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Initiation of Postpartum Contraception by 90 Days at a Midwest Academic Center

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ABSTRACT

Introduction. Contraception is a critical component of addressing the health needs of women in the postpartum period. We assessed contraception initiation by 90 days postpartum at a large, academic medical center in the Midwest.

Methods. In this retrospective cohort study, 299 charts were randomly sampled and 231 were analyzed from deliveries between May 1 to July 5, 2018. Contraceptive method, maternal demographics, and obstetric characteristics at hospital discharge were collected, as well as contraceptive method at the postpartum follow-up appointment. Methods and strata of contraception were categorized as follows: 1) highly effective methods (HEM) defined as sterilization, intrauterine device, or implant, 2) moderately effective methods (MEM) defined as injectable contraception, progestin-only pills, and combined estrogen/progestin pills, patches, and rings, and 3) less effective methods (LEM) defined as condoms, natural family planning, and lactational amenorrhea. Women lost to follow-up who had initiated a HEM or injectable contraception were coded as still using the method at 90 days. We used logistic regression to identity factors associated with HEM use.

Results. Of the 231 included patients, 118 (51%) received contraception before hospital discharge and 166 (83%) by 90 days postpartum. Postpartum visits were attended by 74% (171/231) of patients. Before hospital discharge, 28% (65/231) obtained a HEM and 41% (82/200) were using a HEM by 90 days postpartum. Patients obtaining HEM or injectable contraception before hospital discharge attended a follow-up visit less often than those who did not receive HEM before discharge (RR = 0.68, 95% CI: 0.54 - 0.86, $p \leq 0.01$).

Conclusion. When readily available, many women will initiate contraception in the postpartum period. Health systems should work to ensure comprehensive access to contraception for women in the postpartum period. ***Kans J Med 2020;13:202-208***

INTRODUCTION

The postpartum period represents a time for clinicians to provide ongoing care that assesses many facets of women's health and well-being, setting the stage for long-term wellness.[1] Postpartum contraception is one critical component in addressing the health needs of women and their families. Between 16 - 36% of women do not attend the six-week follow-up appointment, which may be influenced by insurance type or mode of delivery.[2] Ensuring early and available postpartum contraception meets patients' needs because 40 - 57% of women report having unprotected intercourse before the standard six-week postpartum visit.[3] Additionally, half of the 3.2 million annual unintended pregnancies occur within 18 months of a prior live birth.[4-6]

By 18 months postpartum, the estimated pregnancy probability while using hormonal contraception is 17%.[5] Effective contraception use decreases pregnancy risk; sterilization and long-acting reversible contraception (LARC), which includes intrauterine devices (IUDs) and implants, decreases the chances of pregnancy to 0.5% annually.[5,7] Less effective methods, including male condoms and withdrawal, have a higher probability of pregnancy annually, from 18 - 28%.[5,8] In some settings, women can obtain immediate LARCs before hospital discharge, yet this option for contraception delivery has not been implemented fully across the country, including parts of Kansas. In one study of over 8,000 postpartum women at a single institution, less than one in four women who expressed interest in LARCs at the time of hospital discharge successfully obtained one by 90 days postpartum.[9] States have been working to improve access to immediate postpartum contraception, including LARC.[10-12] In May 2018, a policy change was made for Kansas Medicaid to reimburse immediate postpartum LARC. In this study, the incidence of contraception use at hospital discharge and by 90 days postpartum was described, as well as the types of contraception used.

METHODS

Data Source and Sample Description. A retrospective cohort study was conducted for women who delivered at the University of Kansas Hospital (UKH) from May 1, 2018 to July 5, 2018. While UKH already had LARCs (including the copper IUD, 13.5-mg levonorgestrel IUD, 52-mg levonorgestrel IUD, and 68-mg etonogestrel implant) available on the inpatient formulary, reimbursement concerns limited their use in the immediate postpartum period. Therefore, the time period after the policy change was chosen to describe the use of postpartum contraception after the policy implementation.

Data were extracted from the Healthcare Enterprise Repository for Ontological Narration (HERON) discovery tool that can search de-identified data from the electronic medical records available at UKH and provide researchers with an identifiable dataset with appropriate human subjects training and approval.[13] The HERON search discovery tool identified the cohort of women over 18 years of age who delivered at UKH during the study time frame. Women were excluded who planned to follow-up outside of UKH (as documented in delivery discharge summaries), because their postpartum medical records would not be accessible. The Institutional Review Board at UKH approved this study.

A sample size of 198 participants was calculated, based on an estimated incidence of 47% (± 5%) contraception use at 90-days postpartum and an alpha of 0.05.[5,9] A random sample of 299 charts was reviewed to account for patients who would be excluded or lost to follow-up by 90 days. Each patient's chart was reviewed by one of six fourth-year medical students trained in chart abstraction. Data were managed and collected using REDCap electronic data capture tools hosted at our institution.[14,15]

Measures. Basic demographic data and obstetric history were collected for each patient, including maternal age, race, marital status, primary language, insurance, gravidity, and parity. Information also was collected about the patient's pregnancy and delivery, including: 1) the trimester of prenatal care initiation (first trimester defined as less than 14 weeks and second trimester defined as less than 28 weeks), 2) whether they were followed in the High Risk Clinic (defined by more than one consult visit), 3) the presence of multiple gestations, 4) the admitting department as either Obstetrics (including certified nurse-midwives) or Family Practice, 5) type of delivery (cesarean or vaginal), and 6) documentation of scheduled follow-up appointment at time of hospital discharge. Pregnancy history was obtained from documentation in outpatient clinic notes and/or the admission history and physical note. The delivery type, contraception methods, and postpartum visit data were collected from documentation in procedural notes, discharge summaries, and outpatient clinic notes.

The type of contraception documented in procedure notes or discharge summary was recorded. Following previous studies[16,17], contraceptive methods were defined as: 1) self or partner surgical sterilization (as verified by review of operative report or documentation of patient or partner's completed sterilization), 2) intrauterine devices, 3) subdermal implants, 4) injectable contraception, 5) combined estrogen/progestin pills, patches, and rings, 6) progestin-only pills, 7) condoms, 8) natural family planning, 9) lactational amenorrhea, 10) no birth control (verified in the medical record as "declines contraception"), and 11) not documented. Contraceptive types were stratified into three groups similar to previous studies[18]: highly effective methods (HEM): methods 1 - 3, moderately effective methods (MEM): methods 4 - 6, and less effective methods (LEM): methods 7 - 9.

Whether the patient returned for a postpartum follow-up visit was documented and the number of days between discharge and the first follow-up in the 90-day postpartum period was recorded. If a patient returned for a postpartum visit, the type of contraception documented in the first follow-up visit was noted. Patients without a follow-up visit that had received sterilization, LARC, or injectable contraception at the time of hospital discharge were recorded as using that method of contraception at the end of the 90-day period, because the method efficacy continues through 90 days. Patients were excluded who did not attend a postpartum visit without documentation of sterilization, LARC, or injectable contraception at hospital discharge from the 90-day analysis.

Statistical Analysis. Baseline characteristics were summarized for all women included in our study using descriptive statistics. The proportion of women who returned for a follow-up visit within 90 days were calculated. The median time to follow-up was recorded in days. The relative risk of attending follow-up was calculated for those who had HEM documented at discharge compared to those who did not. While providers at UKH typically recommended a postpartum visit at six weeks, the follow-up window was expanded to 90 days, reflecting previous studies on postpartum contraception.[5,9] To evaluate contraceptive initiation in the hospital, the type of contraception documented for all women before hospital discharge was recorded. To evaluate contraception use by 90 days, the type of contraception for women who attended a follow-up visit or had documentation of HEM or injectable contraception at discharge was recorded.

To assess characteristics associated with HEM use, the type of contraception used was reduced into HEM versus other for both hospital discharge and 90-day follow-up data. Binary logistic regression was performed with the following factors: maternal age, race, marital status, insurance type, gravidity, a short interpregnancy interval (defined as a conception within 18 months of delivery), timing of prenatal care, high risk pregnancy, hospital admitting service, delivery method, whether the patient had a follow-up appointment scheduled at discharge, and method of contraception at time of discharge. Any factors significant at the $\alpha = 0.05$ level in the bivariate analysis were added to a multivariable model.

For all statistical analysis a p value less 0.05 was considered significant. All statistical analysis was performed with SAS software version 9.4 (SAS Institute, Inc., Cary, NC).[19]

RESULTS

The HERON discovery tool identified 407 women who delivered at UKH during our study time frame. A random sample of 299 charts were reviewed. Sixty-eight patients were excluded due to documentation of planned follow-up outside the UKH. The remaining 231 patients were included in the final analysis at hospital discharge (Figure 1). Most women spoke English (85%), delivered vaginally (75%), and had private insurance (58%; Table 1).

Postpartum Visit Attendance. Approximately 26% (n = 60/231) of women did not attend a postpartum visit within 90 days. Twenty-nine women who received HEM did not return for follow-up. These women were considered to have HEM at follow-up, with the exception of one woman who had documentation of an IUD expulsion. Thus, contraception data were available for 200 women at follow-up (Figure 1). The median time to follow-up was 42 days (range 5 - 88).

Contraceptive Method Use. Before hospital discharge, 51% (118/231) of women had initiated a contraceptive method and 83% (166/200) had initiated a contraceptive method by 90 days postpartum (Table 2). Before hospital discharge, 28% (65/231) obtained a HEM and 41% (82/200) of patients obtained a HEM of contraception by 90 days postpartum (Table 2). Women chose sterilization most often at time of hospital discharge, while IUDs had the highest frequency of initiation by the postpartum visit (27/231, 12% and 32/200, 16%, respectively).

Women who received HEM before discharge attended a follow-up visit less frequently than women who did not receive HEM (36/65, 55% vs. 135/166, 81%, respectively; RR 0.68, 95% CI: 0.54-0.86). By 90 days, 56 women switched from no method to another method (Figure 2). The most common switch for women who were using a method at discharge was a switch from the progestin-only pill to the combined pill (n = 7). One woman experienced an IUD expulsion and she had another IUD inserted at her six-week postpartum appointment.

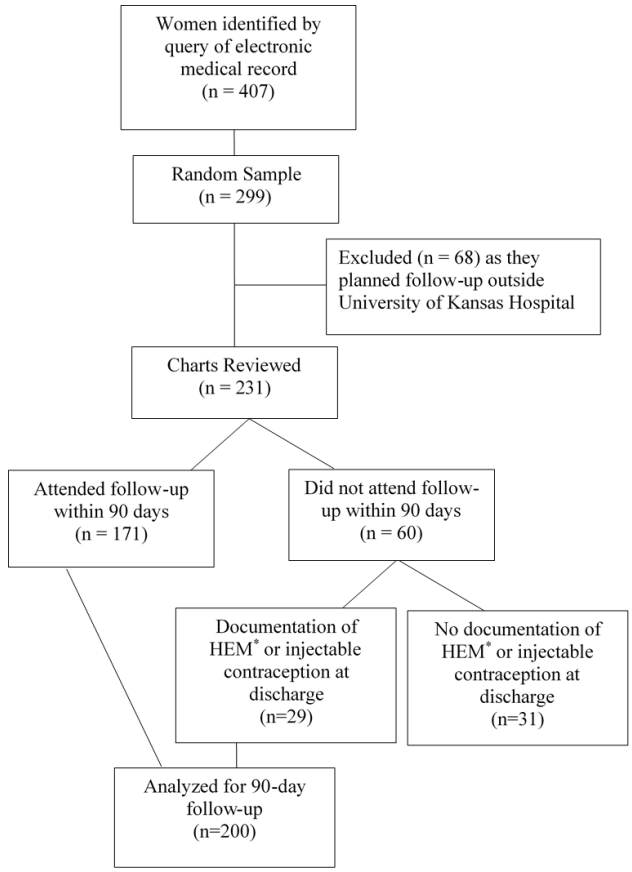

Figure 1. Flow diagram.
*HEM, Highly Effective Method, includes sterilization, intrauterine devices and contraceptive implants.

Factors Associated with Contraceptive Method Initiation. In bivariate analysis, race, language spoken at home, marital status, type of insurance, first pregnancy, having prenatal care before 14 weeks, and having a high-risk pregnancy were found to be significantly associated with use of a HEM at hospital discharge. After adjustment in the multivariable model, only marital status remained a significant predictor of HEM use. Women who were married were less likely to use HEM compared to their non-married counterparts (OR 0.49, 95%; CI 0.24-0.99, p = 0.48; Table 3).

The bivariate analysis for use of HEM by 90 days identified associations between language spoken at home, marital status, first pregnancy, and HEM use. In the multivariable adjusted model, marital status and first pregnancy remained predictors of HEM use by 90 days (Table 4). Women who were married were less likely to have HEM documented by 90 days (OR 0.50; 95% CI 0.28-0.91; p = 0.02) and women for whom this was their first pregnancy were less likely to have HEM documented (OR 0.44; 95% CI 0.23-0.86; p = 0.02).

Table 1. Baseline characteristics (n = 231).

Characteristic	Frequency (%)
Age, years, mean (SD)	29.7 (5.75)
Race/Ethnicity	
White	110 (47.6)
Black	49 (21.2)
Hispanic/Latina	44 (19.0)
Asian	12 (5.2)
Other*	16 (6.9)
Language spoken at home	
English	197 (85.3)
Non-English	34 (14.7)
Relationship status	
Married	119 (51.5)
Non-married	112 (48.5)
Insurance type	
Private	134 (58.0)
Public	76 (32.9)
Uninsured	21 (9.1)
Gravidity, median (IQR)	2 (1-4)
Parity, median (IQR)	2 (1-3)
First pregnancy	
Yes	75 (32.5)
No	156 (67.5)
Short interpregnancy interval†	
Yes	28 (12.1)
No	203 (87.9)
Prenatal care before 14 weeks	
Yes	160 (69.3)
No	71 (30.7)
High risk pregnancy care‡	
Yes	69 (29.9)
No	162 (70.1)
Admitting service	
Obstetrics	215 (93.1)
Family Medicine	16 (6.9)
Delivery type	
Vaginal	174 (75.3)
Cesarean	57 (24.7)

Data are frequency (%) unless otherwise specified. SD, standard deviation; IQR, interquartile range.
*Includes American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, or multiple races/ethnicities. †Conception ≤ 18 months postpartum. ‡Defined by multiple appointments beyond one consultation visit.

Table 2. Frequency of postpartum contraceptive methods used at hospital discharge and at 90 days postpartum.*

Contraceptive method	At hospital discharge		By 90 days postpartum†	
	n = 231		n = 200	
Highly effective methods ‡				
Sterilization (self or partner)	27	11.7	31	15.5
Intrauterine device	24	10.4	32	16.0
Etonogestrel implant	14	6.1	19	9.5
Total	65	28.1	82	41.0
Moderately effective methods				
Injectable contraception ‡	12	5.2	20	10.0
Progestin-only pill	22	9.5	23	11.5
Combined estrogen/progestin pill	0	0.0	14	7.0
Combined estrogen/progestin ring	0	0.0	1	0.5
Combined estrogen/progestin patch	0	0.0	0	0.0
Total	34	14.7	58	29.0
Least effective methods				
Condoms	14	6.1	15	7.5
Natural family planning	4	1.7	9	4.5
Lactational amenorrhea	1	0.4	2	1.0
Total	19	8.2	26	13.0
Any method of contraception	118	51.1	166	83.0
No method	113¥	48.9	34	17.0

*Data are n (%), total %s may not add to 100 due to rounding.
†31 patients were lost to follow-up and had no documentation of a HEM or injectable contraception at discharge. ‡Subjects who received a highly effective method of contraceptive or injectable contraception acetate at the time of hospital discharge were presumed to be using this interventional method at 90-days follow-up, unless an alternate contraceptive method was documented. ¥5 subjects missing contraceptive method documentation were documented as no method.

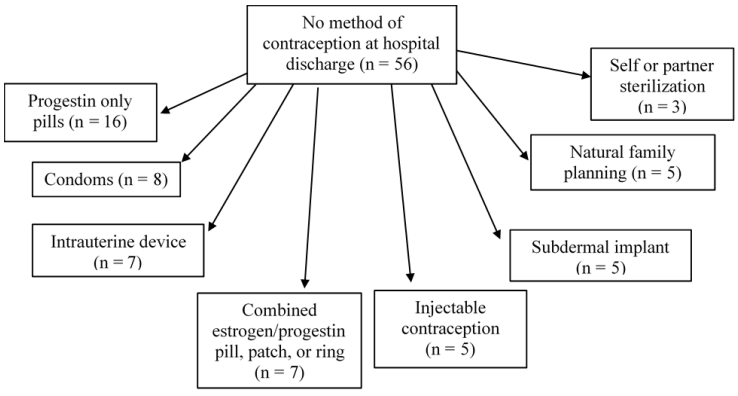

Figure 2. Women who switched from no method of contraception at hospital discharge to a method of contraception by 90 days postpartum (n = 56).

DISCUSSION

In our random sample of women delivering at a large, academic medical center, almost two-thirds of women had initiated a HEM or MEM of contraception by 90 days postpartum and almost three-quarters attended a follow-up visit. These findings are consistent with previous estimates of postpartum HEM and MEM contraceptive use and postpartum visit attendance.[2,5,20-22]

The high rates of HEM among our population may be due to a 2018 state policy change impacting immediate postpartum LARC reimbursement, resulting in increased access. Previous studies have explored how global fees and bundled payments limit access to postpartum contraception, particularly LARC.[23,24] By increasing access to these methods before hospital discharge, the concern for women not obtaining LARCs due to loss of follow-up may be mitigated. This theory is supported by our finding that nearly 45% of women who received a HEM or injectable contraception did not attend a postpartum follow-up appointment. High rates of HEM use may be explained by our study environment: an academic teaching center with 24-hour anesthesia access and LARCs available on inpatient formulary. Notably, women without insurance can obtain both LARC and sterilization at our hospital, which may explain the bivariate finding that uninsured women-initiated HEMs of contraception at hospital discharge more than those with private insurance.

Women who receive more prenatal care, as well as in women who received LARC-intensive or specialized family planning counseling, have higher rates of postpartum contraception initiation.[25-27] Prenatal and postpartum contraception counseling appears to be a consistent predictor in postpartum contraception use.[8,28,29] Prenatal care is also a positive predictor for postpartum follow-up. Women with less prenatal care or who begin prenatal visits later than 14 weeks gestation have a lower rate of postpartum follow-up.[26] Public insurance status does not influence ability to obtain LARCs in the outpatient setting, but publicly-insured women miss follow-up appointments more frequently, independent of social support level.[26]

Our rates of postpartum follow-up were consistent with those previously reported.[21,30] At UKH, women are counseled routinely about contraception antenatally and again at the time of hospital admission. Those who express interest in LARC are given the option to initiate the method immediately postpartum or to wait until a postpartum follow-up appointment. Women choosing an immediate postpartum LARC may have self-identified as at risk for a missed postpartum follow-up appointment.

Strengths of this study included a diverse population and rigorous assessment of contraceptive method use. The study population had a mix of privately-, publicly-, and uninsured women, comparable to the rates of public insurance coverage for births in Kansas.[31] Our patients had high follow-up postpartum visit attendance rates, allowing for more complete chart review and limited missing data points. Finally, multivariable analysis strengthened the HEM associations.

Our study had limitations. Our findings represented one institution, therefore, may not be generalizable to other clinical settings. Our inclusion criteria could bias our postpartum visit attendance results, since we excluded patients scheduled for care outside of UKH. Women with planned follow-up outside of UKH were all publicly insured

or uninsured and accessed postpartum care at safety net clinics around the city; we could not assess their contraceptive use or follow-up rate.

Our findings demonstrated high rates of contraception by 90 days postpartum in a setting with available immediate postpartum LARC. Ensuring comprehensive access to all methods of contraception meets women's needs during the postpartum period.

Table 3. Characteristics associated with highly effective methods (HEM)* of contraception at hospital discharge (n = 231).

Characteristic	HEM (n = 65) n (%)	Other method (n = 166) n (%)	Unadjusted OR (95% CI)	p	Adjusted OR (95% CI)	p
Maternal age†	29.4 (6.01)	29.9 (5.66)	0.99 (0.94 - 1.04)	0.63		
Race						
White	22 (20.0)	88 (80.0)	0.45 (0.25 - 0.82)	<0.01	0.94 (0.45 - 1.95)	0.87
Other (ref)	43 (35.5)	78 (64.5)				
Language						
English	48 (24.4)	149 (75.6)	0.32 (0.15 - 0.68)	<0.01	0.53 (0.19 - 1.46)	0.22
Non-English (ref)	17 (50.0)	17 (50.0)				
Marital status						
Married	22 (18.5)	97 (81.5)	0.36 (0.20 - 0.66)	<0.01	0.49 (0.24 - 0.99)	0.048
Other (ref)	43 (38.4)	69 (61.6)				
Insurance						
Private	22 (16.4)	112 (83.6)	0.22 (0.08 - 0.57)	<0.01	0.68 (0.17 - 2.70)	0.58
Public	33 (43.4)	43 (56.6)	0.84 (0.32 - 2.23)	0.73	1.48 (0.48 - 4.57)	0.50
None (ref)	10 (47.6)	11 (52.4)				
First pregnancy						
Yes	11 (14.7)	64 (85.3)	0.33 (0.16 - 0.67)	<0.01	0.49 (0.23 - 1.07)	0.07
No (ref)	27 (38.0)	44 (62.0)				
Short interpregnancy interval‡						
Yes	10 (35.7)	18 (64.3)	1.50 (0.65 - 3.44)	0.34		
No (ref)	55 (27.1)	148 (72.9)				
Prenatal care before 14 weeks						
Yes	38 (23.8)	122 (76.3)	0.51 (0.28 - 0.93)	0.03	1.00 (0.48 - 2.10)	0.99
No (ref)	27 (38.0)	44 (62.0)				
High risk pregnancy care§						
Yes	26 (37.7)	43 (62.3)	1.91 (1.04 - 3.50)	0.04	1.61 (0.83 - 3.12)	0.16
No (ref)	39 (24.1)	123 (75.9)				
Admitting service						
Obstetrics	63 (29.3)	152 (70.7)	2.90 (0.64 - 13.14)	0.17		
Family Medicine (ref)	2 (12.5)	14 (87.5)				
Delivery mode						
Cesarean	19 (33.3)	38 (66.7)	1.39 (0.73 - 2.65)	0.32		
Vaginal (ref)	46 (26.4)	128 (73.6)				

All characteristics with a p value < 0.05 were included in the multivariable analysis for the adjusted model.
*HEM includes sterilization, intrauterine devices and contraceptive implants. †Mean (SD); odds of HEM per 1-year increase in age. ‡Conception ≤ 18 months postpartum.
§Defined as multiple appointments beyond one consultation visit.

Table 4. Characteristics associated with highly effective methods (HEM)* of contraception by 90 days postpartum (n = 200).

Characteristic	HEM (n = 82) n (%)	Other method (n = 118) n (%)	Unadjusted OR (95% CI)	p	Adjusted OR (95% CI)	p
Maternal age†	29.5 (5.81)	30.3 (5.42)	0.97 (0.93 - 1.03)	0.31		
Race						
White	33 (35.1)	61 (64.9)	0.63 (0.36 - 1.11)	0.11		
Other (ref)	49 (46.2)	57 (53.8)				
Language						
English	64 (37.9)	105 (62.1)	0.44 (0.20 - 0.96)	0.04	0.56 (0.25 - 1.25)	0.16
Non-English (ref)	18 (58.1)	13 (41.9)				
Marital status						
Married	34 (32.4)	71 (67.6)	0.47 (0.26 - 0.83)	<0.01	0.50 (0.28 - 0.91)	0.02
Other (ref)	48 (50.5)	47 (49.5)				
Insurance						
Private	35 (29.7)	83 (70.3)	0.38 (0.14 - 1.02)	0.05		
Public	37 (58.7)	26 (41.3)	1.28 (0.46 - 3.59)	0.64		
None (ref)	10 (52.6)	9 (47.4)				
First pregnancy						
Yes	17 (26.2)	48 (73.9)	0.38 (0.20 - 0.73)	<0.01	0.44 (0.23 - 0.86)	0.02
No (ref)	65 (48.2)	70 (51.9)				
Short interpregnancy interval‡						
Yes	14 (58.3)	10 (41.7)	2.22 (0.94 - 5.29)	0.07		
No (ref)	68 (38.6)	108 (61.4)				
Prenatal care before 14 weeks						
Yes	53 (37.3)	89 (62.7)	0.60 (0.32 - 1.10)	0.10		
No (ref)	29 (50.0)	29 (50.0)				
High risk pregnancy care§						
Yes	28 (49.1)	29 (50.9)	1.60 (0.86 - 2.96)	0.14		
No (ref)	54 (37.8)	89 (62.2)				
Admitting service						
Obstetrics	75 (39.9)	113 (60.1)	0.47 (0.15 - 1.55)	0.22		
Family Medicine (ref)	7 (58.3)	5 (41.7)				
Delivery mode						
Cesarean	25 (47.2)	28 (52.8)	1.41 (0.75 - 2.66)	0.29		
Vaginal (ref)	57 (38.8)	90 (61.2)				

All characteristics with a p value < 0.05 were included in the multivariable analysis for the adjusted model.
*HEM includes sterilization, intrauterine devices and contraceptive implants. †Mean (SD); odds of HEM per 1-year increase in age. ‡Conception ≤ 18 months postpartum.
§ Defined as multiple appointments beyond one consultation visit.

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