

Postpartum contraception initiation, discontinuation, and method switch in Western Kenya

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A thesis
submitted in partial fulfillment of the
requirements for the degree of

Master of Public Health

University of Washington
2017

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Program Authorized to Offer Degree:
Global Health

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Abstract

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Objective: The objective of this study is to prospectively measure contraceptive use throughout the postpartum period among Kenyan women and characterize trends in postpartum contraceptive initiation, discontinuation, and method switch.

Design: Prospective cohort study

Methods: We conducted an analysis of postpartum contraceptive use among a cohort of women enrolled in a study aimed to measure maternal HIV acquisition during and after pregnancy in western Kenya. Women were enrolled in the parent study during antenatal care (ANC) and were eligible for this analysis if they remained HIV-seronegative throughout pregnancy and through 9 months postpartum and had at least one postpartum study visit. At study visits (scheduled at 2, 6, 10, 14 weeks; 6 and 9 months postpartum), women completed questionnaires to assess maternal health, sexual behavior, and contraceptive use (postpartum only). Contraceptive use was categorized as modern contraception (all methods of contraception excluding natural methods), highly effective contraception (all modern contraceptive methods excluding barrier methods), and long acting reversible contraception (LARC; intrauterine devices (IUD) and implants). Generalized

linear models and Cox proportional hazards regression models were used to identify cofactors associated with contraceptive use during the postpartum period and time to contraceptive initiation and discontinuation, respectively.

Results: Overall, 1257 postpartum women were included in the analysis. Median age was 22 years, 78% were married, median relationship duration was 4 years, and 68% of women were multiparous. Overall, 739 women (59%) used modern contraception, 623 (50%) used highly effective contraception, and 116 (9%) used LARC during the postpartum period. Injectable contraceptives, condoms, and OCPs were the most common methods used (45%, 22%, and 21% of contraceptive users, respectively). Among 739 women who initiated contraception, 8% discontinued use and 16% switched to a different method in the postpartum period. During 6095 person-months of follow-up, the incidence of initiation of modern contraception was 11.7/100 person-months (95% confidence interval [CI]: 10.9-12.6). Women who had resumed sexual activity, higher education, and a history of interpersonal violence were more likely to use contraception; women who had experienced pregnancy loss were less likely to use modern contraception postpartum compared to women with live births in the most recent pregnancy (HR, 95% CI). The modern contraceptive discontinuation rate was 0.63 per 100 person-months (95% CI 0.49-0.81) and discontinuation was associated with being employed and cessation of breastfeeding.

Conclusion: While uptake of modern contraceptives was high among postpartum Kenyan women, discontinuation rates and method switching were common. Further research is needed to understand reasons for method discontinuation, to guide improved counseling messages.

Table of Contents

Introduction	1
Methods	2
Study design, population, and procedures	2
Contraceptive use definitions	3
Statistical analysis	3
Results	4
Postpartum contraceptive use	4
Postpartum contraceptive initiation	4
Postpartum contraceptive use	4
Discontinuation and method switch	5
Cofactors for postpartum contraceptive use	5
Cofactors for postpartum modern contraceptive discontinuation	6
Trends in postpartum contraceptive use	7
Time to initiation	7
Time to discontinuation	7
Discussion	8
Tables and Figures	11
References	32

Introduction

Postpartum contraception is a crucial strategy to reduce unintended pregnancies and improve maternal and child health (MCH) outcomes, including those associated with short inter-pregnancy intervals.¹⁻⁴ Pregnancies conceived less than 20 months following a prior birth put infants at risk for prematurity, low birth weight, fetal death and early neonatal death for the infant, and mothers at risk for uterine rupture and uteroplacental bleeding disorders.^{2,3} However, postpartum women in low- and middle-income countries (LMIC) unfortunately have a higher unmet need for family planning than the general population of women of reproductive age.⁵ Thus, postpartum women have a heightened risk of unintended pregnancy and poor MCH outcomes and need better approaches to increase contraceptive use.⁶

In previous studies conducted in LMIC, contraceptive use among women has been associated with urban settings, higher education, achievement of desired family size, no immediate desire for children, use of MCH services, and number of children.⁷⁻¹² However, determining fertility risk and motivation to use contraception among postpartum women is complicated by breastfeeding practices and beliefs about return of menses as a marker for resumption of fertility.¹³ These challenges make it difficult for postpartum women to determine the optimal time to initiate contraception and select appropriate methods that are compatible with breastfeeding.^{9,12-14} A review of DHS data from 19 countries revealed that over half of postpartum contraceptive users initiated contraception after they had resumed sexual activity and menses, and were at risk of unintended pregnancy.⁸

Dissatisfaction with method choice and subsequent method continuation are common. Among postpartum contraceptive users in LMIC, between 51-96% rely on short-acting methods and nearly one-third of postpartum contraceptive users are estimated to discontinue use within 12 months.⁶ Additionally, method switch in the three months following reported cessation of use of a contraceptive method was lower in Sub-Saharan Africa than in other LMIC, indicating that women in this region may be at heightened risk of unintended pregnancy due to these gaps in

postpartum contraceptive use.^{8,15,16} In Kenya, nearly 50% of postpartum contraceptive users in urban slums of Nairobi stopped using a modern contraceptive method within 12 months of postpartum initiation, commonly switching to another short-term method with high method-related dissatisfaction.¹⁷

While many studies have characterized contraceptive uptake during the postpartum period in LMIC, changes in contraceptive behaviors throughout the postpartum period have not been well characterized.¹⁷⁻²⁰ We prospectively measured contraceptive use throughout the postpartum period and assessed cofactors for contraceptive initiation, discontinuation, and method switch among postpartum Kenyan women.

Methods

Study design, population, and procedures

Between May 2011 and June 2013, HIV-seronegative pregnant women presenting for antenatal care (ANC) at the Ahero sub-District and Bondo District Hospitals in rural western Kenya were enrolled in a prospective cohort study to identify risk factors for maternal HIV acquisition during and after pregnancy, as previously described.²¹ Women were eligible to participate in the study if they were at ≥ 14 years of age, pregnant, had a documented HIV negative rapid test at enrolment or within the 3 months prior to enrolment, planned to remain in the area until 9 months postpartum, were willing to provide locator information and have a home visit, and were not participating in other research studies. Follow-up visits were scheduled during pregnancy (at 20, 24, 32, 36 weeks gestation) and during the postpartum period (at 2, 6, 10, 14 weeks; 6 and 9 months). At study visits, women completed questionnaires to assess maternal health, sexual behavior, and contraceptive use (postpartum period only). All study procedures were approved by the Kenyatta National Hospital/University of Nairobi Ethical Research Committee and the University of Washington Institutional Review Board prior to study initiation. Women were eligible for inclusion in this analysis if they remained HIV-seronegative throughout the duration of follow up and had at least one postpartum study visit.

Contraceptive use definitions

Women were classified as using any contraception if they were sterilized or used intrauterine devices (IUD), implants, oral contraceptive pills (OCPs), injectable contraceptives, condoms, diaphragms, or natural methods. Modern contraceptive methods included all methods of contraception excluding natural methods and lactational amenorrhea (LAM).²² Highly effective contraceptive use was defined as all modern contraceptive methods excluding barrier methods (condoms and diaphragms), and long-acting, reversible contraception (LARC) included IUDs and implants. Dual contraceptive use was defined as using condoms plus a highly effective contraceptive method. Male sterilization was not reported by any women and our study and was omitted from all contraceptive definitions. Women were classified as meeting LAM criteria if they were currently breastfeeding, had not resumed menses, had not introduced complimentary foods, and were < 6 months postpartum.²³

Contraceptive method switch was defined as use of a modern contraceptive method that differed from the method women reported initiating during the postpartum period; contraceptive discontinuation was defined as reported contraceptive cessation of a modern contraceptive method, excluding method switches, in a subsequent study visit following initiation.

Statistical analysis

Generalized linear models (GLM) with Poisson distributions and log-link functions were constructed to identify cofactors associated with modern contraceptive use in the postpartum period; separate GLM models were also constructed for injectable contraception, and LARC. In addition, we developed a GLM model to identify cofactors for ever discontinuing modern contraception. Timing of modern contraceptive initiation was recoded as the midpoint between the last study visit when contraceptive use was not reported and the study visit when contraceptive use was first reported; a similar approach was used to define the timing of method discontinuation. Cox proportional hazards regression models were used to identify cofactors associated with time to modern contraceptive initiation and discontinuation in separate models.

Variables with $p < 0.1$ were combined in the multivariate model and removed if at $p > .05$ for the final multivariate models. Age was included in all models as an *a priori* cofactor and retained in all models regardless of significance testing.

Results

Among the 1257 women included in the analysis, the median age was 22 years (IQR 19-27) and duration of education was 8 years (IQR 7-10) (Table 1). Median age at sexual debut was 16 years (IQR 15-18), and number of lifetime sexual partners was 2 (IQR 1-3), and 68% of women were multiparous. Most (78%) women were married, with a median relationship duration of 4 years (IQR 1-8) and median difference in partner's age of 5 years older (IQR 3-8). Almost half (44%) of all women were employed. A small proportion of women experienced interpersonal violence in the past year (3%), stillbirth of current pregnancy (1%), or peripartum death (<1%).

Postpartum contraceptive use

Postpartum contraceptive initiation

During the 9-months of postpartum follow-up, a total of 746 (59%) initiated any form of contraception, 739 (59%) initiated modern contraception, 575 (46%) initiated highly effective contraception and 77 (6%) initiated LARC (Figure 2). Among all contraceptive users, injectable contraceptives (45%) were the most common method initiated, followed by condoms (22%), OCPs (21%), and implants (10%) (Figure 3). Female sterilization, IUDs, and natural methods were uncommonly used as the first method initiated in the postpartum period (all <1%, each).

Postpartum contraceptive use

Modern contraceptive prevalence rates (mCPRs) increased steadily throughout the postpartum period from 1% at 2 weeks to 55% at 9 months postpartum (Figure 4). Among all women, the proportion of women using injectable contraceptives, implants, dual contraception, and IUDs increased throughout the postpartum period, while the proportion of women using OCPs and condoms decreased (Figure 4). Additionally, at the 9-month postpartum visit, the proportion of

women who ever used highly effective contraception (50%) and LARC (9%) postpartum was higher than the proportion of women who initiated these classes of contraception, due to method switches.

Over half (62%) of all women met criteria for LAM at 1 or more postpartum study visits. The proportion of women who met LAM criteria was similar at 2 and 6 weeks postpartum (51% and 49%, respectively) but declined to 38% by 10 weeks and 19% by 6 months.

Discontinuation and method switch

Nearly one-quarter (24%) of the 739 women who initiated a modern contraceptive method postpartum stopped using the method initiated by nine months postpartum (Figure 5); 8% discontinued use and 16% switched to a new method. The methods most commonly discontinued were condoms (44%), injectable contraceptives (26%), and OCPs (26%).

Injectable contraceptives, IUDs, and implants were more commonly switched to than switched from, while condoms and OCPs were switched from more often than switched to (Figure 6). The most common combinations of methods switched from and switched to were OCPs to injectable contraceptives (29%), condoms to injectable contraceptives (21%), injectable contraceptives to implants (16%), and condoms to implants (7%). Nearly half (49%) of all method switches from OCPs to injectable contraceptives occurred at the 9-month visit and 35% occurred at the 6-month visit.

Cofactors for postpartum contraceptive use

Cofactors for postpartum contraceptive use, by contraceptive category, are described in Table 2. In the univariate analysis, women younger than 20 were significantly less likely to use modern contraception than women aged 25-29 (PR 0.81, 95% CI 0.71-0.93; $P=0.002$). Women reporting more frequent sexual intercourse were significantly more likely to use modern contraception (PR 1.02, 95% CI 1.02-1.03; $P<0.001$). Additionally, being employed (PR 1.11, 95% CI 1.02-1.21;

$P=0.02$), having fewer people living in the household (PR 0.96 for each additional person, 95% CI 0.94-0.98; $P=0.001$), shorter relationship duration (PR 0.99 for each year increase, 95% CI 0.98-1.00; $P=0.04$), smaller partner age difference (PR 0.99 for each year older, 95% CI 0.98-1.00; $P=0.008$), and parity of 1 or more (PR 1.21, 95% CI 1.08-1.35; $P=0.001$) were significantly associated with modern contraceptive use. Being married (Prevalence Ratio [PR]: 1.64, 95% CI 1.39-1.92; $P<0.001$), having higher education (PR 1.03 for each year increase, 95% CI 1.02-1.05; $P<0.001$), and a history of abuse in the past year (PR 1.41, 95% CI 1.19-1.67; $P<0.001$) remained significant in the multivariate model.

Similar to postpartum modern contraceptive use, history of abuse in the past year (PR 1.54, 95% CI 1.35-1.76; $P<0.001$) and age were also significant cofactors for use of injectable contraceptives. However, in addition to women younger than 20 (PR 0.84, 95% CI 0.77-0.92; $P<0.001$), women aged 20-24 (PR 0.88, 95% CI 0.81-0.95; $P=0.002$) and older than 35 (PR 0.56, 95% CI 0.46-0.68; $P<0.001$) were also significantly less likely to use injectable contraceptives than women aged 25-29. LARC use, however, was significantly higher among women older than 35 (PR 1.71, 95% CI 1.32-2.22; $P<0.001$) compared to women aged 25-29, while a history of abuse in the past year (PR 2.60, 95% CI 2.06-3.30; $P<0.001$) remained significant.

Cofactors for postpartum modern contraceptive discontinuation

Cofactors for postpartum modern contraceptive are described in Table 3. In univariate analyses, discontinuation of modern contraceptive method use was significantly associated with pregnancy loss (PR 2.80, 95% CI 1.79-4.40; $P<0.001$) during current pregnancy. Additionally women older than 35 (PR 1.54, 95% CI 1.09-2.19; $P=0.02$) were significantly more likely to discontinue than women aged 25-29, and women younger than 20 (PR 0.75, 95% CI 0.57-0.98; $P=0.04$) and between 20-24 (PR 0.63, 95% CI 0.48-0.82; $P<0.001$) were less likely to discontinue.

Discontinuation was also significantly associated with being employed (PR 1.98, 95% CI 1.20-3.27; $P=0.008$). However, only being employed was significant in the multivariate model.

Trends in postpartum contraceptive use

Time to initiation

After 6095 person-months of follow-up, the median time to initiation of modern contraception was 5.39 months and the probability of initiation increased from 35% (95% CI 33-39%) at 3 months to 51% (95% CI 48-54%) at 6 months to 62% (95% CI 59-65%) at 9 months (Figure 7). With regards to important time-varying cofactors, only 5% of women reported having sexual intercourse before initiating contraception and 34% of modern contraceptive users initiated contraception prior to resuming menses.

Cofactors for time to postpartum modern contraceptive initiation are summarized in Table 4 and Figure 8. Higher completed education (HR 1.07, 95% CI 1.04-1.10; $P < 0.001$) and history of abuse in the past year (HR 1.72, 95% CI 1.19-2.48; $P = 0.004$) were significantly associated with initiation of modern contraception in the multivariate model, while women whose current pregnancy had resulted in pregnancy loss were less likely to initiate modern contraception than those who had a live birth (HR 0.41, 95% CI 0.20-0.82; $P = 0.01$). As expected, women who had resumed sexual activity since delivery were nearly 4 times more likely to initiate modern contraception than women who had not resumed sexual activity (HR 3.75, 95% CI 3.04-4.63; $P < 0.001$). In univariate analyses, additional significant cofactors included being married, being employed, having more people in living in household, shorter relationship durations, having an older partner, more frequent sexual intercourse, and being multiparous, while women younger than 20 and older than 35 were less likely to initiate modern contraception.

Time to discontinuation

The probability of contraceptive discontinuation increased from 0.5% (95% CI 0.2-1.1%) at 3 months to 5.4% (95% CI 4.2-6.7%) at 9 months (Figure 9). Cofactors for time to postpartum modern contraceptive discontinuation are summarized in Table 5 and Figure 10. Employed women were nearly twice as likely to discontinue than women who were not employed (HR 1.93, 95% CI 1.09-3.39; $P = 0.02$). Women who were currently breastfeeding were significantly less

likely to discontinue modern contraception than those who were not breastfeeding (HR 0.33, 95% CI 0.15-0.72; $P=0.006$) in the multivariate model. No other significant risk factors for discontinuation were identified in the univariate analyses.

Discussion

In this study we found that 59% of women used modern contraception during the postpartum period. This estimate is higher than a 2014 DHS report that found only 38% of postpartum Kenyan women were using contraception by 9 months postpartum, but consistent with a study among postpartum women in urban slums of Nairobi which reported 60% of women initiated modern contraception in first year following delivery.^{7,17} While the method mix was similar between studies, we did find higher rates of condom use than in their study (15% vs. 6%, respectively), which suggests condom use is higher in areas where HIV prevalence rates are higher, such as Western Kenya where our study was conducted. Additionally, method mix among all women in Kenya, which is dominated by injectable contraceptives (18.7%), implants (7.1%), and OCPs (5.5%), is slightly different from the observed method mix in our study population, signifying that there may be differences in contraceptive preferences between all women of reproductive age and those postpartum.²⁴ For example, injectable contraceptives were the predominant method used among postpartum women in our study and from the general population in Kenya, but condom and OCP use were higher in our study. This might suggest that there is a temporal trend, as their data source was more recent. Although one might expect LARC use to be higher among postpartum women due to desires to prevent or delay future pregnancies longer, our results do not indicate major differences in LARC use among postpartum women when compared to all women of reproductive age.

Optimal timing of family planning uptake during the postpartum period is a challenge for many women, complicated by varying desires to space or limit future pregnancies and perceptions of infertility prior to resumption of menses and during lactation. As only 34% of modern contraceptive users initiated contraception prior to resuming menses, it is probable that these

concerns are relevant in this population. This finding also aligns with well-documented evidence that many women perceive the return of menses as the indicator of return of fecundity.^{9,12-14,25} However, the use of menses as a marker for return to fertility is problematic as ovulation often precedes the return of menses and women may unknowingly be at risk for pregnancy during the cycle when fertility resumes.¹⁴ As such, our findings reinforce the need for family planning counseling during ANC and early postnatal visits to guide women in optimal timing of postpartum contraceptive initiation and appropriate method selection. While many of our identified cofactors of time to initiation of modern contraception are similar to other studies, our findings on the positive association between recent history of abuse and contraceptive initiation and the negative association between recent pregnancy loss and contraceptive initiation point to potential future areas of research and focus for contraceptive counseling among postpartum women.

We found that 8% of women who started a modern contraceptive method discontinued family planning by 9 months postpartum. This estimate is considerably lower than other studies. In a review of 19 LMICs, 30% of all postpartum women who used contraception discontinued within 12 months of initiation.⁸ However, these results are not directly comparable; this time-since-initiation measurement scale is different than our time-postpartum scale, and we would expect to find lower rates of discontinuation given that less time had passed under observation. This points to a strength of our study, as we contributed more specific data on contraceptive use and discontinuation during the postpartum period, as opposed to farther out.

Our findings on the most commonly discontinued methods match those among all women of reproductive age in a 60-country DHS review, which also found condoms to be the most frequently discontinued method, followed by OCPs and injectable contraceptives.²⁶ As for predictors of discontinuation, another study also found that women who were currently breastfeeding were less likely to discontinue use of a modern contraceptive method.¹⁷ A study among HIV-seropositive women in Zambia found that younger age and menstruation-related side effects were associated with discontinuation, which we did not observe and measure,

respectively.²⁷ However, our results on the potential association between employment and pregnancy loss appear to be novel findings.

There is less available information on rates and trends of method switch, although a 2010 DHS review found that the included Sub-Saharan African countries, along with the Dominican Republic, reported the lowest rates of method switch to a modern or traditional method within three months of discontinuation.¹⁵ However, the result that the majority of all women who stopped using a method of modern contraceptive switched to a different method during the study's follow-up period, along with the general trend towards more effective methods of contraception, including LARC methods, is encouraging.

Our study had several strengths. By using a prospective cohort design with frequent sampling, we were able to observe trends in contraceptive use throughout the postpartum follow-up period, including measuring cofactors that varied over time, and measure time to contraceptive initiation and discontinuation. A very high proportion (92%) of women had follow-up data at 9 months postpartum, reflecting the completeness of the data. Our study was also subject to some limitations. Contraceptive use and other behaviors, such as breastfeeding, were only ascertained at study visits, which were scheduled to align with the infant immunization schedule rather than at regular intervals and restricted our ability to summarize trends in contraceptive use at specific, regular intervals throughout the postpartum period. Additionally, we lacked power to control for confounding in the multivariate discontinuation and method switch analyses due to the relatively small number of women who experienced these outcomes.