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Title: Is Postpartum Contraception Predicted by Methods Used before Pregnancy? A Longitudinal Exploration of Women's Postpartum Contraceptive Practices in Kenya

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SHORT ABSTRACT: Research on postpartum contraception in low-resource contexts is limited and relies heavily on cross-sectional data. This analysis examines the relationship between contraceptive methods used pre-pregnancy and immediately postpartum. In-person interviews were conducted in 2017-2018 with 866 women receiving antenatal and delivery care in Kenya. Multilevel mixed-effects logistic regression models will estimate associations among three measures of pre-pregnancy contraception (ever use; last method used; timing) and two outcomes of immediate postpartum contraception (any use; method used), adjusting for covariates. Bivariate analyses demonstrated that more *ever users* adopted immediate postpartum methods compared to *never users* (17% vs. 13%, respectively); however, most women did not adopt a method, regardless of their pre-pregnancy method effectiveness. When counseled on methods, a similar proportion of *ever users* and *never users* adopted contraception (43% and 41%, respectively). Interventions to reduce unmet need through postpartum contraception must consider women's pre-pregnancy contraceptive experiences and factor this into client-centered counseling.

EXTENDED ABSTRACT

Background

While contraception is relevant at any time throughout a woman's life, it is particularly salient in the postpartum period. Closely spaced pregnancies impose serious health risks for women and children, especially in low-resource contexts where access to care is limited. Birth-to-pregnancy intervals (BTPIs) shorter than two years increase women's risk of adverse maternal health outcomes, such as hemorrhage, sepsis, and maternal death, and heighten risk of low birthweight, preterm birth, and neonatal death.[1–9] The highest risk of these poor health outcomes is associated with BTPIs shorter than six months, making access to immediate postpartum contraception essential to protecting women's and children's health. Moreover, when asked about future pregnancy intentions, most postpartum women indicate wanting to delay pregnancy for two years after birth.[10,11] In Kenya, a recent study found that, among women in the 8 to 10 month postpartum period, 94% reported no desire for children within the next two years.[12]

In sub-Saharan Africa, unmet need for postpartum contraception is high, ranging from 36-65%, with many women resuming sexual activity between 2-6 months after birth.[13–15] Although breastfeeding is common during this time, few women exclusively breastfeed through six months postpartum.[26] Frequently, no other contraceptive methods are used during this period, thereby leaving women unprotected against pregnancy. Given women's motivation to prevent pregnancy in the months following a birth, the antenatal and immediate postpartum periods when they are accessing care are opportune times for contraceptive education, counseling, and services. The examination of postpartum contraceptive dynamics requires a longitudinal approach to assess how women's experiences with contraception may shape their future contraceptive behaviors, especially after a birth. Accounting for women's prior contraceptive experiences may also shed light on individual and facility predictors of contraceptive uptake immediately postpartum.

Objective

This study aims to examine the relationship between pre-pregnancy and immediate postpartum contraceptive use using longitudinal, quantitative data collected from women receiving antenatal and delivery care in Post-Pregnancy Family Planning (PPFP) Choices Study facilities throughout Kilifi and Meru counties in Kenya.

Methods

This analysis uses data from the *PPFP Choices Study*, a quasi-experimental longitudinal study implemented by Jhpiego in 22 facilities across two counties in Kenya. *PPFP Choices* aims to evaluate the impact of a multifaceted facility-based intervention on postpartum contraceptive counseling and services provided to pregnant and postpartum women in facilities participating as part of the intervention or control county. Women were eligible for study participation if they had a gestational age $\geq$28 weeks and had received antenatal care (ANC) at one of the 22 study facilities. Women who provided informed consent were enrolled in the study following ANC and were subsequently interviewed after antenatal care (ANC) and labor and delivery (L&D), and at six months postpartum. Trained research assistants implemented face-to-face interviews in local language. All data were collected in REDCap; analyses were conducted in Stata 15. Study instruments and procedures were approved by the Institutional Review Board at Johns Hopkins University Bloomberg School of Public Health and Kenya Medical Research Institute (KEMRI).

To date, a total of 3,678 and 866 women have completed ANC and L&D interviews, respectively. While data collection is ongoing, this analysis included the 866 women who completed both interviews. Attrition analyses based on completed gestational age >42 weeks revealed that women completing both interviews are comparable to those lost to follow-up; further examination of this attrition is being investigated.

The key predictor, pre-pregnancy contraception, was defined in three ways: *ever use* (Yes/No); *last method type used* (five categories): very effective methods (implants, IUDs, tubal ligation); effective methods (injectables, pills, emergency contraception); less effective methods (condoms, traditional methods); and nonuse; and *timing of last method used* (Never; Past, >12 months prior to pregnancy; Recent, within 12 months of pregnancy). The key outcome; immediate postpartum contraception (≤48 hours of delivery), was measured in two ways: *any use* (Yes/No) defined as if a woman received a method before being discharged from the facility; and *method type used* (same five categories as *last method type used*). Sensitivity analyses reclassified women who were *referred* for methods as *users* to assess nuances in these measures. Descriptive statistics identified sociodemographic characteristics of the analytic sample and distributions of key predictors and outcomes.

Forthcoming Analyses: Multilevel mixed effect logistic regression models are being developed to estimate the relationship between pre-pregnancy contraception and immediate postpartum contraception. A random intercept for facility will be included in all models to account for clustering of women within facilities. Covariates at the *individual* (age, education, employment, gravidity), *partner* (marital status, employment, cohabitation, support at ANC), *service-delivery* (provider type at ANC and L&D, counseling on contraceptive methods), and *facility* (private/public status, delivery volume, new ANC volume, facility level, county) levels will be included and examined in all models.

Preliminary Results

The characteristics of women in this analysis are presented in Table 1. The mean age was 25, ranging from 15-42. About one-third of women completed secondary education or higher, and an equal proportion were employed. The majority of women were married or in union (83%), and the mean number of children ranged from 2.57 in Kilifi to 1.82 in Meru. While fewer women in Kilifi than Meru had ever used contraception (56 vs. 63%, respectively), the proportion of women who reported the current pregnancy was unintended was comparable (40% vs. 42%, respectively). Following delivery, the majority of women (72%) did not receive a method or referral for a method before leaving the facility. Overall, 15% of women adopted immediate postpartum contraception; 12% of women received referrals or were asked to return to the facility for methods.

More women who had ever used contraception before pregnancy received immediate postpartum contraception, as compared to those who had never used (17% and 13%, respectively). Results by effectiveness of pre-pregnancy and immediate postpartum methods demonstrated that while most women did not adopt a method immediately postpartum, types of use and referrals varied by pre-pregnancy methods. Reclassifying method referrals as users found a similar number of *ever users* and *never users* received or were referred for methods immediately postpartum (27% and 28%, respectively). When counseled on methods, a similar proportion of *ever users* and *never users* adopted immediate postpartum contraception (43% and 41%, respectively; Table 2).

Preliminary Implications

These results indicate that although a woman's pre-pregnancy contraceptive use status is associated with immediate postpartum contraceptive use, other factors, such as contraceptive counseling play an important role in this relationship. Beyond these descriptive findings, forthcoming analyses with multilevel mixed-effects models will estimate the association between contraceptive use pre-pregnancy and immediately postpartum, as well as assess the influence of other factors on this relationship. To date, studies on postpartum contraception have focused on measuring the prevalence and correlates of use at various times throughout the postpartum period; however, these results underscore the value of exploring the dynamics of contraceptive use, particularly immediately postpartum, and various outcomes related to women's experiences.

Table 1. Percent distribution of sample composition characteristics by county

	N (%)		
Characteristic	Total (n=866)	Kilifi (n=570)	Meru (n=296)
Age			
15-19	168 (19.40)	89 (15.61)	79 (26.69)
20-24	295 (34.06)	203 (35.61)	92 (31.08)
25-34	343 (39.61)	238 (41.75)	105 (35.47)
35-49	60 (6.93)	40 (7.02)	20 (6.76)
continuous (mean(SD))	(24.9(5.73))	(25.17(5.59))	(24.43(5.98))
Schooling level			
None	123 (14.22)	109 (19.12)	14 (4.73)
Primary	466 (53.87)	284 (49.82)	182 (61.49)
Secondary	174 (20.12)	104 (18.25)	70 (23.65)
Post-secondary	102 (11.79)	73 (12.81)	29 (9.80)
Marital status			
Not in union	80 (9.25)	48 (8.42)	32 (10.81)
Currently married	719 (83.12)	481 (84.39)	238 (80.41)
Currently in partnership, not married	66 (7.63)	41 (7.19)	25 (8.45)
Number of pregnancies in lifetime			
1-2	538 (62.27)	351 (61.58)	187 (63.18)
3-4	216 (25.00)	126 (22.11)	90 (30.41)
5 or more	109 (12.62)	93 (16.32)	18 (6.08)
continuous (mean(SD))	(2.57(1.91))	(2.75(2.16))	(2.22(1.25))
Number of living children			
0	326 (37.64)	217 (38.07)	109 (36.82)
1-2	374 (43.19)	225 (39.47)	149 (50.34)
3-4	108 (12.47)	75 (13.16)	33 (11.15)
5 or more	58 (6.70)	53 (9.30)	5 (1.69)
continuous (mean(SD))	(2.32(4.41))	(2.57(5.34))	(1.82(1.08))
Current pregnancy intention			
Now or earlier	501 (57.99)	332 (58.52)	169 (57.48)
Later or not at all	353 (40.86)	229 (40.18)	124 (42.18)
Unsure	10 (1.16)	9 (1.58)	1 (0.34)

Table 2. Percent distribution of immediate postpartum contraception by pre-pregnancy contraceptive use effectiveness

	Last method used before pregnancy by effectiveness, N (%)				
	Never used a method (n=355)	Less effective (n=39)	Effective (n=373)	Very effective (n=85)	Unsure/ Missing (n=14)
Immediate postpartum method adopted by effectiveness					
No method adopted	255 (71.83)	34 (87.18)	260 (69.71)	66 (77.65)	11 (78.57)
Less effective	16 (4.51)	2 (5.13)	12 (3.22)	6 (7.06)	1 (7.14)
Effective	4 (1.13)	-	5 (1.34)	-	-
Very effective	27 (7.61)	1 (2.56)	53 (14.21)	6 (7.06)	1 (7.14)
Referred for a method	53 (14.93)	2 (5.13)	43 (11.53)	7 (8.24)	1 (7.14)

Note: Less effective=condoms, traditional methods; Effective=injectables, pills, EC; Very effective=IUDs, implants, tubal ligation

Table 3. Percent distribution of immediate postpartum use and referrals by pre-pregnancy contraceptive use and family planning (FP) counseling status

	Ever used contraception before pregnancy, N (%)			
	Yes (n=507)		No (n=355)	
	Counseled on FP (n=162)	Not counseled (n=343)	Counseled on FP (n=93)	Not counseled (n=260)
Received method immediately postpartum				
Yes	69 (42.59)	17 (4.96)	38 (40.86)	8 (3.08)
No	93 (57.41)	326 (95.04)	55 (59.14)	252 (96.92)

Note: Counseled on FP indicates that the woman reported receiving counseling from the provider on any FP method. Method-specific counseling to be explored in further analyses.

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