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Breastfeeding Perceptions and Behavior Among Postpartum Women Initiating Different Hormonally Systemic Contraceptive Methods

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Abstract

Background—There continues to be controversy regarding the simultaneous encouragement of both breastfeeding and immediate postpartum contraception.

Research Aims—To explore postpartum women's perspectives about breastfeeding and their breastfeeding behaviors, while using one of three different hormonally systemic contraceptive methods immediately postpartum over a 6 month period of time.

Methods—This was a retrospective, three group comparative, secondary analysis of a prospective cohort study (N = 471) of immediate postpartum contraception. Participants who chose one of three different hormonally systemic forms of contraception immediately postpartum (a long-acting hormonal reversible contraceptive (n = 200), depot medroxyprogesterone acetate 150mg (n = 98), or a non-hormonal method (n = 173)) were compared at hospital discharge, 6 weeks, 3 months and 6 months postpartum. The primary outcome was any breastfeeding at 6 months. Secondary outcomes included any and exclusive breastfeeding, concerns about breastfeeding while using contraception, and reasons for breastfeeding discontinuation.

Results—There was no significant difference in the rate of any breastfeeding between the two hormonal and the non-hormonal contraceptive groups at 6 months postpartum (long-acting hormonal 20.1%, non-hormonal 21.7%, depot medroxyprogesterone acetate 13.9%, p=0.77, 0.28, respectively). The number of participants who reported stopping breastfeeding due to decreased

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milk supply was not significantly different between any groups at all time points (total number who discontinued at 6 months postpartum was long-acting hormonal 24.7%, non-hormonal 25.1%, depot medroxyprogesterone acetate 19.3%, p=0.30).

Conclusions—Breastfeeding perspectives and behaviors over the first 6 months postpartum were not dependent on the chosen form of immediate postpartum contraception.

Keywords

Breastfeeding; Observational

Background

The mutually beneficial health outcomes of breastfeeding for the mother and infant are well recognized and have led to a national emphasis to encourage breastfeeding (American College of Obstetricians and Gynecologists [ACOG], 2018; American Academy of Pediatrics, 2021; World Health Organization [WHO], 2018). Similarly, studies of immediate postpartum contraception have reported positive maternal and neonatal health outcome results by preventing rapid repeat and unintended pregnancies, and being socially cost effective (Liberty et al., 2021; ACOG, 2016). While all contraceptive methods are safe to use at 6 weeks postpartum, up to 40% of women do not return for postpartum visits and up to 40% of women report sexual activity before 6 weeks postpartum (Pluym et al., 2021; ACOG, 2018; Sok et al., 2016). This urges the discussion of immediate postpartum contraception which includes sterilization, the levonorgestrel or copper intrauterine device (IUD), the etonogestrel subdermal implant, depot medroxyprogesterone acetate (DMPA), the progestin-only pill, condoms, and lactational amenorrhea.

The theoretical concern regarding progestin contraceptive use immediately postpartum is that milk production and release in the breast is triggered by the sudden decline in progesterone and increase in prolactin following delivery which exogenous progestin administration may prevent (Rivlin & Davis, 2022). Additionally, this concern may be greater in contraceptives with high systemic progesterone distribution as in the DMPA injection.

Researchers have studied this theoretical risk and most all have found no negative association between immediate versus delayed use of progestin-only contraceptive methods compared to non-hormonal methods on multiple measures of breastfeeding performance (Krashin et al., 2019; Averbach et al., 2020; Carmo et al., 2017; Turok et al., 2017). Studies of high quality methodological rigor evaluating DMPA immediately postpartum are limited and dated, but also have not shown results with a definitive negative effect (Brownell et al., 2013). Interestingly, while public health experts in the United States currently report that the advantages of using progestin-only hormonal contraceptives in the immediate postpartum period generally outweigh the risks among breastfeeding women, authorities in breastfeeding management still recommend advising women that hormonal contraception may cause their milk supply to decrease in the immediate postpartum period (Curtis et al., 2016; Berens et al., 2015; Hale et al., 2021).

Currently, there is a lack of prospective research designed to compare the breastfeeding experience of women using contraceptive methods with different systemic hormone doses. The aim of this study was to explore postpartum women's perspectives about breastfeeding and their breastfeeding behaviors, while using one of three different hormonally systemic contraceptive methods immediately postpartum over a 6-month period of time.

Methods

Research Design

This was a retrospective, three group comparative, cohort study using secondary data from a prospective observational cohort study which examined the uptake of immediate postpartum contraception. Breastfeeding characteristics immediately following delivery until 6 months postpartum were compared among women who chose one of three different hormonally systemic contraceptive options immediately postpartum: a hormonal long-acting reversible contraceptive (LARC) having a low systemic hormonal dose, DMPA having a high systemic hormonal dose, or a non-hormonal method. This study was approved by the Institutional Review Board of the hospital in which the study was conducted (approval date 10/23/2015, #35155, closed 8/14/2018).

Setting and Relative Context

The hospital from which women were recruited for this study is a 906-bed academic teaching hospital located in the state of Delaware in the United States. It serves a diverse population (69% white, 22% black, 52% female, 55% have private insurance, 45% have Medicaid (federally-funded) insurance), and delivers 60% of all live births in the state (approximately 6,540 births in 2019) (United States Census Bureau, 2019; Delaware Health Statistics Center, 2021).

The hospital used for this study is designated in the *Baby-Friendly Hospital Initiative* (BFHI), which is a global program with specific requirements to encourage and offer an optimal level of care for infant feeding immediately after delivery (WHO, 2018). Programs available in the state to aid women with their breastfeeding after they leave the hospital include support groups, insurance coverage for breast pumps, and access to lactation consultants. The breastfeeding rate in 2017 at 6 months postpartum was approximately 55% (National Center for Chronic Disease Prevention and Health Promotion, 2020).

Immediate postpartum contraceptives, including the progestin-only pill and the depot medroxyprogesterone acetate 150mg injection, are covered by all insurance plans and available at most hospitals. In 2015, the state of Delaware implemented a pilot intervention to add immediate postpartum LARC, defined as an IUD or subdermal etonogestrel implant, as a covered option for all women with Medicaid insurance.

Sample

The target population for this study was all women who had a live delivery of their pregnancy at one academic hospital designated within the BFHI within the state of Delaware. For the purposes of this study, the term *woman* or *women* was used to describe

the female sex including the ability to become pregnant. We did not address gender specifically. Inclusion criteria were women who were 18 years or older, within 7 days of delivery, English or Spanish speaking, and with active Medicaid coverage. Medicaid insurance was an inclusion criterion because only these women were eligible to receive a LARC method immediately postpartum with the 2015 state initiative. Women were excluded if they were having a sterilization performed during their hospitalization. Participants were given $10 on a reloadable debit card for completing the baseline survey, and $5 for each completed follow up survey.

This study was a secondary study of the participants recruited for the primary study. A total of 742 women were approached for the study, 22 were found to be not eligible, 178 declined to participate, and 71 did not complete the baseline questionnaire and so a total of 471 participants were enrolled in the study (Figure 1). The sample size for each study group at baseline was determined by the contraceptive method chosen by each participant: 200 chose a hormonal LARC, 173 chose a non-hormonal method, and 98 chose DMPA. Three follow up phone surveys at 6 weeks, 3 months, and 6 months postpartum were conducted. If a participant could not be reached by phone, 3 additional attempts by phone and certified mail were made over a 2 week period. Participant dropouts were only due to inability to contact the participant: 146 at 6 weeks, 159 at 3 months, and 188 at 6 months postpartum.

For comparison of the two smallest groups, we achieved greater than 80% power for differences in breastfeeding rates greater than 18%. Other pairwise comparisons are therefore powered at 80% for smaller differences. At later time points, the sample sizes decreased due to drop out and so subsequent pairwise comparisons were somewhat lower powered.

Measurement

Demographic Characteristics.—Participants provided demographic information in the baseline survey (Supplemental Instrument S1). Variables used for analysis in this study included age, number of living children, pregnancy intention (unplanned or planned), number of prenatal visits, delivery mode (vaginal or Cesarean delivery), place of birth (in the USA or outside), race, ethnicity, highest level of education attained, marital status, employment (full, part time, unemployed), and whether they currently receive any welfare assistance or have difficulty paying for everyday needs.

Baseline Breastfeeding and Contraceptive Characteristics.—Participants provided information regarding their breastfeeding intentions, current contraceptive choice and whether they had concerns about breastfeeding while using contraception in the baseline survey (Table 2; Supplemental Instrument S1). *Breastfeeding,* for this study, was defined as providing any human milk to the infant (Noel-Weiss et al., 2012). Study participants chose their desired form of immediate postpartum contraception: levonorgestrel IUD, copper IUD, etonogestrel subdermal implant, DMPA (150mg was the only formulation used in this study), progestin-only pills, condoms, abstinence, lactational amenorrhea, or withdrawal. Chart review from the electronic medical record was completed to verify whether participants received their stated method of contraception prior to discharge. Since

people pick up prescriptions from a variety of different pharmacies, it was too difficult to conduct a pharmacy check to ensure all participants who requested the progestin-only pill actually received it. These participants were, therefore, excluded from the analysis to eliminate this potential confounder.

Follow Up Breastfeeding and Contraceptive Characteristics.—The follow up surveys collected information about current contraceptive methods, new pregnancies since last survey, current method(s) of infant feeding, reasons for breastfeeding discontinuation and concerns about breastfeeding while using contraception (Table 2; Supplemental Instrument S2). The primary outcome was any breastfeeding (exclusive and mixed breastfeeding with formula feeding) at 6 months postpartum. Secondary outcomes included any and exclusive breastfeeding, concerns with breastfeeding while using contraception, and reasons for breastfeeding discontinuation at all time points.

Of the 471 participants enrolled, 325 (69.0%) completed the 6 weeks follow up survey, 312 (66.2%) completed the 3 month follow up survey, and 283 (60.1%) completed the 6 month follow up survey. All survey data were securely captured using REDCap (Research Electronic Data Capture) (Harris et al., 2009).

Data Collection

Participants were recruited from April 2016 to September 2017. Follow up data were collected for 6 months until March 2018. All patients on the postpartum floor were assessed for eligibility on a daily basis. All women who met inclusion and exclusion criteria based on chart review were approached in their private postpartum room to discuss the study and their interest in participation. Informed consent was obtained after the research coordinator reviewed the purpose, protocol, risks and benefits of the study and answered all the participant's questions. All participants gave written informed consent prior to enrollment, and participation in the study was voluntary. Participants then completed a baseline face-to-face survey with this same research coordinator prior to discharge from the hospital and responses were captured on a paper questionnaire form and immediately transferred into REDCap. Similarly, follow up questionnaires completed over the phone by the same research coordinators were initially recorded on paper forms and immediately transferred to REDCap.

Upon being enrolled in the study, participants were assigned a study number. The list of enrolled participants with their corresponding study number was kept in an electronic file on a password-protected computer only available to the research staff. Each participant had a folder labeled only with their respective study number which contained all signed consent forms, contact information, and completed paper questionnaire surveys. These folders were kept in a key-locked file cabinet in the research staff's office.

Participants were placed into one of three groups based on their chosen contraceptive method immediately postpartum: hormonal LARC (levonorgestrel IUD or etonogestrel subdermal implant), non-hormonal contraception (copper IUD, male or female condom, abstinence, lactational amenorrhea, natural family planning method), and DMPA (150mg).

Data Analysis

The baseline demographic characteristics of the study sample were summarized using means for continuous data and percentages for categorical data. The Student's *t* test or the Wilcoxon rank-sum test were used to compare numeric variables, and contingency table analysis using Chi-square or Fisher's exact test were used to compare categorical variables between the three study groups. Participants were placed in a group based on their chosen contraceptive method immediately postpartum.

For follow up data analysis, we used an intent-to-treat approach and kept each participant's immediate postpartum contraceptive choice constant throughout the 6 month follow up period. For our primary study outcome, the percentage of participants that reported any breastfeeding at 6 months postpartum were calculated and the *z* ratio and the associated two-tailed probability for the significance of the difference between two independent proportions was calculated between each set of study groups. For secondary outcomes, this same statistical analysis was used to compare any breastfeeding, exclusive breastfeeding, comfort with using contraception while breastfeeding, and the reason participants reported for stopping any type of breastfeeding at all study time points between each set of study groups. A logistic regression model was developed to see if the contraceptive method was associated with any breastfeeding (exclusive or mixed with formula feeding) at all time points while controlling for initial intention to breastfeed (excluding those who stated no intention). Data were analyzed using the SAS Software® version 9.4 (SAS Institute, Cary, North Carolina, USA).

Results

Characteristics of the Sample

Of the total cohort at baseline, 200 (42.5%) desired a hormonal LARC method, 173 (36.7%) desired to use a non-hormonal contraceptive method, and 98 (20.8%) desired DMPA injection prior to discharge home from the hospital after delivery. Demographic differences between participants in each contraceptive group are listed in Table 1. Participants were on average 26.4 years old (*SD* = 5.32) and had on average 2.21 living children (*SD* = 1.33); participant age and number of living children did not differ by group. At 6 weeks postpartum, 126 participants (63.0 %) were still using a hormonal LARC, 129 (74.5%) a non-hormonal method, and 70 (71.4%) DMPA. At 3 months postpartum, 141 (70.5%) were still using hormonal LARC, 108 (62.4%) a non-hormonal method, and 63 (64.3%) DMPA. At 6 months postpartum, 134 (67%) were still using a hormonal LARC, 106 (61.3%) a non-hormonal method, and 43 (43.9%) DMPA.

Breastfeeding Rates

The rate of any breastfeeding reported by participants using a hormonal LARC method or DMPA at 6 months postpartum was not significantly different than participants using a non-hormonal method (27 (20.1%) hormonal LARC, 23 (21.7%) non-hormonal method, 6 (13.9%) DMPA, p=0.77, 0.28, respectively). This was also seen after controlling for baseline intention to breastfeed (odds ratio (OR) 0.75 for DMPA versus non-hormonal methods (95%

confidence interval (CI) 0.27–2.12) and OR 0.89 for hormonal LARC versus non-hormonal methods (95% CI 0.46–1.73).

The rate of any breastfeeding was not different between groups at baseline, and no difference was noted between hormonal LARC and non-hormonal method users at 6 weeks and 3 months postpartum (Figure 2), even after controlling for baseline intention to breastfeed. There was a statistically significant decline in any breastfeeding among DMPA users at 6 weeks and 3 months postpartum compared to non-hormonal method users, and after controlling for baseline breastfeeding intention (excluding those who no intention), participants who chose DMPA had 65% lower odds of breastfeeding at 6 weeks postpartum, and 78% lower odds of breastfeeding at 3 months postpartum compared to participants who chose a non-hormonal method (OR 0.349 and 0.22, 95% CI 0.172–0.706, and 0.088–0.548, respectively).

Plans to breastfeed exclusively at baseline were significant higher among hormonal LARC and non-hormonal method users compared to DMPA users (98 (49.0%) hormonal LARC, 76 (44.2%) non-hormonal method, 28 (28.9%) DMPA, p=0.01). By 6 weeks postpartum, exclusive breastfeeding had significantly dropped in all study groups with a significant drop in DMPA users compared to non-hormonal method users (30 (23.3%) non-hormonal method, 8 (11.4%) DMPA, p=0.04). By 3 and 6 months postpartum, there was no difference in exclusive breastfeeding rates between hormonal LARC and non-hormonal contraceptive users, and too few participants using DMPA were exclusively breastfeeding at these time points to allow statistical analysis.

Concerns About Breastfeeding While Using Contraception

Concerns about breastfeeding while using contraception were low among all groups throughout the study period. Overall, 434 (93.5%) of participants reported no concerns about breastfeeding while on birth control at baseline and this value remained constant throughout the study (299 (92.6%) at 6 weeks, 288 (93.8%) at 3 months, 265 (95.3%) at 6 months postpartum). The only statistically significant difference in this perception when the 3 study groups were compared over time was among non-hormonal contraceptive users at 6 weeks and 3 months postpartum (Figure 3).

Reasons for Breastfeeding Discontinuation

Decreased milk supply was the most commonly selected reason participants in each study group gave for why they stopped any and exclusive breastfeeding at all time points. When all participants were analyzed together (those reporting stopping exclusive breastfeeding and those reporting stopping mixed breast and formula feeding) for the reason of decreased milk supply, there was no statistically significant difference between any study groups at 6 weeks, 3 months, or 6 months postpartum (Figure 4). By 6 months postpartum, the total number of participants who discontinued breastfeeding due to decreased milk supply was 99 (24.7%) for hormonal LARC, 86 (25.1%) for non-hormonal and 34 (19.3%) for DMPA (p=0.30). At every time point, fewer participants who initially chose DMPA immediately postpartum reported stopping any form of breastfeeding due to decreased milk supply compared to participants who chose a hormonal LARC or non-hormonal method.

Pregnancies

There were no pregnancies reported in any study group at 6 weeks postpartum, 1 (0.32%) pregnancy at 3 months postpartum (in the non-hormonal method group), and 6 (2.14%) pregnancies at 6 months postpartum (1 in the hormonal LARC group, 4 in the non-hormonal method group, 1 in the DMPA group).

Discussion

New mothers look to their healthcare providers for the most current, evidence-based advice for their health and the health of their baby. Owing to the multiple long-term maternal and neonatal benefits of breastfeeding, obstacles to breastfeeding should be identified and reduced whenever possible for women who desire to breastfeed. Healthcare providers must also consider that return to ovulation and sexual activity can occur quickly after delivery, and therefore, discussions of what a woman desires for contraception are vital to the medical and social health of the woman, her baby, and her entire family. This prospective, three group comparison study allowed for a direct observation of the influence of all current postpartum contraceptive methods on several breastfeeding metrics with findings similar to prior study results that show no negative impact (Averbach et al., 2020; Krashin et al., 2019; Turok et al., 2017).

This study allowed for a current look at breastfeeding attitudes and practices among women who initiate DMPA immediately postpartum, of which there is a lack of research. Participants who chose DMPA had a lower inclination to breastfeed at baseline (although the actual differences between groups were small and may not be clinically significant), and lower breastfeeding rates at all time points compared to participants who used other contraceptive methods. This difference is unlikely due to a negative effect or perceived effect of DMPA on milk production, as no more participants (less participants in fact) in the DMPA group reported stopping breastfeeding at 6 weeks, 3 months and 6 months postpartum due to decreased milk supply compared to the hormonal LARC or the non-hormonal groups. This finding is also pertinent as it directly competes with the primary concern cited by commonly used lactation reference books when considering the use of progestin contraception immediately postpartum (Hale, 2021). An inverse relationship between intent to breastfeed and intent to use hormonal birth control has been noted by other researchers, with findings from one study of less effective forms of contraceptive use (i.e. not LARC methods) being significantly associated with decreased odds of any breastfeeding (Johnson et al., 2019). The faster drop in breastfeeding we observed among DMPA users may be due to unique differences in women who chose this form of contraception, as has been previously suggested (Dozier et al., 2014). This is an important observation and area that requires future research.

The high lack of concern about, or comfort with, breastfeeding while using contraception that we saw in this study has been reported in several other studies as well (Weisband et al., 2017; Stanton et al., 2019). The statistical increase in concern among non-hormonal method users at 6 weeks and 3 months postpartum may not be clinically significant as so few participants reported concerns. Comfort with initiating contraception while simultaneously initiating breastfeeding must be relayed via the healthcare providers a woman looks to

for advice immediately postpartum. This continues to be a struggle (Benfield et al., 2018; Stanton et al., 2019). Ensuring women receive the most accurate, up to date information when asking questions regarding contraception and breastfeeding immediately postpartum may still be an area for further research and development.

Limitations

All participants were recruited from one hospital, and despite the fact that it delivered the majority of live births in the state, this may have introduced bias. Our study sample only included individuals who were women based on the definition of sex and the ability to conceive. We also only included women who received government funded healthcare and this population of women has been shown to have different health care behaviors (e.g. lower rates of breastfeeding) than women with private or commercial insurance and so the results of this study may be less generalizable (Mercier, 2018). Our intent-to-treat approach to analyzing the data was also a limitation as participants may have switched their contraceptive method throughout the study. Finally, we examined self-reported breastfeeding status rather than using an objective assessment of breastfeeding.

Conclusions

In this study, the rates of any type of breastfeeding did not significantly differ at 6 months postpartum between participants who chose to initiate an immediate postpartum hormonal contraceptive (high or low systemic dose) or chose to use a non-hormonal method. Additionally, breastfeeding perspectives over the first 6 months postpartum were not found to be dependent on the chosen form of immediate postpartum contraception. Women should be encouraged to choose their postpartum contraception based on which method works best for them and not on their desire to breastfeed or not. Women deserve a unified message about the impact of contraception on their breastfeeding, which underlines the importance of contraception and breastfeeding for the health of the mother, infant, and future pregnancies.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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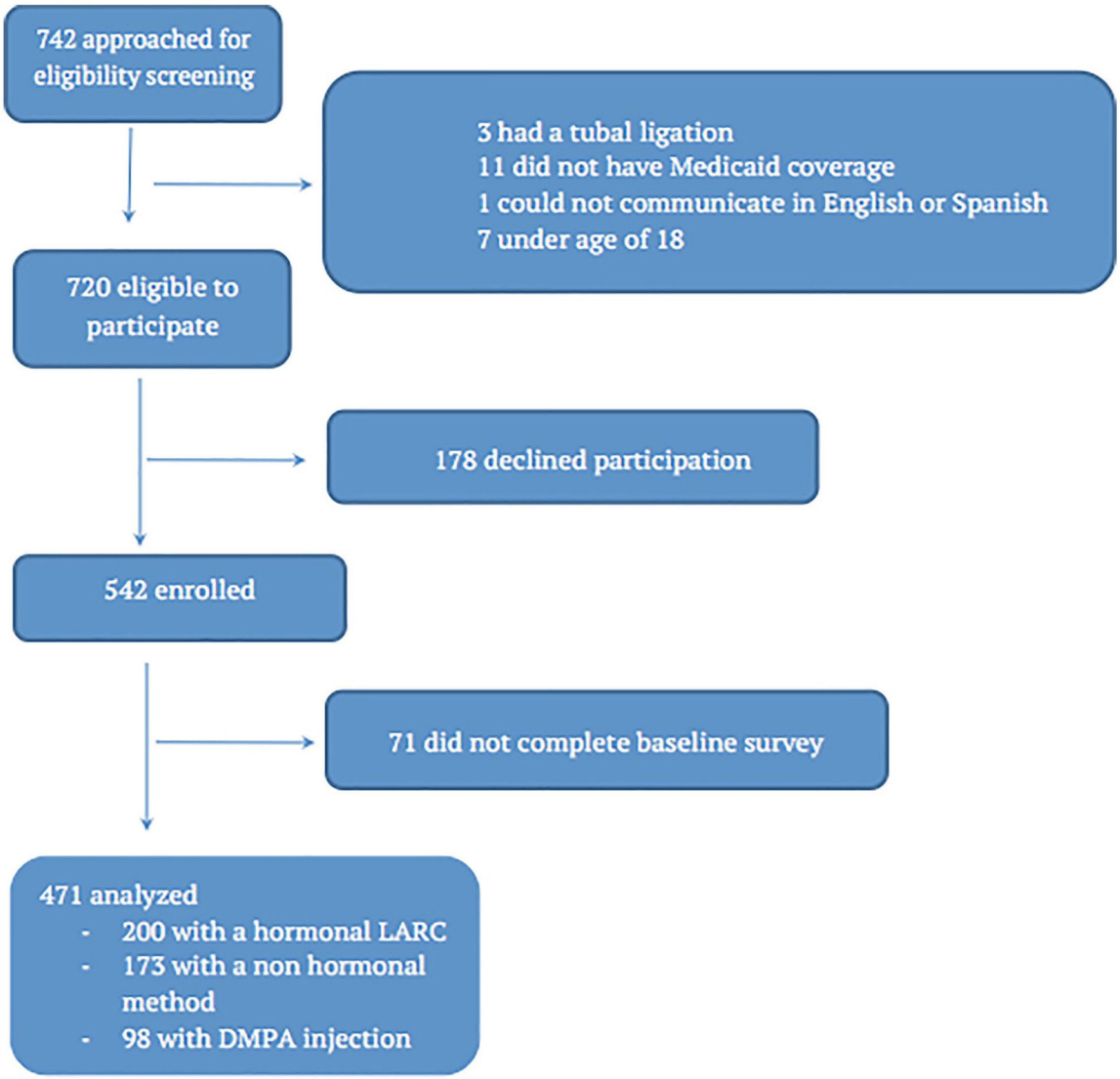

Figure 1.
Determining the Sample.

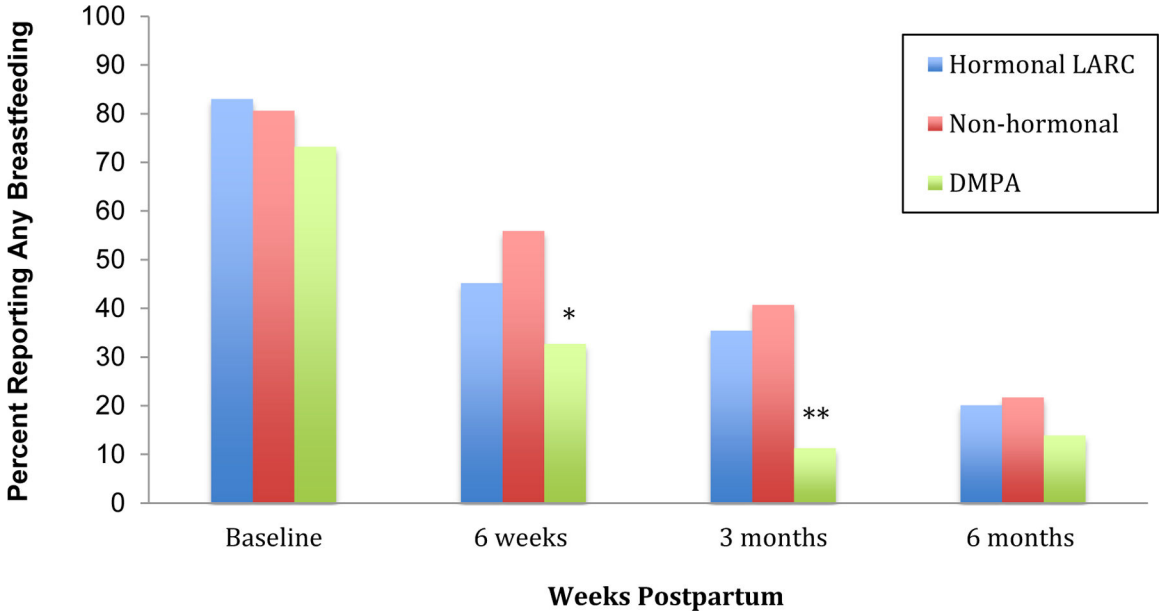

Figure 2. Percent of Participants Who Reported Any Breastfeeding Over Time

Note. The percent of participants who reported any breastfeeding at each study time point is shown with participants grouped by method of contraception initiated immediately postpartum. LARC = long-acting reversible contraception; DMPA = depot medroxyprogesterone acetate 150mg injection. Baseline (N = 469, 2 missing values), 6 weeks (n = 325, 69.0% of total sample), 3 months (n = 311, 66.0% of total sample), 6 months (n = 283, 60.1% of total sample).

*p = 0.002 comparing DMPA to non-hormonal contraceptive users; **p<0.002 comparing DMPA to non-hormonal contraceptive users.

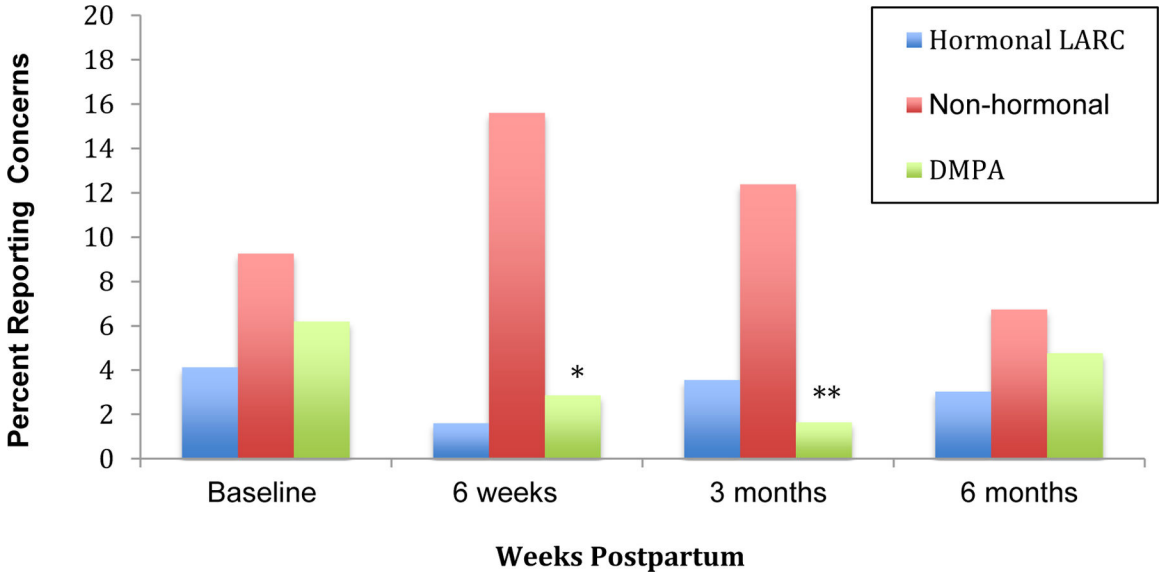

Figure 3. Percent of Participants Who Reported Concerns About Breastfeeding While Using Contraception Over Time

Note. The percent of participants who reported concerns about breastfeeding while using contraception at each study time point is shown with participants grouped by method of contraception initiated immediately postpartum. LARC = long-acting reversible contraception; DMPA = depot medroxyprogesterone acetate injection.

Baseline (N = 464, 7 missing values), 6 weeks (n = 323 (68.6% of the total sample)), 3 months (n = 307 (65.2%)), 6 months (n = 278 (59.0%)).

* p<0.001 comparing DMPA to non-hormonal contraceptive users; ** p=0.004 compared DMPA to non-hormonal users.

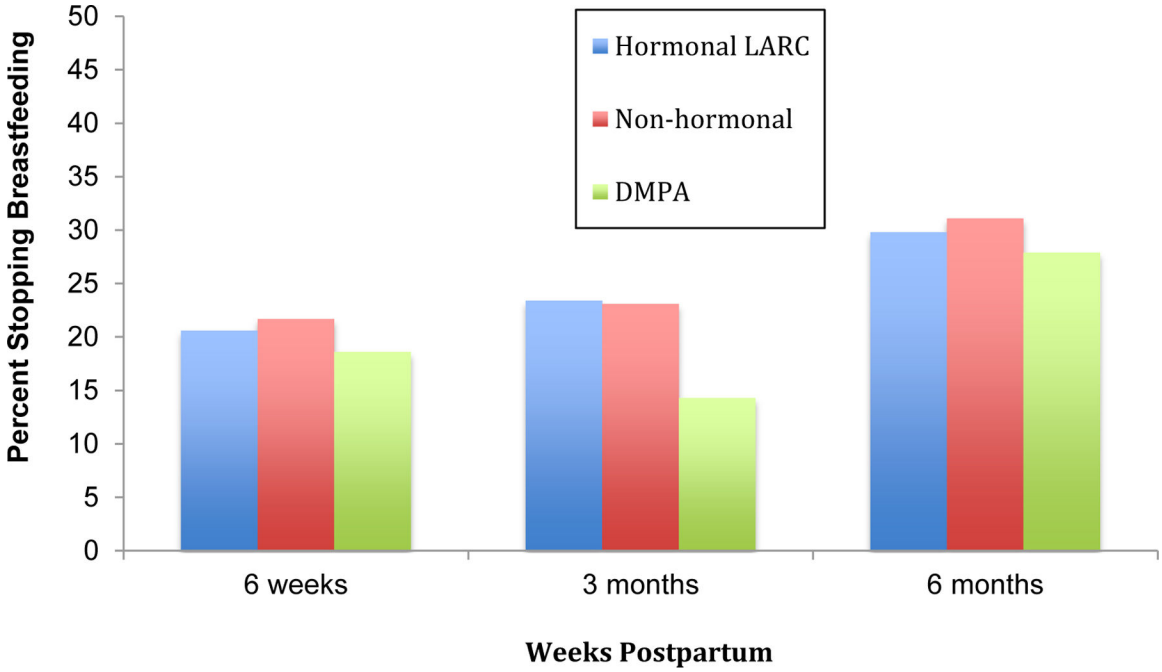

Figure 4. Percent of Participants Who Reported Stopping Breastfeeding Due to Decreased Milk Supply Over Time

Note. The percent of participants who reported stopping any form of breastfeeding, including exclusive breastfeeding and mixed breast and formula feeding, at each study time point is shown with participants grouped by method of contraception initiated immediately postpartum. LARC = long-acting reversible contraception; DMPA = depot medroxyprogesterone acetate injection.

6 weeks (n = 325 (69.0% of the total sample)), 3 months (n = 312 (66.2%)), 6 months (n = 283 (60.1%)).

Table 1.

Breastfeeding and Contraceptive Variables at Baseline and Follow Up

Variable	Theoretical definition	Operational definition
Baseline		
Intention to breastfeed upon discharge	The plan or hope to breastfeed upon discharge from the hospital	Yes, exclusively; mixed with formula as needed; no
Concerns about breastfeeding while using contraception[a]	Having any concerns about breastfeeding while using contraception	Yes; No
Contraceptive choice	Method of birth control currently or planning to be used upon discharge from the hospital	Levonorgestrel IUD; copper IUD; etonogestrel subdermal implant; DMPA; progestin-only pill; lactational amenorrhea; condoms; withdrawal; abstinence
Follow Up		
Current contraceptive method	Method of birth control used for >50% of the time since last survey	Levonorgestrel IUD; copper IUD; etonogestrel subdermal implant; DMPA; a pill, contraceptive patch; vaginal ring; lactational amenorrhea; condom; withdrawal, abstinence, none
Current method of infant feeding	Current method of infant feeding	Breastfeeding exclusively; breastfeeding and formula supplementation; formula only
Reason for breastfeeding discontinuation (if applicable)	Primary reason for stopping breastfeeding	Personal choice; decreased milk supply; inadequate time to breastfeed; maternal issue; infant issue

Note. IUD = intrauterine device; DMPA = depot medroxyprogesterone acetate 150mg injection

[a]This variable was used in both baseline and follow up surveys.

Table 2.

Study Participant Characteristics (N = 471)

Characteristic	Hormonal LARC[a] n=200 n (%)	Non-hormonal method[b] n=173 n (%)	DMPA n=98 n (%)	X^2	*p*
Pregnancy unplanned	136 (68.3)	119 (68.8)	78 (81.2)	6.01	0.049
Number of prenatal visits				1.97	0.74
1–3	8 (4.06)	5 (2.94)	5 (5.26)		
4–8	30 (15.2)	20 (11.8)	12 (12.6)		
9+	159 (80.7)	145 (85.3)	78 (82.1)		
Cesarean delivery	69 (34.7)	47 (27.5)	25 (25.8)	3.39	0.18
Intention to do any breastfeeding upon discharge home	166 (83.0)	139 (80.1)	71 (73.2)	11.3	0.02
Concerns about breastfeeding while using contraception	8 (4.12)	16 (9.25)	6 (6.19)	3.99	0.14
Born in USA	160 (80.0)	134 (78.4)	90 (91.8)	8.45	0.02
Race				12.4	0.01
Black	98 (49.0)	78 (45.4)	62 (63.3)		
White	55 (27.5)	49 (28.5)	26 (26.5)		
Asian/Other	47 (23.5)	46 (26.6)	10 (10.2)		
Hispanic ethnicity	56 (28.3)	41 (24.1)	18 (18.7)	3.22	0.20
Highest education				7.56	0.48
Some high school	41 (20.5)	27 (15.7)	20 (20.4)		
High school graduate	84 (42.0)	63 (36.6)	44 (44.9)		
Some post high school	66 (33.0)	66 (38.3)	29 (29.6)		
College graduate	2 (1.0)	4 (2.33)	0		
Some post college	7 (3.5)	12 (6.98)	5 (5.1)		
Marital status				9.59	0.14
Single	62 (31.0)	68 (39.3)	39 (40.2)		
Partner, live separately	27 (13.5)	14 (8.09)	10 (10.3)		
Partner, live together	79 (39.5)	58 (33.5)	37 (38.1)		
Married	25 (12.5)	31 (17.9)	9 (9.28)		
Employment				8.45	0.01
Full or Part time	79 (39.7)	71 (41.0)	55 (56.7)		

Characteristic	Hormonal LARC[a] n=200 n (%)	Non-hormonal method[b] n=173 n (%)	DMPA n=98 n (%)	X^2	*p*
Unemployed/other[c]	120(60.3)	102 (59.0)	42 (43.3)		
Receive any welfare assistance	162 (81.0)	139 (80.3)	81 (82.6)	0.22	0.90
Difficulty paying for everyday needs[d]	38 (19.0)	27 (15.6)	20 (20.4)	1.19	0.55

Note. LARC = long-acting reversible contraception; DMPA = depot medroxyprogesterone acetate 150mg injection

Missing values: Pregnancy unplanned = 3; Prenatal visits = 9; Cesarean delivery = 4; Intention to breastfeed = 2; Concerned about breastfeeding = 7; Born in USA = 2; Race = 1; Hispanic ethnicity = 7; Highest education = 1; Marital status = 1; Employment = 2

[a]Hormonal LARC includes the levonorgestrel intrauterine device and the etonogestrel subdermal implant.

[b]Non-hormonal includes copper intrauterine device, male or female condom, abstinence, lactational amenorrhea, and natural family planning

[c]Other includes being a student, disabled/sick leave

[d]Everyday needs includes paying for transportation, housing, food and healthcare