67; 95% CI: 1.8-32.75; p=0.005). Similar to our analysis of LARC at contraceptive debut, religious prohibition and cultural unacceptability were uncommon reasons reported for selecting the current contraceptive method. (Table 3c).

DISCUSSION

We found that among Ethiopian women who currently use LARC, those who used LARC at contraceptive debut, as opposed to debuting with another method and later switching to LARC, married at an older age and may have been exposed to national programs that promoted LARC as an option. Their reasons for preferring their contraceptive method also suggest an environment supportive of contraceptive choice. Demographic characteristics associated with a prior unwanted pregnancy, along with provider selected method and pregnancy ambivalence, suggest an environment not supportive of contraceptive choice. However, other factors associated with prior unwanted pregnancy could indicate support for contraceptive choice.

LARC Debut and Contraceptive Choice

Current LARC users who debuted with LARC represent an interesting group of women, as they were able to use LARC as a first method of contraception in a context where, though it may have been many years ago, uptake of LARC was presumably not particularly high. Sociodemographic characteristics associated with LARC debut are somewhat consistent with established predictors of LARC use irrespective of contraceptive debut, such as higher education level and wealth.[22,23] Coupled with older age at marriage, which is also associated with LARC debut, these factors may point to an environment where these women have more freedom and agency, which in turn could contribute to an environment more supportive of LARC as an option.

The association with older age may be explained by trends in national family planning strategies and varying degrees of its implementation. The launch of the Integrated Family Health Program (IFHP) in

2009 saw thousands of health extension workers (HEWs) trained on implant insertion, greatly improving access to LARC. From July 2009 through December 2015, trained HEWs conducted over 1.3 million service visits across Ethiopia, 92.9% of which were implant insertions. During the first few months of the program, survey data showed that 25% of the implant clients were new family planning acceptors.[8]

Slight contrasts in reasons for preferring current method between those who debuted with LARC versus other reversible modern methods of contraception suggest that despite being current LARC users, both groups have different priorities most likely informed by prior contraceptive use. For instance, those who debuted with LARC are more likely to report fear of needle and pain (likely from injectables) which could indicate that though they have no experience with injectables, they are aware of other contraceptive options and their decision-making involves weighing alternatives. Debuting with LARC is also associated with wanting to have a child in the near future. This, however, is more likely driven by expected changes in fertility intentions of women who switch to longer acting methods are preparing to space or limit, and thus will be less likely to want a child soon.

Unwanted Pregnancy and Contraceptive Choice

Our results indicate that women with a recent prior unwanted pregnancy was associated with a spectrum of experiences that could suggest an environment with varying degrees of support for contraceptive choice. Associations with a prior unwanted pregnancy that suggest an inhibition of contraceptive choice include younger age and single marital status. These women may be more likely to experience stigma from being sexually active, which can pose as a significant barrier to accessing contraceptives. These findings are supported by previous studies that show these factors are also associated with unintended pregnancies.[24–27] Additionally, the association between prior unwanted pregnancy and pregnancy ambivalence (reporting a fertility intention of undecided), may be of greater concern, as studies have shown that women who express pregnancy ambivalence may use less effective methods[28] or use contraception more inconsistently.[29] Further, associations with not using preferred method of choice, healthcare provider selected method, and the partner's/other's influence in choosing a LARC method may also point to contraceptive decision-making power shifting away from the woman and suggest a less supportive environment for contraceptive choice.

Contrasting these results, other findings suggest an unwanted prior pregnancy can also indicate an environment supportive of contraceptive choice. A prior unwanted pregnancy may cause a major decline in desire to have additional children, and our results expectedly show a prior unwanted pregnancy was more likely among women who desired birth limiting. A longitudinal study from Senegal found that women whose fertility intentions were to limit birth and who acted on this intention by using

contraceptives were least likely to get pregnant.[30] Women with prior unwanted pregnancies were also more likely to report choosing LARC because prior methods were not as effective. This was most likely driven by users who became unintentionally pregnant due to failure or improper use of non-LARC methods, which is consistent with a study from Zimbabwe.[31] Women choosing methods that are more effective for their specific fertility intentions may suggest an environment supportive of contraceptive choice.

Furthering Environments Supportive of Contraceptive Choice

Our results suggest there may be a need to increase support of contraceptive choice among younger, unmarried women. Investing in additional health care provider training and supervision could be a key leverage point in fostering a supportive environment for those with prior unwanted pregnancies. Health care providers may also play a role in enhancing the quality of family planning counseling, which has been shown to prevent method discontinuation.[32]

Barriers to contraceptive choice such as lack of LARC availability could be overcome through national programs like the IFHP that increased access to LARC methods. Other barriers, such as religion and culture, may still exist. And while our findings indicated that both religious prohibition and cultural unacceptability were the least common reasons for preferring a current method, this could imply that these topics are taboo and play an underlying role in recognizing contraceptive options. However, as programs and policies build the demand and capacity for LARC utilization and delivery to further LARC as a contraceptive option, policy makers must also look to address barriers in complementary services, such as implant removal.[33] Yet despite clear advantages of LARC over other methods, it is important to recognize that LARC is not for everyone – ultimately, the goal is to foster an environment that celebrates diversity of contraceptive choices, allowing each individual woman to choose a method that best aligns with her culture, experiences, and preferences.

Limitations

This study has several key limitations. There is a likelihood of recall and desirability bias due to the data being self-reported. As a secondary analysis, certain associations that did not relate to the original question could not be explored. The entire sample had a 100% contraceptive prevalence rate, limiting our external validity among those with an unmet need for contraception. Subgroup analyses also resulted in lower sample sizes that lead to low statistical stability. Furthermore, the lack of a prospective study design did not lend to enough longitudinal resolution to examine method discontinuation, switching and duration of use, establish timing of contraceptive debut, and demonstrate trends and distinct causal relationships.

Conclusion

This study analyzed associations with use of LARC as contraceptive debut and adds to the body of knowledge on correlates of unwanted pregnancy, as well analyzing associations with a prior unwanted pregnancy in the context of promoting an environment supportive of contraceptive choice. As this is a descriptive study, the associations and the proposed causal mechanisms mentioned in the results and discussion need to be further tested with analytical study designs. Future studies should enroll a cohort of women at their contraceptive debut and capture sociodemographic characteristics and reproductive outcomes, including pregnancy intention. Along with these, qualitative studies are needed to capture in rich detail barriers and facilitators that affect support of LARC as a contraceptive option. In addition, more appropriate tools such as context-specific psychometric surveys should be employed to capture nuances in fertility intentions.[34]

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Table 1. Descriptive Statistics stratified by Subgroup.

		Subgroup Totals	
	TOTAL	current LARC Users	Prior Pregnancy
	N=1124	N=330	N=817
Sociodemographics			
Age (mean and IQR)	25 (22,29)	25 (22,29)	27.0 (24,30)
Rural Residence			
Yes	161 (14.3%)	43 (13.0%)	132 (16.1%)
*Single**			
Yes	196 (17.4%)	50 (15.2%)	79 (9.6%)
Educational Status			
≥ Secondary	591 (52.6%)	174 (52.7%)	378 (46.2%)
Partner Education Status			
≥ Secondary	591 (59.4%)	186 (61.8%)	415 (55.9%)
Wealth Quartile			
Poorest	281 (25.0%)	51 (15.5%)	176 (21.5%)
2nd	281 (25.0%)	102 (30.9%)	206 (25.2%)
3rd	281 (25.0%)	88 (26.7%)	211 (25.8%)
Richest	281 (25.0%)	89 (27.0%)	226 (27.6%)
Occupation			
Housewife	471 (41.9%)	141 (42.7%)	418 (51.0%)
Wage Laborer	515 (45.8%)	160 (48.5%)	366 (44.7%)
Student	138 (12.3%)	29 (8.8%)	35 (4.3%)
Reproductive History			
Early Marriage			
Yes	292 (29.1%)	73 (24.0%)	243 (30.8%)
Gravidity			
Nulligravid	305 (27.1%)	76 (23.0%)	
Primi	322 (28.6%)	98 (29.7%)	322 (39.3%)
> 1	497 (44.2%)	156 (47.3%)	497 (60.7%)
Parity			
Nulliparous	348 (31.0%)	96 (29.1%)	43 (5.3%)
Primi	310 (27.6%)	90 (27.3%)	310 (37.9%)
> 1	466 (41.5%)	144 (43.6%)	466 (56.9%)
FP counseling during ANC			
Yes	427 (60.7%)	132 (61.7%)	427 (60.7%)
FP counseling during PNC			
Yes	381 (83.6%)	130 (85.0%)	381 (83.6%)
Last Pregancy Wanted			
Yes	699 (85.6%)	208 (81.9%)	699 (85.6%)
No History of LARC use			
Yes	960 (85.4%)	300 (90.9%)	679 (82.9%)
History of Induced Abortion			
Yes	71 (6.3%)	30 (9.1%)	71 (8.7%)
Birth Spacing			
< 2 years	85 (18.2%)	20 (13.9%)	85 (18.2%)
2-5 years	329 (70.6%)	116 (80.6%)	329 (70.6%)
> 5 years	52 (11.2%)	8 (5.6%)	52 (11.2%)

* single, divorced, widowed, or separated

Table 2a. Sociodemographic Characteristics Factors Associated with Method at Contraceptive Debut

Sociodemographics	LARC debut N= 74	non-LARC debut N= 256	OR	(95% CI)	p value	aOR**	(95% CI)	p value
Age (mean and IQR)	25 (20,29.5)	25 (22,29)						
15-24	34 (45.9%)	109 (42.6%)	1.48	(0.85, 2.61)	0.169	1.41	(0.78, 2.54)	0.251
25-34	28 (37.8%)	133 (52.0%)	ref			ref		
35+	12 (16.2%)	14 (5.5%)	**4.07**	**(1.69, 9.79)**	0.002	**3.71**	**(1.49, 9.17)**	0.004
Rural Residence								
Yes	15 (20.3%)	28 (10.9%)	**2.07**	**(1.02, 4.08)**	0.039	1.75	(0.72, 4.19)	0.207
*Single**								
Yes	12 (16.2%)	38 (14.8%)	1.11	(0.53, 2.20)	0.772	1.02	(0.47, 2.12)	0.953
Educational Status								
≥ Secondary	42 (56.8%)	132 (51.6%)	1.23	(0.73, 2.09)	0.431	1.54	(0.87, 2.78)	0.141
Partner Education Status (N=301)								
≥ Secondary	45 (66.2%)	141 (60.5%)	1.28	(0.73, 2.28)	0.399	1.68	(0.78, 3.71)	0.189
Wealth Quartile								
Poorest	7 (9.5%)	44 (17.2%)	ref			ref		
2nd	19 (25.7%)	83 (32.4%)	1.44	(0.58, 3.92)	0.448	1.44	(0.58, 3.98)	0.452
3rd	19 (25.7%)	69 (27.0%)	1.73	(0.70, 4.74)	0.255	1.68	(0.67, 4.66)	0.289
Richest	29 (39.2%)	60 (23.4%)	**3.04**	**(1.28, 8.11)**	0.017	**3.02**	**(1.24, 8.24)**	0.021
Occupation								
Housewife	31 (41.9%)	110 (43.0%)	ref			ref		
Wage Laborer	35 (47.3%)	125 (48.8%)	0.99	(0.57, 1.72)	0.982	1.05	(0.56, 1.98)	0.887
Student	8 (10.8%)	21 (8.2%)	1.35	(0.52, 3.25)	0.515	1.42	(0.47, 4.05)	0.522

* single, divorced, widowed, or separated

**adjusted for age, marital status, education, wealth quartile

Table 2b. Reproductive History Factors Associated with Method at Contraceptive Debut

Reproductive History	LARC debut N= 74	non-LARC debut N= 256	OR	(95% CI)	p value	aOR*	(95% CI)	p value
Early Marriage (N=304)								
Yes	11 (16.9%)	62 (25.9%)	0.58	(0.27, 1.15)	0.135	**0.46**	**(0.20, 0.97)**	0.051
Gravidity								
Nulligravid	16 (21.6%)	60 (23.4%)	ref			ref		
Primi	26 (35.1%)	72 (28.1%)	1.35	(0.67, 2.80)	0.403	1.53	(0.71, 3.36)	0.284
> 1	32 (43.2%)	124 (48.4%)	0.97	(0.50, 1.94)	0.924	0.82	(0.31, 2.18)	0.694
Parity								
Nulliparous	22 (29.7%)	74 (28.9%)	ref			ref		
Primi	24 (32.4%)	66 (25.8%)	1.22	(0.63, 2.39)	0.554	1.25	(0.56, 2.79)	0.580
> 1	28 (37.8%)	116 (45.3%)	0.81	(0.43, 1.54)	0.517	0.52	(0.18, 1.46)	0.213
FP counseling during ANC (N=214)								
Yes	26 (56.5%)	106 (63.1%)	0.76	(0.39, 1.49)	0.417	0.82	(0.39, 1.72)	0.593
FP counseling during PNC (N=153)								
Yes	23 (76.7%)	107 (87.0%)	0.49	(0.19, 1.40)	0.162	0.54	(0.17, 1.85)	0.313
Last Pregancy Wanted (N=254)								
Yes	48 (82.8%)	160 (81.6%)	1.08	(0.51, 2.44)	0.845	1.44	(0.57, 3.99)	0.459
History of Induced Abortion								
Yes	7 (9.5%)	23 (9.0%)	0.82	(0.40, 1.56)	0.553	1.06	(0.38, 2.69)	0.899
Birth Spacing (N=144)								
<2 years	2 (7.1%)	18 (15.5%)	ref			ref		
2-5 years	23 (82.1%)	93 (80.2%)	2.23	(0.58, 14.63)	0.306	4.08	(0.89, 30.18)	0.104
> 5 years	3 (10.7%)	5 (4.3%)	5.40	(0.71, 50.90)	0.106	**9.10**	**(1.00, 103.64)**	0.054

*adjusted for age, marital status, education, wealth quartile

Table 2c. Family Planning Decision Making Factors Associated with Method at Contraceptive Debut

Decision Making	LARC debut N= 74	non-LARC debut N= 256	OR	(95% CI)	p value	aOR**	(95% CI)	p value
Reproductive Intention								
want to space	29 (39.2%)	133 (52.0%)	0.60	(0.35, 1.00)	0.054	0.76	(0.41, 1.40)	0.373
want to limit	11 (14.9%)	24 (9.4%)	1.69	(0.76, 3.56)	0.180	1.08	(0.38, 2.78)	0.882
undecided	22 (29.7%)	74 (28.9%)	1.04	(0.58, 1.82)	0.891	0.91	(0.44, 1.84)	0.806
want to have a child soon	9 (12.2%)	10 (3.9%)	**3.41**	**(1.30, 8.79)**	0.011	**3.13**	**(1.13, 8.55)**	0.025
want to delay	3 (4.1%)	15 (5.9%)	0.68	(0.15, 2.13)	0.549	0.71	(0.15, 2.44)	0.622
Not using method of choice								
Yes	5 (6.8%)	16 (6.3%)	1.09	(0.35, 2.89)	0.875	0.80	(0.24, 2.31)	0.700
LARC Knowledge								
Yes	67 (90.5%)	245 (95.7%)	0.43	(0.16, 1.21)	0.093	0.50	(0.18, 1.54)	0.210
LARC Attitude								
Favorable	63 (85.1%)	223 (87.1%)	0.85	(0.42, 1.84)	0.660	0.91	(0.42, 2.07)	0.808
Who decided current method								
Self	32 (44.4%)	116 (45.3%)	0.97	(0.57, 1.63)	0.896	0.95	(0.54, 1.66)	0.859
Mainly partner	3 (4.2%)	1 (0.4%)	**11.09**	**(1.40, 226.05)**	0.039	10.48	(1.14, 229.72)	0.056
Joint decision	34 (47.2%)	122 (47.7%)	0.98	(0.58, 1.66)	0.948	0.98	(0.56, 1.74)	0.956
Healthcare Provider	3 (4.2%)	17 (6.6%)	0.61	(0.14, 1.89)	0.443	0.66	(0.14, 2.17)	0.532
*Need partner approval**								
Yes	48 (64.9%)	153 (59.8%)	1.24	(0.73, 2.15)	0.429	1.18	(0.65, 2.18)	0.595
Why do you prefer the method?								
very effective	15 (19.5%)	41 (16.0%)	1.22	(0.61, 2.35)	0.555	1.03	(0.50, 2.05)	0.924
convenient	32 (41.6%)	127 (49.6%)	0.69	(0.41, 1.17)	0.170	0.68	(0.39, 1.18)	0.170
reversable	21 (27.3%)	95 (37.1%)	**0.54**	**(0.30, 0.97)**	0.043	0.60	(0.32, 1.10)	0.105
fewer side effects	31 (40.3%)	125 (48.8%)	0.68	(0.40, 1.14)	0.144	0.68	(0.39, 1.20)	0.188
easily available	3 (3.9%)	11 (4.3%)	0.31	(0.02, 1.61)	0.259	0.29	(0.02, 1.62)	0.247
long acting	41 (53.2%)	165 (64.5%)	0.61	(0.36, 1.04)	0.068	0.61	(0.35, 1.06)	0.078
short visiting time	22 (28.6%)	78 (30.5%)	0.85	(0.47, 1.49)	0.568	0.78	(0.42, 1.41)	0.424
nothing to remember	3 (3.9%)	7 (2.7%)	1.50	(0.32, 5.56)	0.562	1.50	(0.31, 5.79)	0.579
other	10 (13.0%)	23 (9.0%)	1.58	(0.69, 3.41)	0.256	1.41	(0.59, 3.16)	0.414
Why choose LARC over SARC?								
Fear of side effects	35 (47.3%)	159 (62.1%)	**0.55**	**(0.32, 0.92)**	0.024	0.58	(0.34, 1.01)	0.053
SARC less effective	8 (10.8%)	26 (10.2%)	1.07	(0.44, 2.38)	0.870	0.95	(0.38, 2.18)	0.905
fear of infertility	12 (16.2%)	62 (24.2%)	0.61	(0.29, 1.16)	0.149	0.62	(0.29, 1.25)	0.196
Desire not to have pregnancy soon	34 (45.9%)	136 (53.1%)	0.75	(0.44, 1.26)	0.277	0.77	(0.45, 1.32)	0.347
Religious prohibition	---	---						
Medical problem	1 (1.4%)	18 (7.0%)	0.18	(0.01, 0.90)	0.099	0.15	(0.01, 0.85)	0.082
Lack of commodity/method	0 (0.0%)	2 (0.8%)	---	--- ---	---	---	--- ---	---
Rumors	8 (10.8%)	46 (18.0%)	0.55	(0.23, 1.17)	0.147	0.56	(0.23, 1.24)	0.175
Unacceptable in my culture	1 (1.4%)	0 (0.0%)	---	--- ---	---	---	--- ---	---
Important partner/others influence	6 (8.1%)	8 (3.1%)	2.74	(0.87, 8.13)	0.071	2.40	(0.71, 7.66)	0.140
Lack of knowledge	3 (4.1%)	9 (3.5%)	1.16	(0.25, 4.01)	0.828	1.20	(0.25, 4.47)	0.799
Fear of needle and pain	12 (16.2%)	15 (5.9%)	**3.11**	**(1.36, 6.97)**	0.006	**2.91**	**(1.22, 6.80)**	0.014
Difficult to have frequently	36 (48.6%)	105 (41.0%)	1.36	(0.81, 2.29)	0.243	1.39	(0.81, 2.40)	0.238
other	3 (4.1%)	4 (1.6%)	2.66	(0.51, 12.34)	0.207	2.37	(0.44, 11.52)	0.279

* recoded "no opinion" as "no"

**adjusted for age, marital status, education, wealth quartile

Table 3a. Sociodemographic Factors Associated with Status of Prior Pregnancy

Sociodemographics	Unwanted Preg N= 118	Wanted Preg N= 699	OR	(95% CI)	p value	aOR**	(95% CI)	p value
Age (mean and IQR)	25 (21,30)	27 (25,30)						
15-24	54 (45.8%)	171 (24.5%)	**2.75**	**(1.80, 4.20)**	0.000	**2.25**	**(1.39, 3.63)**	0.001
25-34	50 (42.4%)	435 (62.2%)	ref			ref		
35+	14 (11.9%)	93 (13.3%)	1.31	(0.67, 2.41)	0.404	1.38	(0.67, 2.69)	0.365
Rural Residence								
Yes	21 (17.8%)	111 (15.9%)	1.15	(0.67, 1.88)	0.601	1.42	(0.73, 2.72)	0.298
*Single**								
Yes	47 (39.8%)	32 (4.6%)	**13.80**	**(8.32, 23.20)**	0.000	**12.74**	**(7.52, #####**	0.000
Educational Status								
≥ Secondary	57 (48.3%)	320 (45.8%)	1.09	(0.68, 1.78)	0.718	0.87	(0.55, 1.36)	0.543
Partner Education Status (N=742)								
≥ Secondary	44 (57.9%)	370 (55.7%)	1.65	(0.97, 2.94)	0.075	1.14	(0.62, 2.09)	0.680
Wealth Quartile								
Poorest	24 (20.3%)	152 (21.7%)	ref			ref		
2nd	28 (23.7%)	178 (25.5%)	1.00	(0.55, 1.80)	0.990	1.18	(0.61, 2.31)	0.618
3rd	44 (37.3%)	165 (23.6%)	1.69	(0.99, 2.95)	0.059	**2.06**	**(1.12, 3.90)**	0.022
Richest	22 (18.6%)	204 (29.2%)	0.68	(0.37, 1.27)	0.225	0.81	(0.40, 1.61)	0.537
Occupation								
Housewife	42 (35.6%)	376 (53.8%)	ref			ref		
Wage Laborer	55 (46.6%)	310 (44.3%)	**1.59**	**(1.04, 2.45)**	0.034	1.28	(0.77, 2.12)	0.337
Student	21 (17.8%)	13 (1.9%)	**14.46**	**(6.84, 31.71)**	0.000	**4.06**	**(1.58, #####**	0.004

* single, divorced, widowed, or separated

**adjusted for age, marital status, education, wealth quartile

Table 3b. Reproductive History Factors Associated with Status of Prior Pregnancy

Reproductive History	Unwanted Preg N= 118	Wanted Preg N= 699	OR	(95% CI)	p value	aOR*	(95% CI)	p value
Early Marriage (N=304)								
Yes	37 (40.7%)	206 (29.6%)	**1.63**	**(1.03, 2.54)**	0.033	**1.67**	**(1.01, 2.74)**	0.043
Gravidity								
Primi	58 (49.2%)	263 (37.6%)	ref			ref		
> 1	60 (50.8%)	436 (62.4%)	**0.62**	**(0.42, 0.92)**	0.018	1.29	(0.72, 2.32)	0.392
Parity								
Nulliparous	39 (33.1%)	4 (0.6%)	87.44	(32.59, 306.28)	0.000	**38.11**	**#####**	**142.73)** 0.000
Primi	31 (26.3%)	278 (39.8%)	ref			ref		
> 1	48 (40.7%)	417 (59.7%)	1.03	(0.64, 1.68)	0.896	1.08	(0.59, 2.02)	0.795
FP counseling during ANC (N=214)								
Yes	36 (56.3%)	391 (61.3%)	0.81	(0.48, 1.37)	0.432	0.95	(0.55, 1.66)	0.865
FP counseling during PNC (N=153)								
Yes	21 (77.8%)	360 (83.9%)	0.67	(0.28, 1.88)	0.407	0.61	(0.25, 1.75)	0.319
No History of LARC use								
Yes	105 (89.0%)	572 (81.8%)	1.79	(1.01, 3.44)	0.059	**2.17**	**(1.12, 4.54)**	0.029
History of Induced Abortion								
Yes	47 (39.8%)	24 (3.4%)	**6.40**	**(4.19, 9.81)**	0.000	**8.56**	**(4.46, 16.51)**	0.000
Birth Spacing (N=144)								
<2 years	11 (22.9%)	73 (17.5%)	ref			ref		
2-5 years	31 (64.6%)	298 (71.5%)	0.69	(0.34, 1.50)	0.322	0.61	(0.29, 1.36)	0.209
> 5 years	6 (12.5%)	46 (11.0%)	0.87	(0.28, 2.44)	0.790	0.65	(0.20, 1.94)	0.455

*adjusted for age, marital status, education, wealth quartile

Table 3c. Family Planning Decision Making Factors Associated with Status of Prior Pregnancy

Decision Making	Unwanted Preg N= 118	Wanted Preg N= 699	OR	(95% CI)	p value	aOR**	(95% CI)	p value
Reproductive Intention								
want to space	37 (31.4%)	449 (64.2%)	**0.25**	**(0.17, 0.38)**	0.000	**0.34**	**(0.20, 0.55)**	0.000
want to limit	24 (20.3%)	102 (14.6%)	**1.49**	**(0.90, 2.42)**	0.112	**2.03**	**(1.05, 3.86)**	0.033
undecided	51 (43.2%)	87 (12.4%)	**5.35**	**(3.49, 8.22)**	0.000	**2.61**	**(1.53, 4.36)**	0.000
want to have a child soon	6 (5.1%)	61 (8.7%)	0.56	(0.21, 1.23)	0.188	0.82	(0.30, 1.92)	0.679
want to delay	---	---						
LARC User								
Yes	54 (45.8%)	248 (35.5%)	**1.53**	**(1.03, 2.27)**	0.033	1.45	(0.92, 2.28)	0.110
Not using method of choice								
Yes	12 (10.2%)	17 (2.4%)	**4.54**	**(2.06, 9.71)**	0.000	**3.17**	**(1.17, 8.21)**	0.019
LARC Knowledge								
Yes	104 (88.1%)	645 (92.3%)	0.62	(0.34, 1.20)	0.135	0.68	(0.33, 1.49)	0.310
LARC Attitude								
Favorable	64 (54.2%)	388 (55.5%)	0.95	(0.64, 1.41)	0.797	1.00	(0.64, 1.58)	0.984
Who decided current method								
Self	69 (61.6%)	338 (48.4%)	**1.71**	**(1.14, 2.59)**	0.010	1.08	(0.67, 1.73)	0.759
Mainly partner	0 (0.0%)	7 (1.0%)	---	--- ---	---	---	--- ---	---
Joint decision	32 (28.6%)	342 (48.9%)	**0.42**	**(0.27, 0.64)**	0.000	0.70	(0.43, 1.15)	0.164
Healthcare Provider	11 (9.8%)	12 (1.7%)	**6.24**	**(2.64, 14.60)**	0.000	**4.33**	**(1.55, 11.73)**	0.004
*Need partner approval**								
Yes	52 (44.1%)	427 (61.1%)	0.50	(0.34, 0.74)	0.001	0.99	(0.61, 1.66)	0.981
Why do you prefer the method?								
very effective	15 (12.7%)	121 (17.3%)	0.70	(0.38, 1.20)	0.217	0.76	(0.39, 1.40)	0.406
convenient	60 (50.8%)	495 (70.8%)	**0.43**	**(0.29, 0.63)**	0.000	**0.53**	**(0.34, 0.83)**	0.006
reversable	23 (19.5%)	209 (29.9%)	**0.57**	**(0.34, 0.91)**	0.022	0.62	(0.36, 1.05)	0.087
fewer side effects	40 (33.9%)	298 (42.6%)	**0.69**	**(0.45, 1.03)**	0.076	0.64	(0.40, 1.01)	0.058
easily available	27 (22.9%)	107 (15.3%)	**1.64**	**(1.00, 2.61)**	0.041	1.23	(0.68, 2.16)	0.474
long acting	38 (32.2%)	174 (24.9%)	1.43	(0.93, 2.17)	0.095	1.42	(0.87, 2.28)	0.159
short visiting time	39 (33.1%)	118 (16.9%)	**2.43**	**(1.57, 3.73)**	0.000	**2.12**	**(1.28, 3.48)**	0.003
nothing to remember	8 (6.8%)	11 (1.6%)	**4.55**	**(1.73, 11.49)**	0.001	2.71	(0.81, 8.38)	0.093
other	24 (20.3%)	73 (10.4%)	**2.19**	**(1.29, 3.60)**	0.003	**1.86**	**(1.01, 3.30)**	0.040
Why choose other method over LARC? (N=517)								
Fear of side effects	38 (59.4%)	275 (61.0%)	0.94	(0.55, 1.61)	0.806	0.89	(0.50, 1.60)	0.690
LARC less effective	5 (7.8%)	19 (4.2%)	1.93	(0.62, 5.00)	0.208	1.44	(0.39, 4.46)	0.552
fear of infertility	10 (15.6%)	96 (21.3%)	0.68	(0.32, 1.34)	0.297	0.68	(0.30, 1.43)	0.337
Desire to have pregnancy soon	7 (10.9%)	70 (15.5%)	0.67	(0.27, 1.44)	0.339	0.82	(0.31, 1.89)	0.663
Religious prohibition	2 (3.1%)	6 (1.3%)	2.392	0.345 10.65)	0.292	1.983	0.219 10.86)	0.477
Medical problem	0 (0.0%)	12 (2.7%)	---	--- ---	---	---	--- ---	---
Lack of commodity/method	9 (14.1%)	48 (10.6%)	1.374	0.603 2.84)	0.416	1.588	0.646 3.59)	0.286
Rumors	26 (40.6%)	114 (25.3%)	**2.02**	**(1.17, 3.46)**	0.011	1.38	(0.73, 2.54)	0.309
Unacceptable in my culture	0 (0.0%)	10 (2.2%)	---	--- ---	---	---	--- ---	---
Important partner/others influence	12 (18.8%)	52 (11.5%)	1.77	(0.85, 3.44)	0.105	1.28	(0.56, 2.72)	0.543
Lack of knowledge	18 (28.1%)	87 (19.3%)	1.64	(0.89, 2.92)	0.103	1.58	(0.81, 2.99)	0.167
Fear of needle and pain	17 (26.6%)	83 (18.4%)	1.60	(0.86, 2.89)	0.125	1.58	(0.80, 3.03)	0.174
LARC inconvenient for me	12 (18.8%)	113 (25.1%)	0.69	(0.34, 1.30)	0.273	0.58	(0.27, 1.17)	0.145
other	3 (4.7%)	17 (3.8%)	1.235	0.283 3.81)	0.742	0.981	0.199 3.47)	0.979

Table 3c (continued)

Why choose LARC over other method? (N=302)									
Fear of side effects	28 (51.9%)	155 (62.5%)	0.65	(0.36, 1.17)	0.149	0.85	(0.41, 1.75)	0.649
other method less effective	8 (14.8%)	16 (6.5%)	**2.52**	**(0.97, 6.10)**	0.045	**3.19**	**(1.02, 9.21)**	0.036
fear of infertility	8 (14.8%)	49 (19.8%)	0.71	(0.29, 1.52)	0.402	0.71	(0.23, 1.91)	0.518
Desire not to have pregnancy soon	17 (14.4%)	138 (19.7%)	0.68	(0.38, 1.15)	0.174	0.76	(0.40, 1.37)	0.382
Religious prohibition	---	---	---	--- ---	---	---	--- ---	---
Medical problem	3 (5.6%)	18 (7.3%)	0.75	(0.17, 2.33)	0.657	1.36	(0.26, 5.22)	0.684
Lack of commodity/method	1 (1.9%)	1 (0.4%)	4.660	(0.18, 119.11)	0.279	13.764	(0.46, 418.03)	0.090
Rumors	6 (11.1%)	43 (17.3%)	0.60	(0.22, 1.39)	0.265	0.39	(0.10, 1.24)	0.141
Unacceptable in my culture	1 (1.9%)	0 (0.0%)	---	--- ---	---	---	--- ---	---
Important partner/others influence	7 (13.0%)	5 (2.0%)	**7.24**	**(2.22, 25.38)**	0.001	**7.67**	**(1.80, 32.75)**	0.005
Lack of knowledge	3 (5.6%)	8 (3.2%)	1.76	(0.38, 6.34)	0.413	1.89	(0.29, 9.15)	0.460
Fear of needle and pain	7 (13.0%)	27 (10.9%)	1.22	(0.47, 2.83)	0.662	0.69	(0.20, 2.02)	0.521
Difficult to have frequently	24 (44.4%)	100 (40.3%)	1.18	(0.65, 2.14)	0.577	0.95	(0.46, 1.95)	0.890
other	1 (0.8%)	5 (0.7%)	1.19	(0.06, 7.44)	0.877	0.90	(0.04, 7.11)	0.932

* recoded "no opinion" as "no"

**adjusted for age, marital status, education, wealth quartile