

Effect of quality of maternal health services on postpartum family planning behavior in Ethiopia: Results from a longitudinal survey

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Background

Pregnancies occurring within 24 months of a previous birth are associated with increased risk of serious maternal and newborn morbidity and mortality [1–7]. Family planning programs have increasingly recognized that the extended postpartum period, generally the first year following birth, is a critical time to provide contraceptive methods to women in order to reduce unwanted pregnancies [2, 8]. Demographic and Health Survey data (DHS) suggest that very few postpartum

women want to become pregnant within the next two years (3%-8%), but approximately 60% of postpartum women in low and middle income countries who want to delay childbearing are not using contraceptive methods [8–10]. To improve uptake of postpartum family planning (PPFP), the World Health Organization (WHO) recommends that women receive counseling during the antenatal, immediate postpartum, and the postnatal period, preferably integrated into a comprehensive maternal and newborn health (MNH) package [2].

Results of the impact of integration of PPFP services into maternal health services on uptake of contraceptive methods are mixed, however. Retrospective studies relying on DHS data have found a relationship between antenatal care (ANC) care and later contraceptive adoption, but whether or not PPFP counseling was actually provided during ANC services was not asked by the DHS [11, 12] [11, 12]; it is thus difficult to ascertain whether the relationship is due to common underlying positive factors that affect both behaviors or that the ANC exposure positively affects postpartum contraceptive adoption. Keogh and colleagues (2015) found that integration of PPFP counseling into ANC did not result in higher rates of contraceptive use in the postpartum period, but did find a significant impact on increasing women’s intention to use contraceptives [13]. Integration into delivery care and postnatal care has shown more consistently positive impacts on increasing postpartum contraceptive use; when PPFP counseling and provision is integrated into delivery and immediate postpartum services, there is evidence that a substantial proportion of women will choose to use contraception [9, 14–17]. Immediate postpartum provision of contraception remains a challenge, however. A lack of trained providers, provider bias, misconceptions about the safety of using contraception while breastfeeding, and competing

demands on the healthworker have been shown to affect the coverage and quality of immediate postpartum family planning services [9, 18, 19]. Receipt of postnatal services has also shown largely positive associations with postpartum contraceptive uptake [16, 20–22], but low provision of postnatal care (PNC) remains a persistent challenge [9].

Postpartum family planning uptake remains low in Ethiopia; in 2016, it was estimated that 21% of postpartum women were using family planning at six months postpartum and 26% of women at one year [23]. This number differed substantially by place of delivery; 39% of women who delivered in a health facility used contraception by six months postpartum, relative to 13% of women who delivered at home [23]. The DHS estimates, however, that only 33% of women in Ethiopia delivered in a health facility and an even lower percentage of postpartum women (19.1%) reported receiving postnatal care [24]. These estimates also do not account for confounding by wealth or residence; that is, women who are wealthier are both more likely to deliver in health centers and to use family planning methods, masking any causal association between accessing MNH services use and PFP uptake.

To address the low use of the formal health system in rural areas, Ethiopia introduced an ambitious community health program, relying on Health Extension Workers (HEWs) to provide a range of community-based services, including family planning counseling and provision. Postpartum family planning counseling is included as a component of both ANC and PNC services, but because most large, population-based surveys, such as DHS and MICS, do not ask whether ANC and PNC included PFP counseling, the coverage of PFP counseling is not well known. To

fill the knowledge gap the coverage of specific components of care, including PFP counseling, the Performance Monitoring and Accountability Maternal and Newborn Health (PMA-MNH) study was conducted in Southern Nations Nationalities and Peoples Region (SNNPR) in July 2016. It employed a longitudinal design, following pregnant women from the six month of pregnancy through six months postpartum, and is ideal to assess whether and when PFP counseling was provided and its association with postpartum contraceptive uptake.

Our objective in this paper is to examine whether PFP counseling is being provided during antenatal and postnatal care services and whether receipt of PFP counseling in these services improved uptake of postpartum family planning use by six months postpartum.

Methodology

Data

The PMA-MNH study was conducted in Southern Nations Nationalities and Peoples Region (SNNPR) between July 2016 and July 2017. It expanded on the previously implemented Performance Monitoring and Accountability 2020 (PMA2020) survey, a cross-sectional survey fielded in Ethiopia since 2013, by implementing a longitudinal component [25]. Forty-four enumeration areas (EAs) used in PMA2020/Ethiopia were included in the sample. PMA2020 surveys used a multi-stage stratified cluster design wherein all EAs were randomly selected using probability proportional to size and all households were screened to identify any women six or more months pregnant. All consenting pregnant women were interviewed at screening, seven-

days, six-weeks, and six-months postpartum by trained enumerators using smartphones programmed with Open Data Kit (ODK). At screening, 329 women from 10,399 households in 43 EAs were identified as eligible for the study and approached for consent; all women consented and enrolled. Over six months, eight women were lost to follow-up. Women who experienced a stillbirth or whose infants died during the study period (14 total) were excluded from analysis as their contraceptive behavior is likely to be different from women who did not experience an adverse event. In total, data from 307 women who completed the study were included in this analysis.

Household characteristics were assessed during enrollment. Questions regarding intention to use contraception, previous use of contraception, and intended delivery location were also assessed at enrollment. Components of antenatal care, postnatal care by seven days, and delivery care were assessed at the first follow-up visit (<7 days). Uptake of postpartum family planning, including method choice, was assessed at six weeks and six months postpartum, in conjunction with receipt of postnatal care, amenorrhea status, and if relevant, dates of contraceptive initiation, return of menses, and sexual resumption.

Ethical Approval

Ethical approval for this study was granted by the Johns Hopkins Bloomberg School of Public Health and the Ethiopian Public Health Institute (EPHI) Institutional Review Boards. Verbal consent was obtained from participants. The IRB approves verbal consent procedures (without a need for written consent) for simple surveys without any invasive procedures in an

environment where literacy is low. Detailed information about the ethical guidelines required by EPHI can be found in the National Research Ethics Review Guidelines (<http://www.ccgrr.ca/wp-content/uploads/2013/>).

Analyses

The outcome of interest was time to uptake of a modern method of contraception, within six months postpartum. Modern contraceptive use was defined as use of male/female sterilization, IUD, implants, pills, injectables, condoms or Lactational Amenorrhea Method (LAM). Two of four women who reported using LAM were reclassified as non-users as they reported that their menstrual cycle had restarted and/or that they had not exclusively breastfed their infant in the previous 24 hours. Women who reported using a modern method of contraception were asked when they started using the method. Parity was classified as either first birth, 2-3 births, or 4 or more births. At the seven-day, six-week, and six-month interview, women reported separately on postnatal care received for their infant and postnatal care received for themselves. For the purposes of this analysis, these were combined to indicate whether a woman had received postnatal care for any reason by the six-week visit and whether postpartum family planning counseling was delivered as part of that visit.

Survey weights were used to account for complex survey design and generate regionally representative estimates of postpartum women, including for the modern contraceptive prevalence rate and distribution of respondent characteristics. We used weighted parametric survival regression analysis with Weibull distribution to assess the hazards of modern

contraceptive use and associated covariates of interest. The primary independent variable was receipt of PFP counseling in MNH services, defined as whether the woman received no PFP counseling, received counseling in ANC only, received counseling by 6-weeks postpartum PNC only, or received counseling in both ANC and PNC. Due to small sample sizes, we did not differentiate women who did not receive any ANC and PNC services from women who did receive services but did not receive PFP counseling. Additional independent variables include the respondent's intention to use family planning in the future (obtained at enrollment), whether the index pregnancy was wanted then, later, or not at all (obtained at enrollment), delivery location (facility or home), amenorrhea at six months, exclusive breastfeeding at six months, parity, education, and residence. Though included in bivariate analyses, age and wealth were not included in the final model due to significant correlation with parity and urban/rural residence, respectively. Parametric survival models with a Weibull distribution were used to adjust for multiple variables.

Results

Table 1 shows the background characteristics of women who enrolled in the study. There were no significant differences in sociodemographic characteristics, gathered at baseline, between women who completed the final interview at six months and those who were lost to follow-up or dropped for adverse events and thus only women who completed all three interviews are included in the table below. Half of the women included in the panel were between age 25-34 and almost all were married. The sample was predominantly rural and over half of women had

four or more births, including the index birth. The majority of women either did not attend school (44.4%) or attended only primary school (45.3%).

[Table 1 here]

Approximately 40% of women reported that they either wanted the pregnancy at a later time or not at all. At enrollment, 85% of women reported that they intended to use a contraceptive method at some point in the future. By six months postpartum, 87.9% of women were sexually active and only 16.3% reported exclusively breastfeeding their child in the 24 hours before the survey. Approximately 80% were amenorrheic and 41.5% reported that they were currently using a modern method of contraception.

Table 2 shows the health service utilization and receipt of PFP counseling from antenatal care through six months postpartum. Receipt of antenatal care was significantly higher than receipt of postnatal care coverage (83.6% versus 8.5%, 30.3% and 63.5% by seven days, six weeks, and six months, respectively). About half of women who received antenatal care reported receiving PFP counseling; this was similar for women who reported receiving postnatal care at seven days and postnatal care at six weeks. By six weeks postpartum, 43.0% of women had not received postpartum family planning counseling in either ANC or PNC, 34.7% received it in ANC only, 9.8% received it in PNC only, and 12.5% of women had received PFP counseling in both visits.

[Table 2 about here]

Figure 1 below shows the Kaplan-Meier failure function for uptake of a contraceptive method over the six-month period, by receipt of PFP counseling, intention to use contraception, wantedness of the index pregnancy, and delivery location. Women who received no PFP counseling or who received counseling only in ANC had similar rates of contraceptive uptake over the six-month period, with fewer than half of women using contraception by the end of the six months, while women who received PFP counseling in PNC only or ANC and PNC had faster rates of uptake. As shown in Table 3, these differences are statistically significant at $p < .05$. Relative to women who had no ANC or PNC counseling, the hazard (instantaneous risk rate) of contraceptive uptake was higher among women who received counseling in either PNC alone or PNC and ANC relative to women who did not receive any PFP counseling (HR: 2.3, 95% CI: 1.1-4.8 and HR: 2.2, 95% CI: 1.1-4.4, respectively). The hazard was also significantly higher among women who reported intention to use contraception at enrollment relative to women without that intention (HR: 5.0, 95% CI: 1.8-14.2). Women who reported that they did not want the index pregnancy at all had lower hazards of uptake compared to women who reported that they did want to become pregnant at that time, but the difference is not statistically significant (HR: 0.3, 95% CI: 0.8-1.1). Women who delivered in a facility had a 1.8 times higher hazard (95% CI: 1.1-3.0) than women who delivered at home.

[Figure 1 about here]

[Table 3 here]

In terms of sociodemographic characteristics, younger, urban, more educated, lower parity, and wealthier women were more likely to adopt a contraceptive method than older, rural, less educated, high parity women, and poor women, respectively.

After adjustment for background characteristics (shown in Table 3), the relationship between receipt of PFP counseling and uptake remained significant; women who received counseling in PNC only and PNC and ANC take up contraception at significantly higher rates than women who do not receive any counseling (HR: 3.4, 95% CI: 1.6-7.1 and HR: 2.5, 95% CI: 1.2-5.1, respectively). The effect of intending to use family planning in the future also remained consistent. The association between pregnancy wantedness and contraceptive uptake was strengthened after adjustment; women who did not want the child at all took up contraception at significantly lower rates than women who wanted the child at that time (HR: 0.3, 95% CI: 0.1-0.9). Women who reported that their menstrual cycle returned had 2.9 times the hazard of contraceptive uptake than women who were amenorrheic at six months (95% CI: 1.7-4.8). High parity remained statistically significant; women who had four or more children took up contraception at significantly lower rates than woman with 1-3 children (HR: 0.3, 95% CI: 0.2-0.9). There were no significant differences in the hazard of contraceptive uptake by delivery location, exclusive breastfeeding, residence, or education.

Discussion

This study examined both the coverage and effect of integrating PFP counseling into maternal and newborn health services in SNNP region, Ethiopia. Overall, we find that integration of postpartum family planning counseling into postnatal care services is an effective means to increase postpartum contraceptive uptake, but that significant gaps in coverage, particularly in the delivery and postnatal period, remain a challenge. We found no effect of receiving postpartum family planning counseling in antenatal care or on delivering in a health facility on contraceptive uptake. Of note, women who did not want the index pregnancy at all and women who had four or more children had the lowest rate of modern contraceptive uptake by six months postpartum.

Postpartum family planning use is relatively low in SNNP region; fewer than 45% of women were using a method by six months postpartum, despite approximately 90% of women having resumed sexual activity. In general, we found higher use of maternal and newborn health services than reported elsewhere for SNNP. The majority of women (83.5%) reported that they received at least one antenatal care visit in SNNP and delivered in a facility (52.1%), higher than the DHS 2016 regional estimates of 69.3% and 33.2% of women, respectively [24]. These numbers are not entirely comparable, however; PMA Ethiopia data were collected within 7 days of birth and only included births taking place between July and September 2017, while the DHS included all births to women in the three years prior to the survey. While the DHS thus has a larger sample size, recent trends towards higher uptake of health services may be masked by the patterns of delivery among births occurring three years before.

Though the numbers of women receiving maternal and newborn health services may be increasing, the coverage of PFP counseling remains low. Half of women who received ANC and/or PNC services reported receiving any PFP counseling during these visits, indicating a significant missed opportunity for counseling. Our results indicate that it is particularly important to improve both the coverage and content of PNC services. Women who received counseling on PFP by six weeks postpartum took up modern contraception at significantly higher rates than women who did not, but by six weeks postpartum, only one in five women had received this counseling. These results are similar to those from other regions in Ethiopia that found both low rates of postnatal care coverage and a significant positive association of contraceptive use and postnatal care amongst postpartum women [20, 21, 26]. These results reinforce the importance of including PFP counseling and provision into standard postnatal care services.

We found no association between receiving PFP counseling in ANC services alone and PFP uptake; this differs from studies that rely on DHS data [11, 12, 27], but is largely consistent with findings from smaller studies in Ethiopia and East Africa [13, 20, 21]. This lack of effect should not, however, be interpreted that introduction of PFP counseling in ANC services is not worthwhile. When women reported at enrollment that they intended to use contraception in the future, they had significantly higher rates of uptake by six months postpartum. While ANC counseling alone may not be sufficient to improve PFP uptake, it is an ideal opportunity to introduce contraceptive methods and, as Keogh and colleagues demonstrated in Tanzania, impact the intention to use contraception in the future [13]. Consistent with the literature, we also found that return of the menstrual cycle was significantly associated with contraceptive

uptake [28–30]. Women may be unaware that they are at risk of conceiving even if they are amenorrheic; ANC thus provides an ideal opportunity to provide further counseling on return to fertility, correct use of LAM, and pregnancy risk during the postpartum period.

We also found no effect of delivering in a health facility on PFP uptake after adjusting for receipt of counseling in ANC and PNC care. This differs from some previous research using DHS data that found a significant association between institutional delivery and PFP uptake at the national level [15, 27]. Immediate postpartum contraceptive counseling and provision did not appear to be widespread in SNNP; only 7% of women who delivered in a facility reported that they had spoken to anyone about family planning by the seven-day postpartum interview [not shown]. Given the evidence that postpartum services can be successfully integrated into delivery services [18, 31], this represents a significant missed opportunity.

The relationship of parity and contraceptive use is in keeping with cross-sectional PMA2020 data from 2017; married women with 4+ births had lower modern contraceptive prevalence rates (27.1%) than women who had 0-1 children (41.6%) or 2-3 children (43.6%) [32]. Prevention of unwanted pregnancies and reduction of high parity births, a priority to address due to increased risk of maternal and child mortality, can be reduced through improved contraceptive use practices, including postpartum family planning, 3/22/2019 8:15:00 PM. Though sample size must be considered when interpreting results, high parity Ethiopian women and women who want to limit births do not seem to be receiving effective counseling and services.

Our study is not without limitations, primarily due to the small sample size. To achieve adequate statistical power for analyses, we did not differentiate between women who received no services during the antenatal and postnatal period and those who did receive services but did not receive counseling. Sensitivity analyses of preliminary models demonstrated that the overall findings are consistent when disaggregated by no services versus no counseling, but model convergence was an issue in the final model. Our study, however, has a number of strengths, primarily the longitudinal design with low loss to follow-up. This allowed us to assess exposure to postpartum counseling and uptake of contraception at frequent intervals throughout the postpartum period, limiting recall bias. As we collected information on pregnancies occurring only between July 2017 and September 2017, we also limited confounding due to temporal changes that are present when including all births over a three- or five- year period, which may mask more recent progress.

Conclusion

Our results demonstrate that receipt of PFP counseling during postnatal care visits is associated with higher rates of contraceptive uptake among recently postpartum women, an important programmatic finding. The success of integration is limited, however, by both low-uptake of postnatal care services and inconsistent provision of PFP counseling. Additionally, the lack of effect seen for facility delivery indicates that immediate postpartum services are not yet widely utilized in Ethiopia. A significant gap in services remains among high parity women and women who reported that the birth was unwanted. Short birth intervals, high parity and unwanted births are still high in Ethiopia, and interactions with health providers during MNH care provide unique opportunity to improve low contraceptive use situation in the country.

Postnatal care providers must be trained to provide comprehensive PFP counseling, including immediately after delivery and during child health visits, such as well-baby and immunization visits, for all women and particularly those who are interested in limiting future fertility. Future research should identify barriers to accessing postnatal care and what counseling messages and services can most effectively reach high parity women. Improving the coverage and quality of postpartum family planning services can help to reduce the number of high-risk pregnancies, further contributing to global declines in unintended pregnancies and maternal morbidity and mortality.

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Table 1: Background characteristics of women enrolled in PMA-MNH survey

	Weighted n	Weighted %
Total	307	100
Age group		
15-24	100	32.4
25-34	160	52.1
35-49	47	15.5
Married	300	97.8
Urban	34	11.2
Parity[†]		
1	63	20.7
2-3	79	25.7
4 or more	165	53.6
Educational Attainment[†]		
Never attended	136	44.4
Primary	139	45.3
Secondary or Higher	32	10.3
Pregnancy wantedness		
Then	181	59.0
Later	96	31.4
Not at all	29	9.6
Intend to use FP in the future	263	85.6
Six months postpartum		
Amenorrheic	244	79.4
Sexually active	270	87.9
Exclusive breastfeeding (24 hr)	50	16.3
MCPR	128	41.5

† Data collected at 7-day postpartum interview

Table 2: Health service utilization and postpartum	
	Weighted %
Seven day follow-up	100.0
Any ANC	83.6
PPFP counseling (among women receiving ANC)	56.5
Facility delivery	52.1
PNC within seven days	8.5
PPFP counseling (among facility delivery or women receiving PNC)	56.5
Six week follow-up	
Any PNC	30.3
PPFP counseling in PNC	50.2
PPFP counseling at six-weeks	
No ANC or PNC counseling	43.0
ANC counseling only	34.7
PNC counseling only	9.8
ANC and PNC counseling	12.5
Six-months post-partum	
Any PNC	63.5
PPFP counseling in PNC	64.8

Table 3: Hazard ratios for time to contraceptive uptake within six months postpartum, bivariate and adjusted

	Bivariate		Adjusted	
	HR	p value	HR	p value
PPFP counseling (ref: No ANC or PNC counseling)				
ANC counseling only	1.2	0.59	1.3	0.37
PNC counseling only	2.3	0.03	3.4	<.001
ANC and PNC counseling	2.2	0.03	2.5	0.01
Intend to use family planning in the future	5.0	<.01	4.7	0.01
Pregnancy wantedness (ref: Then)				
Later	1.1	0.60	1.1	0.82
Not at all	0.3	0.07	0.3	0.04
Facility delivery	1.8	0.02	1.3	0.36
Return of menses	4.5	<0.001	2.9	<.001
Exclusive breastfeeding	0.7	0.31	1.1	0.77
Urban (ref: rural)	2.3	<.001	0.8	0.42
Age (ref:15-24)				
25-34	0.6	0.05	-	-
35-49	0.3	0.01	-	-
Parity (ref: 1)				
2-3	1.0	0.90	1.0	0.89
4 or more	0.3	<.001	0.3	<.01
Education (ref: Never)				
Primary	2.2	<.01	1.0	0.96
Secondary or higher	3.5	<.001	1.3	0.56
Wealth (ref: Poorest)				
Middle	2.2	<.01	-	-
Wealthiest	3.5	<.001	-	-

Figure 1: Kaplan-Meier failure function by receipt of PFP counseling, contraceptive intention, pregnancy wantedness, and delivery location

