

# Leveraging maternity waiting homes to increase the uptake of immediate postpartum family planning in primary health care facilities in Ethiopia

Mengistu Asnake<sup>1</sup>, Bekele Belayihun<sup>1\*</sup>, Yeowndwossen Tilahun<sup>1</sup>, Habtamu Zerihun<sup>1</sup>, Adeba Tasissa<sup>1</sup>, Zerihun Tilahun<sup>1</sup>, Fisseha Moges<sup>1</sup>, Atsede Taddelle<sup>1</sup>, Wondimagegnehu Workneh<sup>1</sup>

## Abstract

**Background:** Maternity waiting homes within primary health care facilities are ideal platforms to reach women with family planning education and counselling. Maternity waiting home users interact with health care providers on a regular basis throughout their waiting period and can prepare to initiate the family planning method of their choice immediately after childbirth. To date, there has been no clear evidence about the use of maternity waiting homes to increase the uptake of immediate postpartum family planning. The aim of this study is to assess the contribution of maternity waiting homes to increase the uptake of immediate postpartum family planning among women who deliver in primary health care facilities in Ethiopia.

**Methods:** A comparative cross-sectional study design was conducted to collect quantitative data from women who gave birth within 12 months prior to the study. Multi-stage random sampling procedures were employed to select 884 women. Descriptive summaries and logistic regressions with 95% confidence intervals were conducted using Stata version 14 to analyze the data.

**Results:** The prevalence of immediate postpartum family planning use among women who used maternity waiting homes was 44%, while among those who did not use maternity waiting homes it was 36%. The use of maternity waiting homes significantly contributed to an increase in the immediate uptake of postpartum family planning (OR = 0.69, 95% CI = 0.51-0.95,  $p < 0.022$ ).

**Conclusions and recommendations:** This study showed that maternity waiting homes significantly contributed to improved uptake of immediate postpartum family planning within 10 minute or 48 hours after delivery. Developing a comprehensive package of maternal care services in maternity waiting homes has the potential to improve the uptake of family planning among postpartum women. [*Ethiop. J. Health Dev.* 2020; 35(1):000-000]

**Key words:** Ethiopia, family planning, immediate postpartum, maternity waiting home, primary health care facilities

## Introduction

Ethiopia has achieved a rapid increase in its modern contraceptive prevalence rate (mCPR), from 14% in 2005 to 41% in 2019 (1). Still, the unmet need for postpartum family planning (PPFP) remains high (1-4). The results from a study conducted in Ethiopia indicate that nearly 86% of postpartum women want to delay or avoid future pregnancies but are not using modern contraceptive methods – a situation referred to as “unmet need” for family planning (FP) (5-7). Evidence shows a high level of unmet need for contraception among postpartum women in sub-Saharan Africa (4,8). The postpartum period is a critical time to address unmet FP needs in order to reduce the risks related to closely spaced pregnancies (9-11). Studies show that some women become pregnant early in the postpartum period (12,13) when there is a resumption of sexual activity without the use of an FP method (14). PPFP information helps a woman to decide whether to use contraception and which contraceptive to use. Additionally, it helps women assess their reproductive needs and decide how long to continue FP (15).

In Ethiopia, almost 80% of its population reside in rural areas, where poor access to maternity services accounts for many maternal and perinatal deaths (16). One of the strategies to tackle poor geographical access to maternal care is to establish maternity waiting homes (MWHs). MWHs are residential areas within health centers or hospitals that are close to the delivery unit. As pregnant women from rural areas approach their due delivery date, they can stay at one of these MWHs to overcome

the barriers of distance and time to reach to the health center (17). In addition to the antenatal care (ANC) the MWHs provide to pregnant women, they also offer health education on FP, newborn care, breastfeeding, and other health services (18). The World Health Organization (WHO) recommends that women should receive information on FP and the health and social benefits of birth spacing during ANC immediately after birth, and during the postpartum period. Women should also receive information on well-baby care, including immunization and growth monitoring (19). Health care providers should be encouraged to provide PPFP counselling throughout pregnancy (20). Each visit to a health professional offers a unique opportunity to counsel and offer FP services. The MWH is an ideal platform to reach rural women with FP education and counselling, and respond to their needs (21). MWH users interact with health care providers on a regular basis throughout their waiting period and can prepare to initiate an FP method immediately after childbirth. However, providers may not take advantage of this window of opportunity to improve immediate postpartum family planning (IPFP) among clients using MWHs in Ethiopian public health centers.

Studies show that 12% of women who have delivered in a facility in eastern Ethiopia received PPFP within 12 months after delivery (12). Twenty-two percent of women received immediate postpartum intrauterine contraceptive devices (IUCDs) in southern Ethiopia (21), and more than 45% of postpartum women received implants and IUCDs in western and central parts of the

<sup>1</sup>Pathfinder International -Ethiopia, \*Corresponding author: Bekele Belayihun, bbelayihun@pathfinder.org

country (22,23). Of Ethiopian women who do take up PPF, 8% received FP during the first months after childbirth, and 21% received FP within the first six months after childbirth. Twenty-six percent of women during the first year of the postpartum period received no provision of IPPFP, this indicates that the provision of IPPFP remains a challenge in Ethiopia (24).

The United States Agency for International Development (USAID)-funded project, ‘Transform: Primary Health Care’, began supporting the Ethiopian government to implement an IPPFP initiative in primary health care facilities across four regions of the country in 2017 (25). Since 2017, the project – primarily implemented by Pathfinder International, John Snow Inc. and other partners – has continued to support the government’s IPPFP initiative in 1,225 primary health care facilities. The project is being implemented in four regions—Amhara, Oromia, Tigray, and Southern Nations, Nationalities, and People’s Region (SNNPR) – in collaboration with each Regional Health Bureau. In partnership with Ethiopia’s Ministry of Health, the project has strengthened 406 *woredas* (districts) by building a stronger and more skilled health workforce; expanded access to and the uptake of high-quality FP services by improving household and community practices; and encouraged health-seeking behavior (25). The availability of IPPFP services within 10 minutes to 48 hours of childbirth was poor in delivery rooms in Ethiopia until the MWH scale-up by the government in 2017. However, there is no clear evidence about the contribution of MWHs to an increase in IPPFP use among women who delivered in primary health care facilities. Evidence indicates that integrating PPF with ANC, postnatal maternity service, and information on contribution of integrating MWHs with PPF is necessary in order to ensure that services are responsive to clients’ needs(19) The aim of this study was to understand the relative contribution of MWHs to increasing the uptake of IPPFP.

## Methods

**Study area and period:** The study was conducted in primary health care facilities (selected health centers) with MWHs that provide delivery and IPPFP services located within USAID ‘Transform: Primary Health Care’s’ implementation regions – Amhara, Tigray, Oromia and SNNPR – and focused on women who delivered within the 12 months prior to the study. Data were collected from October to December 2019.

**Study design:** The study employed a comparative cross-sectional study design with a quantitative approach to assess the utilization of IPPFP among women who delivered in health centres within 12 months prior to the study. The study categorized the women into two groups: those who used MWHs and those who did not use MWHs (walk-in deliveries).

**Sampling technique and sample size:** The sampling frame was all health centres that have MWH facilities and provide deliveries and IPPFP services under the project catchment areas. While 143 health centres are listed under the project areas, only 44 have a functional MWH and provide skilled delivery and IPPFP services.

One in every three health centers with a functional MWH, skilled delivery and IPPFP services were randomly selected (n=15 health centers) for this study. Four health centers were selected from Amhara, Oromia and SNNPR, and three health centers from Tigray. The second sampling frame included a list of all women who delivered in the selected 15 health centers (both those who used and those who did not use MWHs) in the 12 months prior to the study, as recorded in the health center delivery registration book. Over the 12-month period, 9,275 women had delivered in the selected facilities (on average, 618 women per health center). Of these, 40% (3,710) used MWHs (247 women per health center).

Based on the information and intention-to-treat analysis approach, it was determined that about 10% (n=930) of the women in our sample frame would provide an adequate sample for the study, and proportionally 40% (n=375) were assigned as MWH users and the remaining 60% (n=555) were non-users. Therefore, 62 women from each of the 15 health centers were randomly selected – 40% of these women used MWHs (25 women per health center) and 60% did not (37 women per health center). The sample consisted of women who met the following inclusion criteria: i) had delivered in the last 12 months (to obtain recent delivery data and reduce recall bias); ii) 15 years of age or older; and iii) lived in a village that was 10km or more from one of the selected health centers. Women who experienced stillbirth or new-born death in their last delivery were excluded from the study.

After identifying potential study participants, the women were traced through health extension workers (HEWs), who informed them about the purpose of the study. All women willing to participate in the study were invited to interview at a proposed time and place through the HEWs. The data collectors conducted the interviews with the support of HEWs. Of those eligible but who did not respond, 17 (1.8%) were unavailable during their scheduled time and place, 13 (1.4%) refused to participate, 9 (1%) withdrew after beginning the interview or had incomplete surveys, and 7 (0.8%) had a stillbirth and were wrongly recorded in the delivery record and were dropped from the analysis. The final data were analysed with a final sample of 884 participants (361 women who used MWH and 523 women who did not use MWH) at a 95.1% response rate.

**Data collection process:** The data were collected using a structured questionnaire that was standardized based on existing literature, a previous questionnaire used in postpartum IUCD research (26,27), and through discussions with subject-area experts. The questionnaire consisted of three subsections designed to assess: 1) socio-demographic characteristics of women; 2) women’s experience with health education and counselling on IPPFP; and 3) health service utilization during pregnancy and birth (e.g., delivery complication, mode of delivery) and use of IPPFP. The questionnaire was translated into local languages (Amharic, Tigrigna, and Oromifa) prior to the start of the fieldwork. Twenty-four master’s-level research assistants (20 data collectors and four supervisors), who were fluent in the

local languages and experienced in family planning/reproductive health-related data collection, were recruited. A three-day training course was provided to data collectors and supervisors on the content of the questionnaire, issues of confidentiality, ethical conduct of human-subject research, and data-collection techniques. The training included pretesting the questionnaire in adjacent health centres that were not included in the study. Pretesting of the data-collection instrument was aimed at assessing: (1) how well the instrument elicited the information needed; (2) the usefulness of the information collected; and (3) the competency of the data collectors. Based on the pretest results, the instrument was modified. After providing data-collection training and modifying the final questionnaire, five data collectors and one supervisor were assigned to each region. The interviews were conducted in local languages.

**Data processing and analysis:** The research team assessed the quality, accuracy, and completeness of the collected data using range plausibility and cross-validation checks. Data were checked, coded, and

entered using EpiData version 3.2. The accuracy of data entry was checked by running frequency analyses and making range checks every time data were entered. Data-entry errors were corrected by cross-checking with the completed questionnaire. After completing the data entry, the data were exported to Stata version 14 for further analysis. Descriptive and inferential statistics were provided to assess differences (using chi-square tests) between MWH users and non-users with respect to the dependent variable, and independent and control variables. Logistic regression was used to assess the association between MWH use and IPPFP uptake. Bivariate analyses were done to select important variables for the multivariate analysis. Variables with a p-value of  $\leq 0.25$  in bivariate analyses were transferred into a multivariate logistic regression to manage confounding effects. An adjusted odds ratio with 95% level of significance was considered for those variables that were found to have significant association (p-value  $\leq 0.05$ ) with the outcome variable (IPPFP use). All variables that were considered in the analysis are described in Table 1.

**Table 1: Definitions of variables**

Variables	Definitions
<i>Dependent variable:</i> Immediate post-partum family planning use	PPFP methods provided during the immediate or early postpartum period, meaning within 10 minutes or up to 48 hours after birth (29). Women who utilized any FP method within 10 to 48 hours after birth. 1=yes, 0=otherwise
<i>Predictor variables:</i> Maternity waiting home	MWH refers to a waiting area/house prepared in a health centre compound for pregnant women identified to be at risk who receive services, including health services, and later to deliver with a skilled provider in a facility (30). Women who stayed in MWH=1, 0=otherwise
Age	Age of the women in years
Residence	Current residence of the women. 1=urban, 0=rural
Education	Level of education. 1=cannot read/write (illiterate), 2=primary, and 3=secondary and above
Marital status	Marital status of the women. 1=married, 0=otherwise
Number of live children	The women who gave birth and the number of alive children
Ever used FP	Women who have an experience of FP use. 1=yes, 0=otherwise
ANC	Women who have received ANC services and the number of ANC visits in the facility
Child immunization experience	Women who have their last child immunized. 1=yes, 0=otherwise
IPPFP information	Women who received information about immediate PPFP from any source. 1=yes, 0=otherwise
IPPFP counselling	Women who received immediate PPFP counselling from service providers at any time before delivery. 1=yes, 0=otherwise
Delivery mode	Women who delivered in the facilities either as normal or assisted delivery. 1=normal delivery, 0=assisted delivery (delivered with vacuum support, delivered with forceps support, delivered with surgical support)

**Ethical considerations:** Ethical approval was obtained from the Amhara, Oromia, SNNPR and Tigray Regional Health Bureau IRB committees, and permission letters were secured from the *Woreda* Health Offices. Each respondent gave informed verbal/oral consent after being told the purpose and procedures of the study. All respondent identifiers were kept confidential and data were anonymized.

**Results: Socio-demographic characteristics:** The mean

age of the respondents was 28 years (mean=27.7, standard deviation (SD) =  $\pm 5.6$ ), and approximately 46% of the respondents were in the 25 to 30-year-old age bracket. Most of the respondents (81%) were rural residents. Of all respondents, 53% had some level of education (able to read and write), of whom 69% had completed primary education. Most of the respondents were currently married (81%), and 15.6% were living with their sexual partners but were not currently married (Table 2).

**Table 2: Socio-demographic characteristics of postpartum women**

Variables	N (%)	Used MWHs N (%)	Not used MWH N (%)
Age in years			
<25	252 (28.9)	97 (27)	155 (30)
25-30	403 (46.3)	159 (44)	244 (48)
31+	216 (24.8)	103 (29)	113 (22)
Mean age, $\pm$ SD	27.7 years, $\pm$ 5.6	28 years, $\pm$ 5.9	27.7 years, $\pm$ 5.6
Residence			
Rural	708 (81.2)	324 (92)	384 (74.2)
Urban	164 (18.8)	30 (8)	134 (25.8)
Attend formal school			
Yes	465 (53.2)	187 (52)	278 (53)
No	419 (47.4)	174 (48.9)	245 (46.8)
Educational Level			
Primary (1-6)	318 (69.4)	177 (56)	249 (48)
Secondary (7-10)	104 (22.7)	144 (46)	174 (33)
Higher (11+)	36 (7.9)	40 (13)	100 (19)
Marital status			
Married	706 (80.9)	282 (80)	424 (82)
Live together	136 (15.6)	57 (16)	79 (15)
Divorced/single	31 (3.5)	15 (4)	16 (3)

**Reproductive histories of respondents:** At the time of the study, the mean number of live children of respondents was three (mean  $3 \pm 1.7$  SD). Half of the respondents (53%) reported that they had 36 or more months of spacing between each child, and 14% of women reported less than 24 months between their current and last birth. Almost 90% of the respondents had spontaneous vaginal delivery, followed by 8% of women who delivered through vacuum-assisted delivery. Overall, 68% of the respondents attended four

or more ANC visits and 30% attended ANC between two and three times. Of the respondents who attended four or more ANC visits, 66% had used MWHs. Approximately 84% of respondents indicated that they used some form of contraception (ever use) before their most recent birth. Fifty-six percent of respondents used injectable contraception, and 36% had used implants. Most of the respondents (87%) reported that the child from their last delivery had been immunized. Of these women, 87% had used MWHs (Table 3).

**Table 3: Reproductive histories of postpartum women**

Variables	N (%)	Used MWHs N (%)	Not used MWH N (%)
Mean number of births (live and still)	3.2, $\pm$ 1.9SD	3.4, $\pm$ 2.02SD	3.22, $\pm$ 3SD
Mean number of live births	3, $\pm$ 1.7SD	3.13, $\pm$ 1.8SD	1.9, $\pm$ 1.74SD
Birth space			
<24 months	91 (13.6)	34 (13)	57 (14)
24 to 35 months	225 (33.5)	88 (33)	137 (34)
>35 months	355 (52.9)	148 (55)	207 (52)
Ever used FP			
Yes	742 (84.1)	297 (82)	445 (85)
No	140 (15.9)	64 (17.7)	76 (14.6)
FP method ever used			
DMPA	411 (55.5)	166 (56)	245 (55)
Implanon	269 (36.3)	115 (38)	154 (35)
Jadelle	22 (3)	2 (1)	20 (5)
Others	39 (5.3)	16 (5)	23 (5)
Number of ANC visits			
0-1	17 (1.9)	6 (2)	11 (2)
2-3	258 (29.9)	109 (31)	146 (29)
4+	586 (68.1)	233 (66)	353 (69)
Facility visit experience for any services			
Yes	773 (87.7)	329 (91)	444 (84.9)
No	108 (12.3)	32 (8.8)	76 (14.6)
Facility delivery experience (before the last delivery)			
Yes	633 (71.9)	250 (69.3)	383 (73.2)
No	248 (28.1)	110 (30.6)	138 (26.5)
Child immunization experience			
Yes	760 (86.9)	313 (86.9)	447 (86.8)
No	115 (13.1)	47 (13.1)	68 (13.2)

**Contribution of maternity waiting homes:** The overall prevalence of IPPFP use was 39.4%. Of those women who immediately received PPF, 36% received services within 10 minutes, and 64% received services within 48 hours after delivery (data not shown). Of all respondents, 41% of women used MWHs before delivery; of these, 55% stayed for five or fewer days, and 15% stayed for more than 15 days. The prevalence of IPPFP use among women who used MWHs was 44%, while it was 36% among those who did not use MWHs. There was a significant difference ( $p<0.007$ ) in IPPFP utilization (8 percentage points) between women who used MWHs and those who did not use MWHs. Of the women who used MWHs and received IPPFP, 41% received services within 10 minutes, and 59% received services within 48 hours after delivery. Among women who did not use MWHs and received IPPFP, 30% received services within 10 minutes, and 70% received services within 48 hours after delivery. There was a significant difference (11 percentage points) between women who used MWHs and did not use MWHs in the time to receive IPPFP service ( $p=0.036$ ) (Table 4).

Of the women who used and did not use MWHs, 76% and 70% received IPPFP counselling, respectively. Of the women who used MWHs and received IPPFP counselling, more than half (54%) adopted IPPFP, while 48% adopted IPPFP among those who did not use MWHs and received IPPFP counselling. Despite both groups receiving IPPFP counselling, there was a significant difference ( $p<0.008$ ) in IPPFP utilization (6 percentage points) between women who used MWHs and women did not use MWHs (Table 4).

For both categories of women, the most commonly used FP methods were Implanon, followed by IUCDs. The use of Jadelle among women who used MWHs was very low compared to those who did not use MWHs ( $p<0.009$ ). However, the proportion of women who used MWHs and adopted IUCDs was higher than among women who did not use MWHs ( $p<0.011$ ). The major reasons for postpartum women not using IPPFP included a desire to have another child/pregnancy soon, and a lack of IPPFP counselling (Table 4).

**Table 4: Contribution of maternity waiting homes and service information to immediate PPF use**

Characteristics	Women who delivered in the Health centres		p-value
	MWH users (%)	Walk-in/MWH non-users (%)	
Stay at MWHs (in days)			
>6	196 (54.7)		
6-10	76 (21.2)		
11-15	31 (8.7)		
16+	55 (15.4)		
Average day	8.24, $\pm$ 8.8SD		
IPPFP counselling service received			
Yes	272 (76)	365 (70)	0.051
No	86 (24.02)	155 (29.8)	
Adopted IPPFP (from counselled women)			
Yes	148 (54)	174 (48)	
No	124 (46)	190 (52)	0.008
Women who adopted IPPFP in the facility			
Yes	160 (44)	187 (36)	
No	198 (55.3)	334 (64.2)	0.007
Time to receive IPPFP			
Within 10 minutes	66 (41.3)	55 (30.4)	0.036
Within 48 hours	94 (58.8)	126 (69.6)	
PPFP contraceptive methods			
IUCD	32 (20.3)	19 (10.6)	0.011
Implanon	112 (70.9)	124 (69.3)	0.901
Jadelle	9 (5.7)	27 (15.1)	0.009
Others	5 (3.2)	9 (5)	0.217
Reasons for not using IPPFP			
Want to be pregnant	51 (26.3)	79 (25)	
No information about availability of the service			
No counselling on PPF	26 (13.4)	44 (13.9)	0.017
Fear of side effects	29 (14.9)	52 (16.5)	
No sexual contact	24 (12.4)	24 (7.6)	
Partner disagreement	23 (11.9)	41 (13)	
	12 (6.2)	34 (10.8)	

**Factors associated with immediate postpartum family planning use:** Of the selected 10 variables, eight of the predictors were related with IPPFP use ( $p\leq 0.25$ ) in

bivariate analysis. Based on the findings, all variables ( $p\leq 0.25$ ) in bivariate analysis were included in a multivariable logistic regression model after checking

for multicollinearity (VIF<5) and effect modification (interaction effect). There was no multicollinearity (VIF<5) or interaction effect between the predictors. In multivariable logistic regression, four predictors such as; marital status, counselling, immunization and use of MWHs experience were significantly associated ( $p<0.05$ ) with IPPFP use. Women who visited the health facility for child immunization had a significant association ( $p\leq 0.05$ ) with IPPFP use. After controlling for the effect of FP counselling, child immunization and other socio-demographic characteristics of respondents,

women who used MWHs during their most recent pregnancy still had higher odds of taking active measures to avoid pregnancy (IPFP use) (AOR=0.69; 95% CI: 0.51-0.95) than women who did not use MWHs. Postpartum women who had received IPFP counselling were 13% more likely to use contraceptive methods in their immediate postpartum period (AOR=0.13; 95% CI: 0.08-0.21) than women who were not counselled about PFPs after controlling for the effect of characteristics of respondents (Table 5).

**Table 5: Bivariate and multivariable logistic regression result for factors associated with immediate postpartum family planning use**

Variables	COR (95% CI)	p-value	AOR (95% CI)	p-value
Age group in years				
<25	1			
25-30	1.67 (1.20-2.33)	0.002		0.452
>30	1.64 (1.12-2.40)	0.011		0.525
Educational level				
Illiterate	1			
Primary school (1-6 G)	0.94 (0.69-1.26)	0.66		0.979
Secondary school and above	0.53 (0.35-0.81)	0.003		0.022*
Marital status (Married/Other)	1.87 (1.33-2.64)	0.000	1.94 (1.31-2.87)	0.001**
Number of living children				
1-2	1			
3-4	1.72 (1.26-2.34)	0.001		0.125
5 and above	1.3 (0.9-1.88)	0.162		0.851
Frequency of ANC visits <4/4+	1.25 (0.93-1.69)	0.136		0.255
Visited HF for child immunization (No/Yes) *	0.30 (0.18-0.49)	0.000	0.34 (0.19-0.60)	0.000**
Use MWHs (No/Yes)	0.68 (0.52-0.90)	0.007	0.69 (0.51-0.95)	0.022*
Received IPFP counselling before or during delivery (No/Yes)	0.11 (0.07-0.17)	0.000	0.13 (0.08-0.21)	0.000**
Constant			1.21	0.14

HF: Health facility, Significant at  $\alpha$  value of \* $p=0.05$  and \*\* $p=0.01$

## Discussion

This study examined the contribution of MWHs on IPPFP use. Findings indicated a positive association between MWH use and the uptake of IPPFP. Moreover, the study findings suggested that postpartum women who were counselled in the health facilities before or during delivery, or who had prior information about PFP, were more likely to use contraceptive methods in their immediate postpartum period than women who were not counselled or did not have prior information about PFP. These findings, supported by previous studies, show a positive relationship between IPPFP use and FP counselling before or during delivery (28), and that MWHs offer an important window of opportunity to provide FP messages as well as various contraceptive options (29,30).

This study is supported by other studies conducted in Ethiopia and Uganda which indicate that women who had exposure to family planning information were significantly more likely to use PFP (12,31). Previous evidence has also reported on the association between contraceptive use and MWHs in Kenya and Ethiopia (32,33). The findings of the current study suggest that the expansion of MWHs that provide postpartum family planning counselling, as well as contraceptives, have the potential to further increase the use of contraceptive services during the immediate postpartum period.

Developing a comprehensive package of services for maternity care facilities has a great role to play in improving the availability, accessibility, and acceptability of IPPFP use in resource-limited settings (26). The use of MWH services is a valuable opportunity to provide comprehensive maternity care, including family planning services, increase contact between health care providers with pregnant women, and create possibilities for peer-to-peer discussion among pregnant women about IPPFP. Different opportunities had been used to improve postpartum family planning uptake, including antenatal care, delivery and postnatal services integrated with FP service through, and this study informed the relevance of FP service integration with MWHs to increase the uptake of IPPFP.

The delivery of child immunization services creates another opportunity for postpartum women to have multiple contacts with health care providers, and for women to be exposed to PFP counselling. The use of modern contraceptive methods is low in low-income countries, but most women are likely to want immunization services for their children. In 2019, immunization coverage reached 72% in Ethiopia (as measured by the estimated delivery of DTP3) (34). In this study, 86% of postpartum women (both those who used and did not use MWHs) have had experience of child immunization services. Of the postpartum women

who used MWHs and had the experience of child immunization, 78% received IPPFP counselling. Of these women, 55% adopted IPPFP. A previous study found that FP messages integrated during immunization visits were associated with a 54% increase in the average monthly number of new FP acceptors (35). A similar study conducted in Mali indicated that 18% of women received IUCDs and implants during clinical immunization days (36).

As with other studies, the current study found that postpartum women with a secondary education have an increased awareness of PPF and are more likely to use IPPFP (12,37,38). Postpartum women whose educational status was secondary or above were more likely to use IPPFP compared to those who are illiterate. This might be due to the attainment of education exposing women to a better understanding of PPF information and counselling during the postpartum period.

The rate of IPPFP use for women who did not use MWHs is higher compared to the national figures of IPPFP use (24), even though this study confirmed a significant difference in the uptake of IPPFP among women who used MWHs compared to those who did not use MWHs. This difference is accounted for by the project's contribution to improving IPPFP services across the project area, as the project supports the IPPFP program through multiple activities, such as: i) improving the family planning and reproductive health service-delivery system through implementation of different improved service-delivery approaches; and ii) integrating family planning services within the health system across the continuum of pregnancy and child birth. The project provided capacity enhancement in IPPFP training for health care providers working in the delivery room to initiate IPPFP service provisions and utilization of IPPFP increased since then (39).

This analysis highlights important findings to support program integration and its contribution, but the study was not without limitations. This study is limited by its focus on USAID 'Transform: Primary Health Care' implementation *woredas*, which constrains generalization beyond the project districts selected for this study. The 15 health centers in the study are among the project-intervention facilities and have had considerable resources provided over the past three years. It is likely that outcomes in these health centers are better than non-project health centers. Finally, several questions relied on participants' recall of events over the past 12 months, potentially creating recall bias (participants' ability to accurately recall). Also, there is a possibility of social-desirability bias as women may have wanted to report "good behavior."

### Conclusions and recommendations

This study examined the contribution of MWHs and the uptake of FP services during the immediate postpartum period. Providing a comprehensive package of services, including FP information and counselling, in MWHs can have a positive impact on improving IPPFP use. By designing and implementing a holistic approach to maternity services in primary health care facilities,

MWHs create the opportunity to increase contact between health care providers and pregnant women, possibilities for peer-to-peer discussion among pregnant women, and IPPFP use. Future research is needed to understand the cost implications of integrating IPPFP into MWHs in health care facilities, and to understand the situation in IPPFP uptake in contexts outside of the non-project implementation areas.

### Competing interests

The authors declare they have no competing interests.

### Availability of data and materials

The datasets used in this study are not publicly available to ensure individual privacy. All information related to the processed data is included in the results section of the study. The raw data used in this analysis is available from the corresponding author on reasonable request using [bbelayihun@pathfinder.org](mailto:bbelayihun@pathfinder.org).

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### Authors' contributions

MA, BT, YT, HZ, AT, AT, WW, FM, and ZT participated in the planning and coordination of this study including data collection and write up, designing, and drafting of the manuscript. MA and BT revised and approved the final manuscript.

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