Innovations for maternal, newborn & child health

ESSENTIAL NEWBORN CARE CORPS Project Evaluation Findings

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HEALTH POVERTY ACTION

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What's inside?

Acronyms used

ANC	Antenatal Care
CB	Community Beneficiary
CHW	Community Health Worker
DHMT	District Health Management Team
DID	Difference-in-difference
DMO	District Medical Officer
DT	Design Thinking
EA	Enumeration Area
ENCC	Essential Newborn Care Corps
FGD	Focus Group Discussion
GoSL	Government of Sierra Leone
HF	Health Facility
HP	Health Promotion
HP+	Health Promotion Plus
HPA	Health Policy Action
IDI	In-depth Interview
KII	Key Informant Interview
MCH	Maternal/child health
MFSE	Microfranchise Social Enterprise
MNCH	Maternal, Newborn, and Child Health
MNHP	Maternal Newborn Health Promoter
PD	Process Documentation
PHU	Primary Health Unit
PNC	Postnatal Care
TBA	Traditional Birth Attendant
TOC	Theory of Change

Introduction

The challenge in Sierra Leone

Sierra Leone has among the highest maternal, infant, and under-5 mortality indices in the world. According to the 2013 Demographic and Health Survey, the national maternal mortality ratio and infant mortality rate are estimated at 1,165 maternal deaths per 100,000 live births and 92 deaths per 1,000 live births, respectively. Globally, the country also has the highest under-5 mortality rate at 156 deaths per 1,000 live births.[1]

It is critical to have access to skilled care before, during, and after childbirth in order to avert maternal and neonatal morbidity and deaths. However, the culture of giving birth at home in Sierra Leone remains prevalent, with 44 percent of births delivered at home.[1] More than one-third (39%) of all births are conducted without a skilled health provider, and among those, approximately 92 percent are assisted by a traditional birth attendant (TBA). [1]

To improve health outcomes, the Government of Sierra Leone (GoSL) implemented the Free Health Care Initiative in 2010, which rendered health care free for children under 5 years of age and women who are pregnant or lactating.[2] Within the same year, the GoSL also instituted a policy that officially discouraged TBAs from performing home deliveries.

TBAs have supported women in Sierra Leone through pregnancy and delivery for generations. Acquiring their learning from older TBAs or through brief government-sponsored trainings, TBAs are a trusted and well-respected source women and their families rely upon during pregnancy and childbirth. Therefore, despite political effort to discourage TBA activities, women continue to seek their advice and services, highlighting the importance of the TBAs and the need to engage the cadre to combat the high number of maternal, infant, and child deaths.

Innovations for Maternal, Newborn & Child Health: project description

Recognizing TBAs as a crucial maternal and newborn health resource in their communities, the Essential Newborn Care Corps (ENCC) pilot explores how **retraining, repositioning, and rebranding** the cadre to work as **maternal newborn health promoters (MNHPs)** impact coverage of essential care for mothers and young children.

ENCC is part of Concern Worldwide's Innovations for Maternal, Newborn & Child Health (MNCH) project (*Innovations*), an initiative funded by the Gates Foundation that seeks to identify, support, and field-test bold innovative ways to overcome barriers to delivering proven solutions for MNCH.

Five innovations, including ENCC, were developed and implemented from 2013 to 2015 across three countries: Kenya, Ghana, and Sierra Leone. Each innovation involved stakeholders from the private, nongovernmental organization, health, and nonhealth sectors and consulted a range of national and international experts as well as the communities themselves.

To develop a human-centered process and output, *Innovations* applied design thinking (DT) concepts and tools in two phases to design the five projects:

- **MARCH 2011:** During the "ideate, incubate, test, and evaluate" process, several possible pilots were identified to address barriers to accessing MNCH services. Different DT tools were used to ensure that pilot ideas not only utilized expertise outside the traditional health sector but also reflected the needs, interests, and desires of target communities. The five pilots were selected and then shaped and refined using DT methods.

- **AUGUST-OCTOBER 2013:** During the "rapid prototyping" phase, *Innovations* held several DT workshops for ENCC in Sierra Leone. Various stakeholders, including TBAs, program staff, and mothers, were gathered to determine the acceptability of certain elements and concepts of the ENCC model and identify any potential project roadblocks. Program facilitators used DT techniques to gather insights and data to inform optimal project design for better fit with the target communities.

ENCC pilot design

The ENCC intervention

To leverage the existing trust and status TBAs hold within the communities, ENCC recruited the cadre to improve coverage of essential care among mothers and newborns. The two-year pilot provided training and supervision to TBAs and rebranded them as maternal and newborn health promoters (MNHPs), harnessing their potential to help address the shortage of health workers while still complying with the ban on TBA-led deliveries. MNHPs were trained to provide basic care, medicine, and health-related advice to pregnant women and families during home visits. They also referred mothers to the health facilities for deliveries and emergencies. The cadre therefore served as a link connecting communities to the country's formal health system. ENCC also contained a complementary **microfranchise social enterprise (MFSE) component** in which half of the MNHPs received business training and were loaned a start-up basket of health and baby products to sell during their home visits. The pilot assessed the feasibility of the social franchise model to incentivize and generate income for the MNHPs in their newfound roles.

There were **two intervention groups** across **nine chiefdoms** in **Bo District**, Sierra Leone. One intervention group, Health Promotion Plus (HP+), received both MNCH promotion training and MFSE training/support. The second intervention group, Health Promotion (HP), received only the MNCH training. Further details of each group are provided below:

Health Promotion (HP)

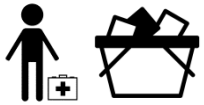
MNHPs were trained on key MNCH messages and conducted home visits during pregnancy and postpartum stages. The training manual used was specially developed for the predominantly illiterate cadre. MNHPs were expected to make four visits throughout a woman's pregnancy and three visits after delivery. During these visits, the MNHPs counseled on antenatal care (ANC), postnatal care (PNC), breastfeeding, maternal and newborn danger signs, and family planning. Referrals for ANC, facility delivery, PNC, maternal and newborn complications, and family planning were also made.

Maternal/child health (MCH) aides and Health Poverty Action (HPA) supervisors supervised the cadre. MNHPs met monthly with their supervisors to review the MNHPs' activities and performance. Retraining on select MNCH topics was also provided when necessary.

Health Promotion Plus (HP+)

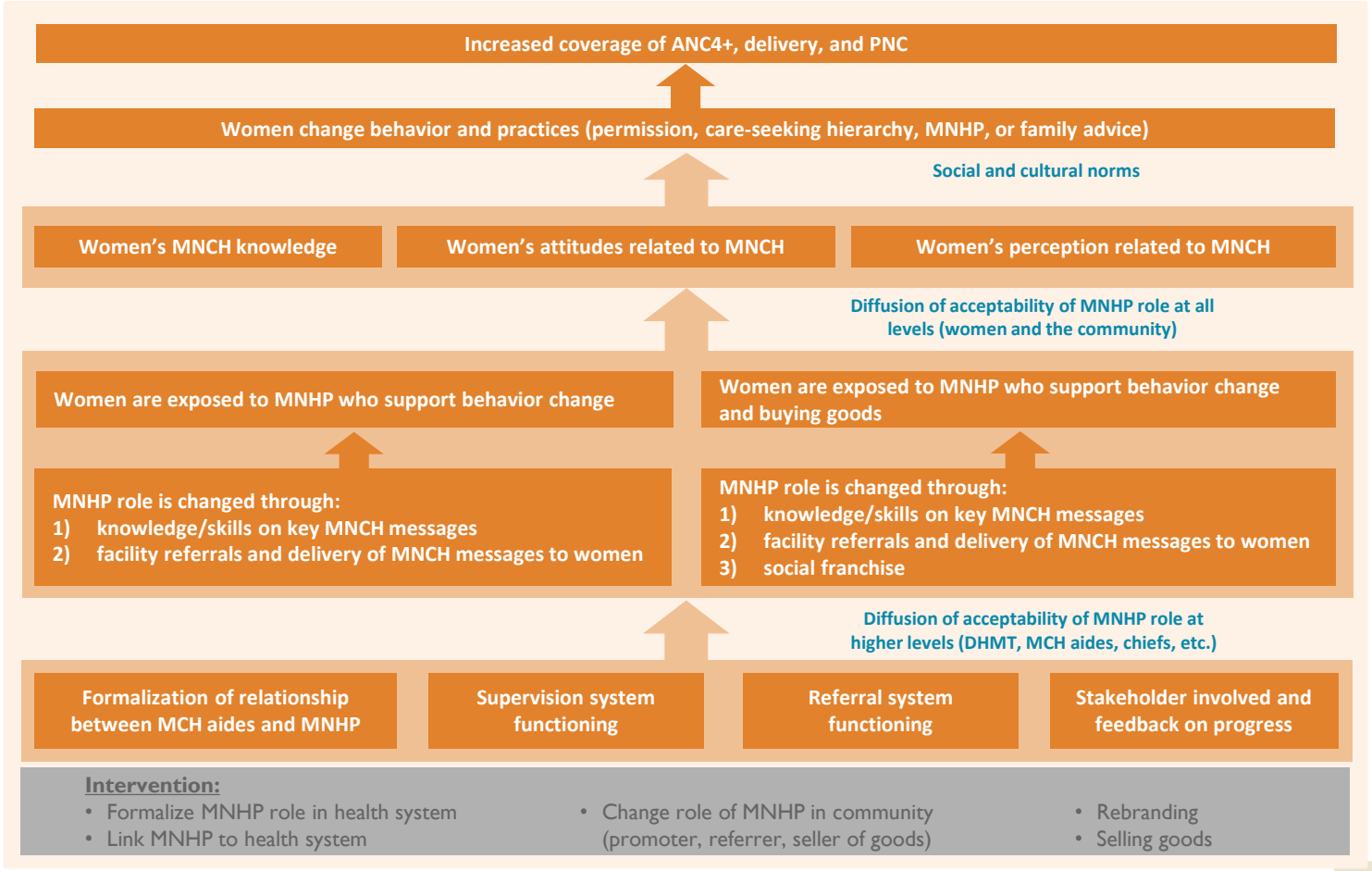
In addition to the activities described in the HP group, the MNHPs in the HP+ group sold a basket of health and baby products as part of the MFSE model. Products sold included bath soap, iodized salt, laundry bar soap, powder soap, toothpaste, toothbrushes, Vaseline jelly, sanitary pads, baby blankets, diapers, and clothes pins. ENCC provided the initial basket of goods (valued at approximately US$30) on loan. During the monthly review meetings with supervisors, MNHPs made loan payments and had the opportunity to purchase more products to build their businesses. Discussions on the MFSE sales and their associated successes and challenges were an added topic in the monthly meetings as well.

ENCC was funded by the Gates Foundation and led by Concern Worldwide U.S. The global research partner was John Snow Research and Training Institute, Inc. (JSI R&T, Inc.), and the local research partners were NestBuilders International, Ask Consulting, and FOCUS 1000. The pilot was implemented by Health Poverty Action (HPA) and the Bo District Health Management Team (DHMT) from the Sierra Leone Ministry of Health and Sanitation.



Theory of Change (TOC) framework

The conceptual framework below summarizes the pathway of change ENCC seeks to enact to ultimately improve maternal and newborn health. In this framework (reading from bottom to top), high-level officials, including the DHMT, MCH aides, and district medical officers (DMOs), accept the new MNHP cadre as part of the formal health system. MNHPs then perform their duties of health promotion, facility referrals, and/or social franchise, exposing women to their new work and fostering in them a knowledge, attitude, and perception change on MNCH issues. These internal changes spur changes in women's health-related behavior and practices, increasing utilization of facilities for antenatal care, delivery, and postnatal care.



CONTEXT

External factors that can positively or negatively affect the TOC pathway

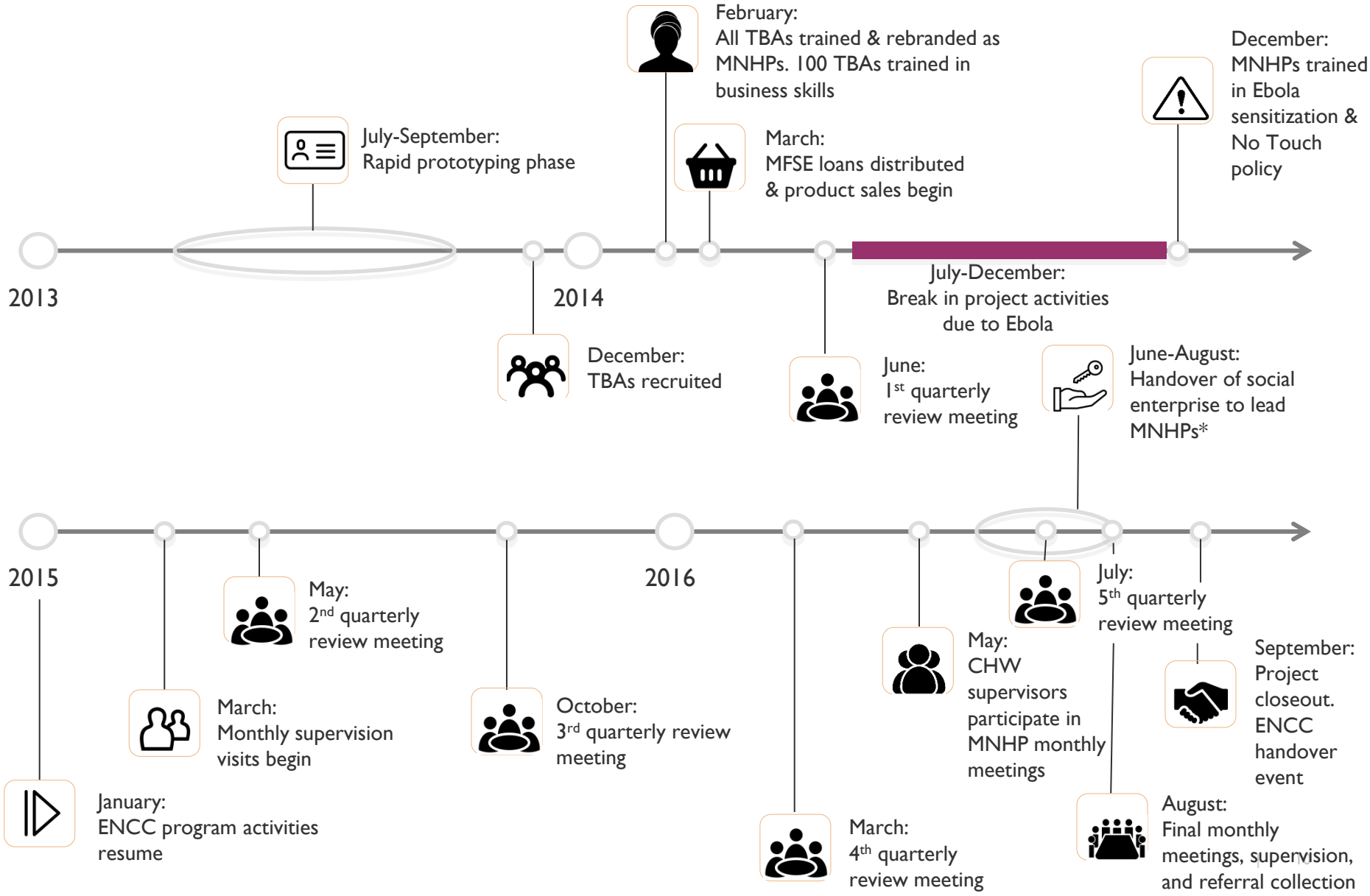
Positive

- Community health worker (CHW) law
- TBA history and standing
- DHMT support
- UNFPA work with TBA
- Concern representation in Sierra Leone
- Cohesive network of TBAs
- Free health care initiative

Negative

- Low literacy of TBAs and women
- Cash flow limits
- Corruption
- History of conflict
- Current norms (gender-based violence)
- Ineffective services, drugs unavailable, staff shortage, equipment not functioning
- Transport to services a challenge

ENCC activities timeline



ENCC evaluation design

Methods of evaluation

A **mixed-methods approach** was used to assess the effect of the ENCC interventions .

Quantitative surveys

Qualitative in-depth interviews

JSI R&T, Inc., led the evaluation and worked closely with Concern. The study design, selection of respondents, and data collection tools were developed in consultation with the organization.

Study arms

The evaluation study included three arms: (i) HP group, (ii) HP+ group, and (iii) a comparison group, which did not receive any intervention. The pilot was implemented across nine chiefdoms in Bo District, Sierra Leone. Characteristics considered for the selection of the intervention and comparison arms included (1) total catchment population, (2) density of primary health units (PHUs), (3), average distance between PHU and MCH referral hospital, and (4) number of active MNHPs.

GROUP 1

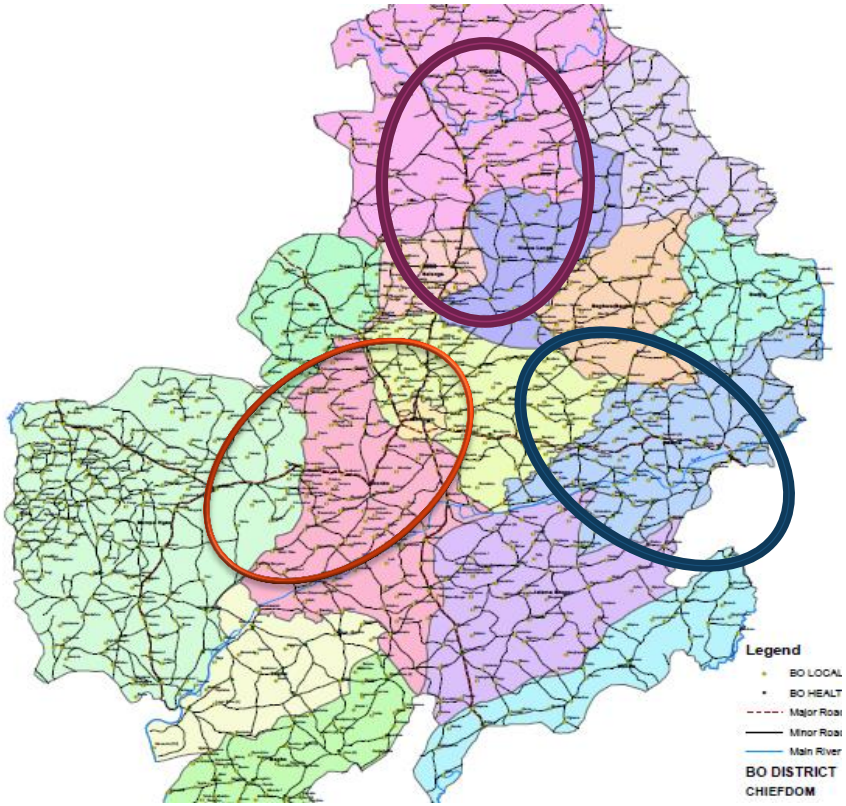
HP Arm. 100 MNHPs trained in Valunia, Gbo, Selenga, Kakua,* and Niawa Lenga chiefdoms

GROUP 2

HP+ Arm. 100 MNHPs trained in Bumpe and Tokonko chiefdoms

GROUP 3

Comparison Arm. No intervention in Baoma, Kakua,* and Jiama-Bongor chiefdoms



Some villages in Kakua chiefdom have been assigned to the HP arm and others to the HP+ arm. Because Kakua is so large, crossover between the two groups was estimated to be limited.

Evaluation timeline & data sources

A series of research, monitoring, and evaluation activities were conducted throughout the pilot to capture progress and learning and to ultimately evaluate the outcome of ENCC.

Method	Baseline Assessment (October 2013)	PD 1 (June-July 2015)	PD 2 (March 2016)	Endline Assessment (June 2016)
Quantitative	-Household survey -Women's survey			-Household survey -Women's survey -MNHP survey
Qualitative		-Key informant interviews (KIIs) with MCH aides, community beneficiaries (CBs), DHMT, HPA staff, and MNHPs -Focus group discussions (FGDs) with women -Monthly monitoring data	-KIIs with MCH aides, CBs, Concern staff, HPA staff, MNHPs, and women	-KIIs with MCH aides, CBs, DHMT, women, and MNHPs

Quantitative study design

Quasi-experimental design

Data collected from households and women at baseline and endline from all arms

The quantitative methods of the evaluation employed a quasi-experimental design at the household level. The baseline survey was conducted in October 2013, immediately before the intervention was launched, and the endline survey was conducted in June 2016, right before the end of the project. Local research partners NestBuilders and FOCUS1000 collected the baseline and endline data, respectively.

The previously mentioned TOC (slide 9) was at the core of the evaluation study, guiding the process and development of the data collection tools. The quantitative surveys therefore aimed to collect information on changes in the utilization of select MNCH-related facility services as indicated by the TOC flowchart. Changes in maternal MNCH knowledge, maternal MNCH perception, and coverage of the HP and HP+ interventions (MNHP services) at the household level were also examined.

MNHP survey

For the endline assessment, an additional survey was conducted among all the MNHPs to examine their knowledge on MNCH, level and scope of engagement with the community, and job satisfaction. In addition, data on amount and utilization of profit from MFSE sales were collected from the MNHPs in the HP+ arm.

The survey was developed based on MNHPs' job aides, training materials, and counseling tools. The instrument was also field-tested and optimized for the MNHPs to understand. The survey was conducted for over a week during the last quarterly review meeting held in July 2016.

Qualitative study design

Conducted for both PDs and at endline to complement endline quantitative results

Mode: Key informant interviews (KIIs), in-depth interviews (IDIs), & focus group discussions (FGDs)

Conducted in intervention arms only

Respondents ranged from DHMT to mothers

Qualitative research methods were employed for the **endline assessment** and **both rounds of the PD**.

At the endline, IDIs were conducted around the same time as the quantitative surveys. Like the quantitative study tools, the TOC guided the design of the in-depth interview script. The IDIs aimed to understand (1) the motivators, facilitators, and barriers mothers faced when seeking facility-based MNCH services; (2) the level of engagement MNHPs have with mothers and communities; and (3) the MNHPs' role in mothers' care-seeking practices. Interviews were additionally conducted with DHMT members to discuss their perspective on the MNHPs, the cadre's influence on health care utilization rates, and sustainability of the HP and HP+ interventions.

Between the baseline and endline assessments, two rounds of qualitative data were collected as part of the PD. The first round consisted of KIIs and FGDs, while the second only consisted of KIIs with key stakeholders (for list of stakeholders, refer to slide 14). The purpose of the PDs was to assess the implementation of ENCC and examine whether changes in key outcomes (maternal MNCH knowledge, perceptions, motivation, and behavior) were emerging based on the pathways stated in the TOC. Purposive sampling was used to select participants for the qualitative analyses.

Research questions

Key research questions (final outcomes)

Has utilization of facility-based MNCH services increased since the baseline in the program intervention areas?

- Increased utilization of facilities for four ANC visits
- Increased utilization of facilities for deliveries
- Increased utilization of facilities for PNC services

Has the HP+ intervention had any additional effect over the HP-only intervention in utilization of facility-based MNCH services?

- Increased utilization of facilities for four ANC visits
- Increased utilization of facilities for deliveries
- Increased utilization of facilities for PNC services

Additional research questions (intermediate outcomes)

What were the perceived enablers and barriers to utilization of care for women in the intervention arms?

Has maternal MNCH knowledge on ANC, delivery, and PNC improved since baseline in the intervention arms? Does maternal knowledge on MNCH differ between the intervention arms?

Do MNHPs' knowledge on MNCH differ between the intervention arms?

How satisfied were the MNHPs with their job as health promoters and what were some perceived challenges in their role?

Has the interaction between the MNHPs and women and their families increased since baseline *(when MNHPs were TBAs)?*

How do the MNHPs interact with the TBAs in the area?

Are the MNHPs making profit from selling goods in the HP+ arm? If so, how are they utilizing their profit?

How have the MNHPs been accepted by the formal health system and community?

Data collection

Data from the baseline, endline, and MNHP surveys were collected through the electronically based platform SurveyCTO. The surveys were uploaded into SurveyCTO's online platform and then downloaded onto Samsung Galaxy mobile phones, ready for use by data enumerators.

Experienced data enumerators and field supervisors were trained for a week on how to properly administer the survey tools and use the SurveyCTO server.

In terms of the qualitative data collection, a two-person team conducted each KII with one working as the interviewer and the other as a note taker. The interviews were recorded and later transcribed and translated from Creyol or Mende to English. The interviewers underwent a weeklong training on interview techniques; notably, all were highly educated with a master's degree and had previous experience conducting IDIs. Therefore, richer information could be obtained from respondents.

Two FGDs were also held with mothers from each intervention arm for PD1. Each FGD consisted of one facilitator, one note taker, and six mothers. Both discussions were likewise recorded, transcribed, and translated.

Consent from all respondents was first obtained before administering any survey or interview. All data collection tools were also field-tested with the target population and revised accordingly before their final use.

Sampling strategy & sample size

Sampling strategy: baseline and endline household & women's surveys

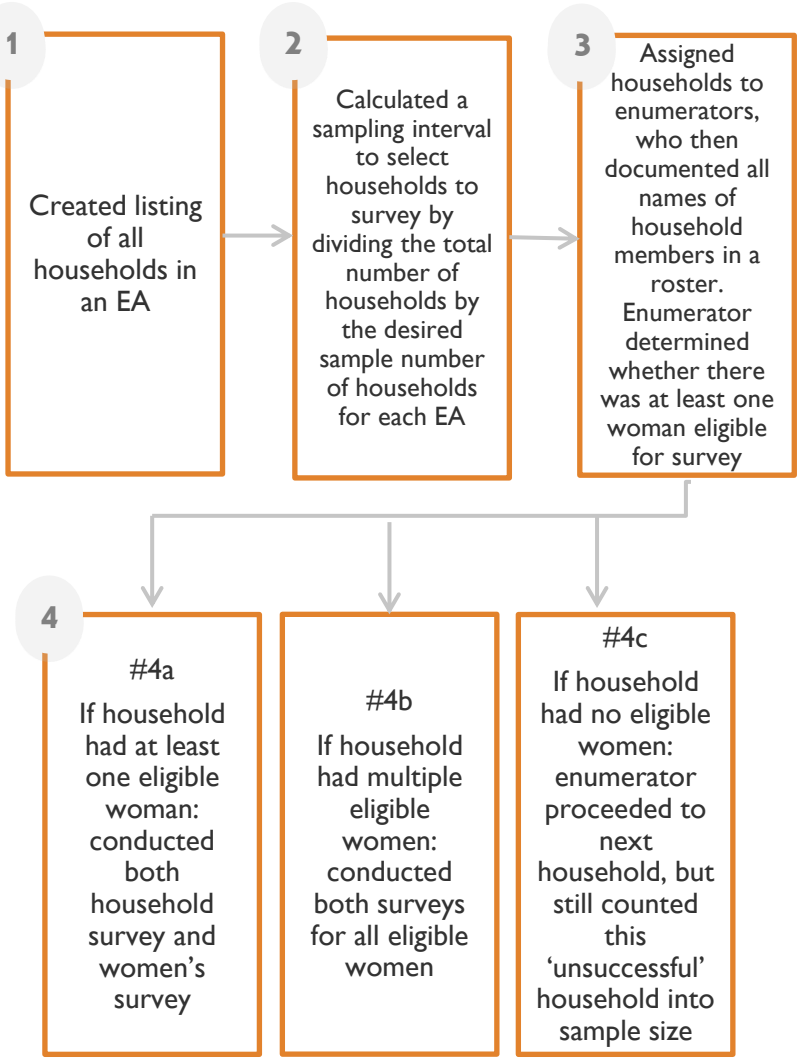
The baseline and endline surveys used a **two-stage cluster sampling** method:

1st stage	Using **probability proportional to size sampling,** 66 enumeration areas (EAs) and 92 EAs were selected for the baseline and endline, respectively. The probability of selecting an EA was proportional to the number of households within the EA.
2nd stage	A total of 33 households in the baseline and 40 households in the endline were sampled from each EA to reach the target population (see Figure 1).

The following parameters were applied when estimating the sample size:

15%	difference on the key outcome indicators in endline
0.75	power to detect the change in the indicators
5%	error margin

Figure 1. Sampling method for household selection



Sample size

	Baseline	PD1	PD2	Endline
Household survey*	745 total -Comparison : 258 households -HP : 246 households -HP+ : 241 households			1,024 total -Comparison : 272 households -HP : 362 households -HP+ : 390 households
Women's survey**	795 total -Comparison : 276 women -HP : 255 women -HP+ : 264 women			1,110 total -Comparison : 285 women -HP : 391 women -HP+ : 434 women
MNHP survey				196 total -HP : 97 MNHPs -HP+ : 99 MNHPs
KIIs		28 total -HP : 4 MCH aides, 2 CBs, 5 MNHPs -HP+ : 4 MCH aides, 2 CBs, 5 MNHPs -2 DHMT members & 4 members from HPA	42 total -HP : 5 MCH aides, 2 CBs, 5 MNHPs; 3 mothers -HP+ : 5 MCH aides, 2 CBs, 8 MNHPs; 6 mothers -6 members from HPA & Concern	38 total -HP : 8 women*+, 2 MCH aides, 5 MNHPs, 2 CBs -HP+ : 8 women*+, 1 MCH aides, 6 MNHPs, 3 CBs -3 DHMT members
FGDs		12 total -HP: 6 mothers -HP+: 6 mothers		

Head of households were interviewed.

****Women who were currently pregnant or had a live birth in the past year were eligible. If a woman had a live birth in the previous year and was also currently pregnant, she was interviewed for the previous live birth only.***

+Includes women who both delivered and did not deliver at the facility

Sample size: Birth status of respondents for women's survey

Baseline		Endline:
282	Women currently pregnant	344
512	Women with a live birth in last 12 months	766
1	Unknown	0
795 total		1,110 total

Analytical method

Analytical approach

The findings presented in this evaluation report are primarily based on the baseline and endline quantitative results (household, women's, and MNHP surveys) to get a better understanding of the change in facility utilization for MNCH services over time and the effect of the project on the communities, MNHPs, and key health providers. The qualitative data from baseline and endline, as well as the PDs, provide context to help explain the reasons for the change observed. The analysis draws information from the previously mentioned data sources, in addition to the monitoring data collected by Concern Worldwide, to provide a comprehensive picture of the effect of the project.

Quantitative approach

The baseline and endline quantitative data were cleaned and analyzed using STATA 14. **Bivariate** and **multivariate logistic regressions** were used to examine the associations between the study arms and outcomes. The outputs of the multivariate logistic regressions were then applied in **"difference-in-difference (DID)" analysis** to determine the differential effect of the intervention on key indices. The DID estimation detected the added changes that may have happened in the HP and HP+ arms over the changes in the comparison arm. Statistical significance was tested at **p<.10 level.** All multivariate models controlled for age, education, religion, household wealth, and access to better roads. The household wealth index was calculated using the principal component analysis and was determined by a number of household characteristics, including amount and type of assets.

To assess respondent's knowledge, components listed under each category were coded with a binary system of 0 (no mention of component) or 1 (component mentioned). Thus, a scale for a variety of indicators was created by simply summating all the components belonging to each knowledge category. The effect of each study arm on a scale was assessed using linear regression and DID.

Qualitative approach

The qualitative data in the endline, PD1, and PD2 were coded and analyzed for emergent themes using NVivo 11. The analyses consisted of two stages. In the first stage, a **deductive coding process** was used based on themes generated from the TOC chart. The research team defined these thematic codes and applied them to the data. A second round of coding was then conducted, using an **inductive approach** to analysis. In addition to the already existing coding scheme, new themes and codes were created and applied to the IDI, KII, and FGD transcripts. To maintain intercoder reliability, the same research team coded for both rounds and routinely compared analyses to ensure consistency.

Limitations

Several limitations emerged during the pilot's lifetime. Firstly, most indicators of interest were already at high levels at baseline in Bo District. This therefore posed major challenges for the HP and HP+ interventions to make substantial increases in the targeted outcomes.

The sample size was also not large enough, and power in the sample size was too low, to detect significant changes in the outcome indicators if the change were small (parameters used: power 0.75 to detect 15 percent change in the indicators).

Additionally, a portion of the sample (women who were currently pregnant) was excluded from the analysis for some key final outcomes at baseline and endline. Though they were asked questions about their intentions to utilize facility-based MNCH services, no evidence was found indicating that intention would translate into practice. As such, this group of respondents was excluded in order to produce more accurate results of usage. This strategy further reduced the sample size.

Another limitation is that the respondent pool included mothers who had a live birth a year prior to the survey. Due to this relatively long time gap between delivery and survey implementation, some indicators may have suffered from recall bias. For example, number of ANC visits or components checked by a skilled health provider during postnatal visits may not have been clearly recalled.

Due to time constraints, the endline MNHP, household, and women's surveys were conducted simultaneously as the KIIs. Thus, there were some missed opportunities to qualitatively explain certain unexpected quantitative findings, such as why the utilization of PNC at the health facility within 48 hours after delivery was much lower for the two intervention arms than it was in the comparison arm.

Furthermore, no qualitative studies were conducted in the comparison arm, leaving a gap in the understanding of the TBAs' role in areas absent of MNHPs. Such studies would have been of added value especially due to the marked improvement in coverage for certain outcomes of interest in the comparison region.

Lastly, though the two PDs examined contextual factors influencing ENCC implementation, interactions from third-party health programs were not explicitly addressed in the quantitative surveys or in the endline qualitative study. Therefore, interactions from external agencies could not be controlled for in the quantitative analyses.

Study outcomes

Both the baseline and endline assessments aimed to provide evidence of ENCC's effect on the intermediate and final TOC outcomes listed below:

Intermediate outcomes

Women's knowledge of MNCH

- Knowledge of dangers signs during labor, after delivery, and in newborns
- Knowledge of birth preparedness components

Engagement of MNHPs or TBAs

- MNHPs' coverage of households
- *interaction between MNHPs/TBAs and mothers
    - MNHPs providing increased referrals for four ANC visits
    - Women accepting advice provided by MNHPs
    - MNHPs providing increased referrals for newborns within 24 to 48 hours for birth.
    - MNHPs providing increased referrals for facility deliveries within functional EMOC referral network

Final outcomes

Utilization of facilities for at least four ANC visits as recommended by the World Health Organization

Utilization of facilities for first ANC visit during first trimester of pregnancy

Utilization of facilities for deliveries

Utilization of facilities for PNC

Findings

Percent distribution of women's characteristics by time and study arm

Baseline survey

- Majority of the cadre were married (88%), Muslim (74.3%), Mende (91.7%), and received no formal education (64.5%).
- Overall, one out of every three women were between the ages of 20 and 24 years.
- The HP+ arm had the highest proportion of the study arms of women in the lowest wealth quintile (33.3% versus 12.3% and 13.2% in the comparison and HP arm, respectively).

	Comparison	HP	HP+	Total
N	253	227	240	795
Age				
15-19 years	15	9.7	18.3	13.7
20-24 years	36	37	27.9	33.5
25-29 years	19.4	21.6	24.6	22.3
30-34 years	19.8	15.4	12.5	16.6
35-49 years	9.9	16.3	16.7	14
Wealth				
Lowest	12.3	13.2	33.3	19.1
Second	16.6	19.8	14.6	18.1
Middle	26.9	22	18.8	22.5
Fourth	26.9	26.4	18.3	24
Highest	17.4	18.5	15	16.2
Parity				
1	14.6	22.5	22.5	19.2
2-3	41.1	41	29.2	37
4 or more	44.3	36.6	48.3	43.8
Education level				
None	68	64.6	60.8	64.5
Primary	14.2	16.8	18.3	16.6
Secondary	17.8	18.6	20	18.6
Religion				
Christian	12.3	39.6	27.5	25.5
Muslim	87.4	60.4	72.5	74.3
Ethnicity				
Mende	91.3	93.7	90.2	91.7
Others	8.7	6.3	9.8	8.3
Marital status				
Never married	10.3	5.7	10.4	8.3
Married/living with a partner	86.6	89.9	86.3	88.4
Divorced/widowed	3.2	4.4	3.4	0.8

Percent distribution of women's characteristics by time and study arm

Endline survey

- Overall, the endline distribution of characteristics remained similar to the baseline's in that the majority were married (88.6%), Muslim (69.1%), Mende (92.8%), and received no formal education (55.9%).
- However, there is a smaller clustering of women aged 20 to 24 years and a relatively more even distribution among the quintiles from 15 to 29 years.
- Similar to the pattern seen at baseline, the HP+ arm continues to hold the highest proportion of women in the lowest wealth quintile compared with the other arms.

	Comparison	HP	HP+	Total
N	284	391	425	1110
Age				
15-19 years	23.6	19.9	21.6	21.6
20-24 years	21.5	28.4	29.6	27.1
25-29 years	25	27.9	26.4	26.6
30-34 years	17.6	14.3	14.1	15
35-49 years	12.3	9.5	8.2	9.7
Wealth				
Lowest	12.3	19.9	26.6	20.7
Second	26.1	20.2	19.5	21.3
Middle	19	17.1	18.8	18.3
Fourth	22.2	13.8	16.2	17.0
Highest	20.4	28.9	18.8	22.7
Parity				
1	23.6	24.3	30.6	26.6
2-3	27.5	39.9	32	33.9
4 or more	48.9	35.8	37.4	39.5
Education level				
None	58.8	59.8	50.6	55.9
Primary	15.8	15.3	19.8	17.1
Secondary	24.6	24	29.2	26.4
Religion				
Christian	14.8	47.1	26.6	30.9
Muslim	85.2	52.9	73.4	69.1
Ethnicity				
Mende	93.3	89	95.9	92.8
Others	6.7	11	4.1	7.2
Marital status				
Never married	11.3	10.5	6.8	9.4
Married/living with a partner	85.6	87	92.2	88.6
Divorced/widowed	3.2	2.6	1.0	1.1

Percent distribution of maternal characteristics by time and study arm: road access and transportation

	Baseline survey				Endline survey			
	Comparison	HP	HP+	Total	Comparison	HP	HP+	Total
N	253	227	240	795	284	391	425	1110
Village is accessed by								
Paved road	51.8	66.3	67.8	61.8	84.9	84.4	81.1	82.9
Main type of transportation to get to health facility for regular check-up from village								
On foot	96.4	80.8	89.4	89.4	88.8	68	67.3	73.1
Ocada*	2.9	18.8	7.6	7.6	9.1	26.9	30.4	23.7
Other	0.4	0.4	3	3.0	2.1	4.9	2.1	3.1

**motorcycle taxi*

- Road conditions seemed to have improved for women at endline, with 82.9% of women having access to a paved road compared with only 61.8% at baseline.
- Though walking remains the main transportation method to get to health facilities, a higher proportion of women are using the ocada at endline across the three arms (23.7% compared with 7.6% at baseline).

ENCC in the context of Ebola

Percentage of MNHPs who reported that their work as an MNHP continued during Ebola:

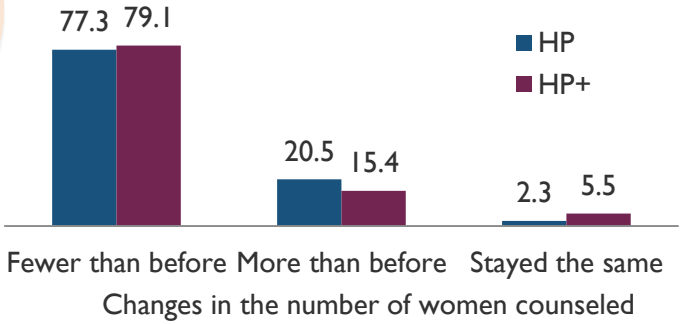
90.7% HP

91.9% HP+

The Ebola epidemic hit Sierra Leone from May 2014 to March 2016, leading to further declines in the use of health care facilities in many communities across the country.[3] A much lower proportion of women sought pregnancy-related care, and facility-based deliveries reduced by 11 percent nationwide. In light of the outbreak, the ENCC pilot was forced to temporarily suspend activities for six months (July to December 2014). In December 2014, all MNHPs were trained in Ebola community sensitization and mobilization and abided by the national No Touch guidelines during their home visits.

Though a majority of the cadre were counseling fewer women during the outbreak, nine out of 10 MNHPs from both intervention arms reported that they did not stop working as MNHPs.

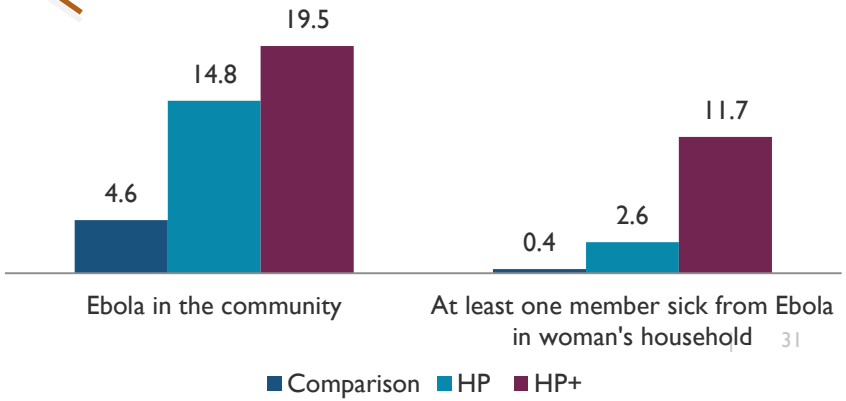
MNHPs' work during the Ebola epidemic



The endline surveys were conducted in June 2016, gathering information on women's usage and MNHPs' provision of health care services in the preceding year. The Ebola epidemic was therefore unlikely to affect the utilization and provision patterns captured by the surveys. Nevertheless, the outbreak was and is a lingering legacy for Sierra Leone. Thus, the endline survey asked MNHPs and women about the effects of Ebola on their community and care-seeking patterns during the time of the outbreak.

The effect of Ebola varied by study arms.

Women's experience with Ebola in their communities by study arm



84.5% of MNHPs in the HP arm
84.8% of MNHPs in the HP+ arm
stated that Ebola did not reach their communities.

Sierra Leone was officially declared free from Ebola by the time PD2 was implemented in March 2016.

Has utilization of facilities for four or more ANC visits (ANC 4+) increased since baseline in the program intervention areas?

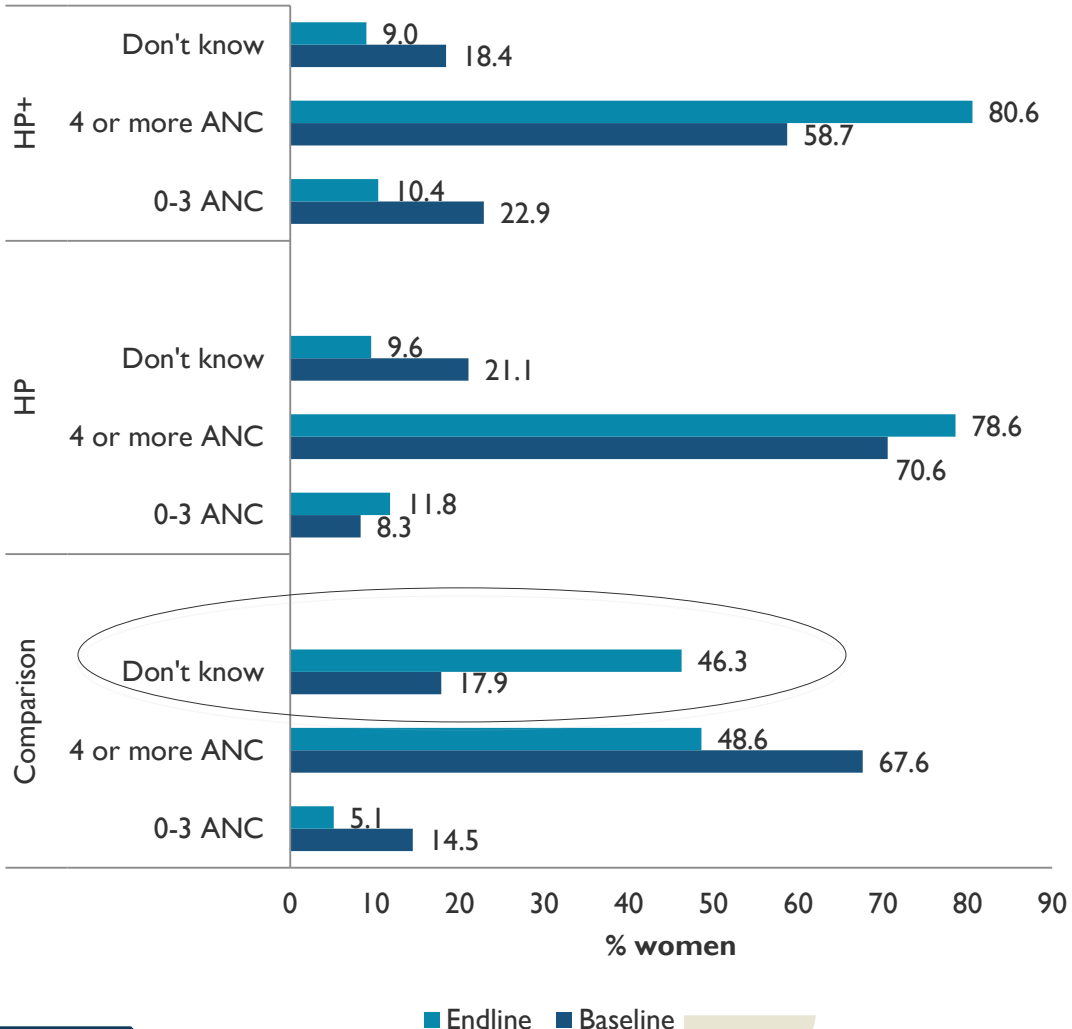
ANC 4+

Effect of interventions on ANC 4+ visits after adjusting for other covariates

At baseline, approximately one-fifth of women across the arms reported to not know the number of ANC visits made during their pregnancy. However, at endline, nearly half (46.3%) in the comparison arm reported to not know compared to less than only 10% who reported "don't know" in the intervention arms. This finding may indicate that women in the intervention arms were becoming more aware of the recommended number of visits for ANC.

There is a high percentage of women reporting "don't know" in the comparison arm at endline: 46 percent compared to less than 10 percent in both intervention arms.

Percentage of women who sought four or more ANC visits at baseline and endline by study arm (adjusted)



ANC 4+

Effect of interventions on ANC 4+ visits after adjusting for other covariates. ***Excludes cases of "don't know" and women who were 7 months pregnant or fewer***

Women who gave birth in the previous year and those who were pregnant 8 months or more were included in the analyses only to ensure accuracy of utilization counts.

There was a statistically significant increase in the utilization of facility-based ANC 4+ in the HP+ and comparison arms since baseline. However, no such change was evident in the HP arm. In fact, there was a slight reduction in the utilization, but the effect was not significant.

The effect of the HP+ intervention versus the comparison on utilization of ANC 4+ was found to be insignificant at 8.8 percentage points. However, when compared with the HP intervention, the HP+ had a significant 19 percentage-point increase in facility-based utilization of ANC 4+ visits.

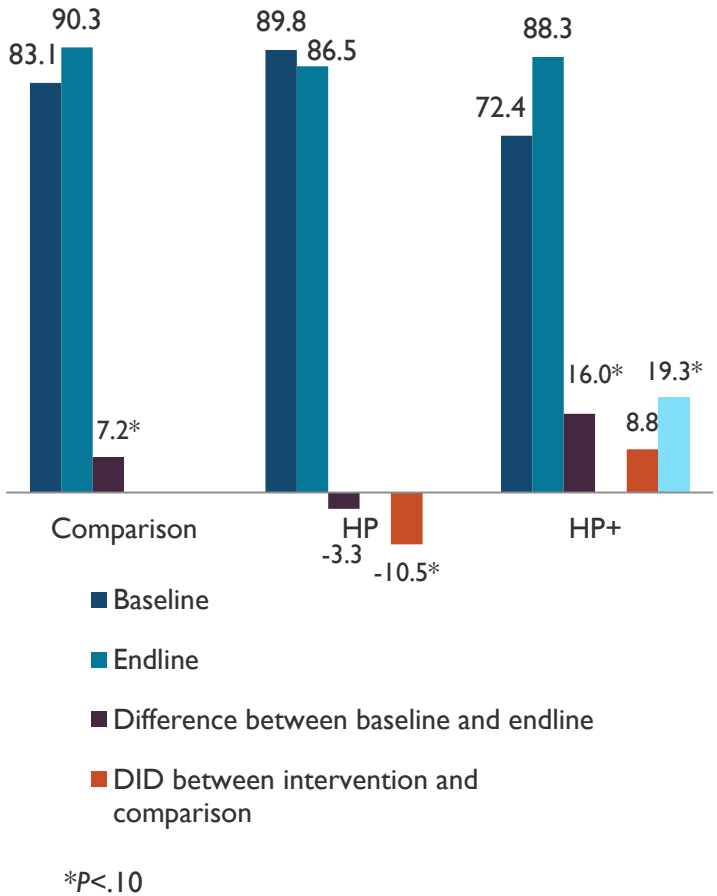
Notably, there was a significant negative effect of the HP arm intervention compared with the comparison. This finding is a bit discouraging given that improvements have occurred in the other two arms.

One possible explanation for the lack of improvement in the HP arm could be that facility-based ANC was already high at baseline, which made it additionally challenging to engender further increases.

In fact, the high coverage of this indicator at baseline for all three arms indicated that the practice of seeking ANC at health facilities was relatively well established in the area already.

The monitoring data on slide 47 correspond with the findings and show that the majority (31%) of the referrals from the

DID in utilization of four or more ANC visits (adjusted)



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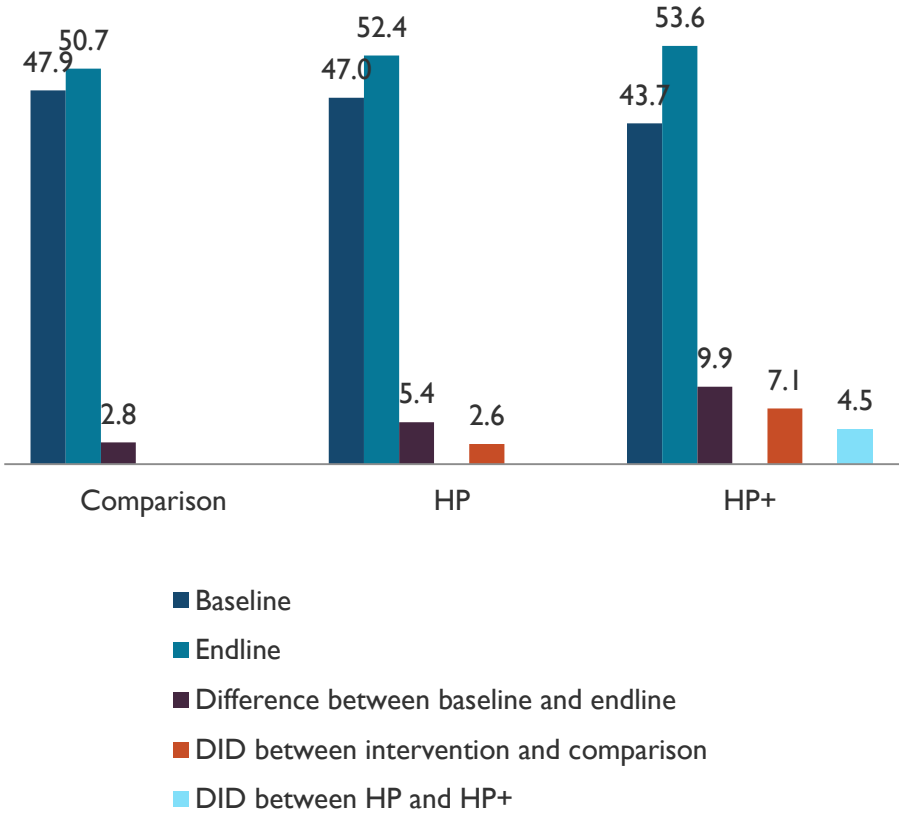
ANC visit during first trimester

DID: Percentage of women who sought facility-based ANC during the first trimester

Less than half of the respondents at baseline sought their first ANC at health facilities during their first trimester, as recommended by the World Health Organization, across all three arms.[4] By endline, all arms experienced an increase in the indicator. Though the HP+ intervention had the highest ending coverage at 53.6%, the gain was modest (9.9 percentage points). Moreover, the value was still relatively low and not too far off from the comparison arm's ending coverage. The interventions' effect were not statistically significant.

It is evident that MNHPs were counseling and referring pregnant women for ANC and delivery services. However, they were not able to reach them in the early stage of pregnancy. While this particular aspect has not been explored further in the qualitative study, there is a likelihood that the MNHPs were not being informed of pregnancies early on.



Has utilization of facilities for deliveries increased since baseline in the program intervention areas?

Health facility–based deliveries

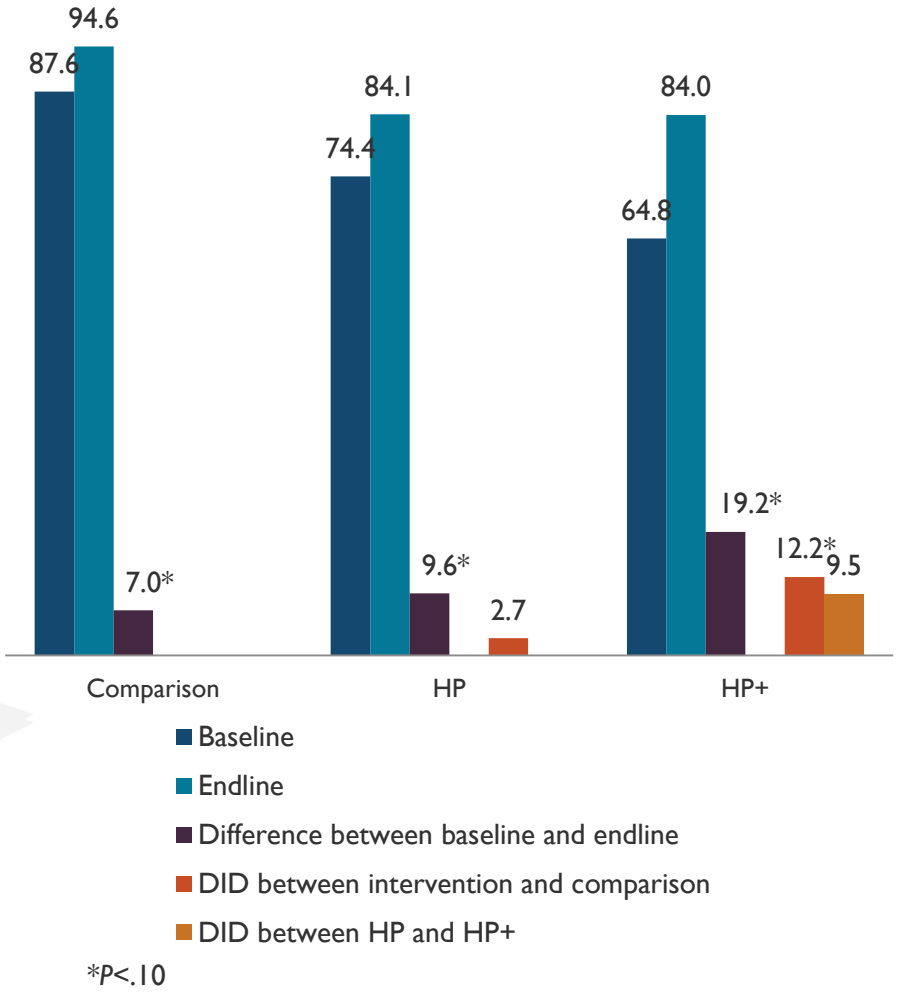
Effect of interventions on deliveries conducted at the health facility

Increasing facility-based deliveries was one of the major outcome indicators. MNHPs were trained to encourage and refer women to the health facilities.

- All three arms experienced significant increases in health facility–based deliveries since baseline. The HP+ arm made the largest gains at 19.2 percentage points.
- The **HP+ intervention** had a significant effect on facility-based deliveries with a **12.2 percentage-point increase** over the comparison arm and a **9.5 percentage-point increase** over the HP arm.

Notably, facility-based deliveries were already quite high in the comparison arm at baseline: almost all women reported delivering at the health facility. The initial high coverage in the comparison arm indicates that there is still room for further improvement in the intervention areas.

DID in deliveries at the health facility among women who had a live birth in the past year



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Final Outcome

Has utilization of facilities for deliveries increased since baseline in the program intervention areas?

Women's attitudes toward facility-based services

All respondents from the endline qualitative analyses agreed that more women were going to the facility than before the project was implemented.

"So now we are having more deliveries at the facility than before. So it is obvious the people respect them and obey them; that is why the turn-up is very high and it shows that the community people are really appreciative of the work of the health promoters." –MCH aide, HP

"I decided to deliver at the health facility because the health promoter always advised me that it would be better if I delivered at the health facility because she said if I deliver at the health facility I will gain benefit like free delivery and they will supply me free bed net." –Woman, HP+

Has utilization of postnatal care (PNC) services increased since baseline in the program intervention areas?

PNC

The interventions showed effects on utilization of PNC services. PNC check-ups on women (next slide, left graph) by a health care professional (doctors, nurses, and midwives) slightly increased in the HP and HP+ arms from baseline to endline, while the comparison arm significantly reduced by 15.5 percentage points. **The overall effects of the interventions over the comparison arm were significant and around 20 percentage points.**

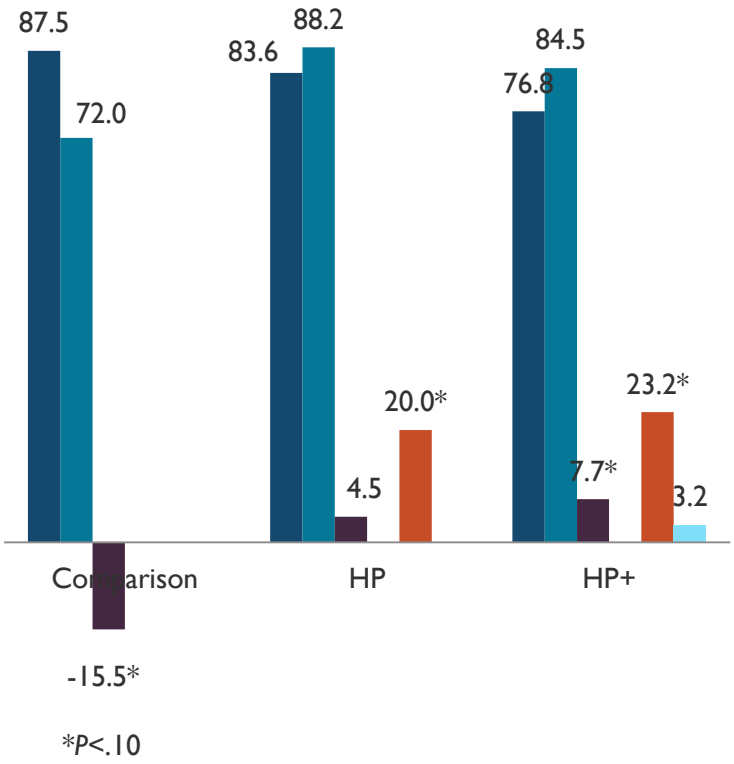
PNC check-ups on newborns (next slide, right graph) likewise experienced a significant 20.percentage-point decrease in the comparison arm. **The HP and HP+ interventions showed a significantly added positive effect with a 17.8 and 15 percentage-point gain over the comparison, respectively.**

Though not significant, the decrease in the utilization of PNC services from baseline to endline for newborns contrasts with the increase seen for the mothers. This seemed unusual given that both mothers and newborns were likely to be seen by a health professional together. The discrepancy may have arisen from health professionals not explicitly telling the mother when they were performing the newborn check-up, leaving mothers unaware of whether the infant was seen by the care provider. Another plausible reason may be that the mothers were more aware of what to expect during the newborn check-ups from their interaction with the MNHPs. As such, if all the components were not addressed, mothers would not have acknowledged it as a proper check-up.

One limitation for PNC was that the survey did not ask about the number and timing of PNC visits made. Such questions would have added a fuller understanding of the interventions' effects on women's utilization of PNC services at the health facilities.

PNC

DID PNC: percentage of women who were checked by a health professional anytime after birth by study arm



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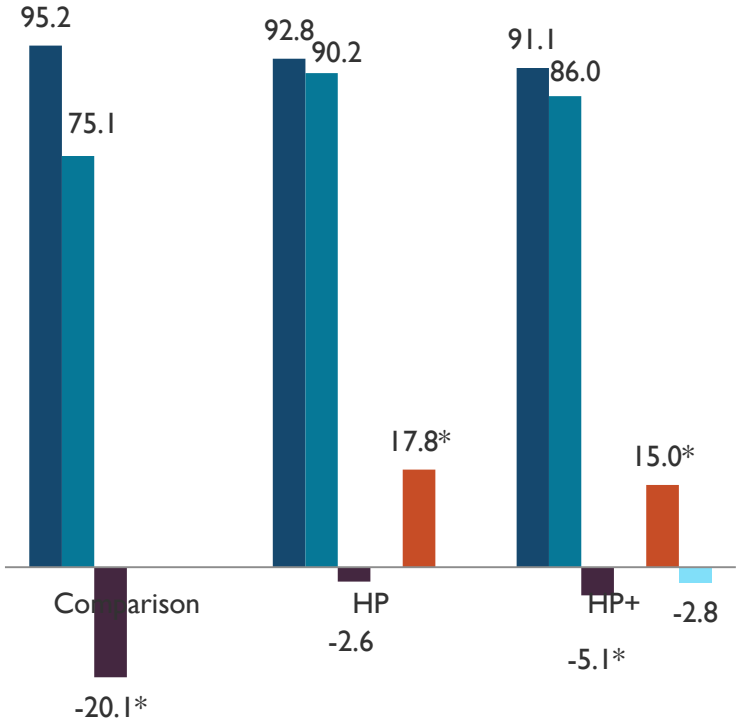
DID PNC: percentage of newborns who were checked by a health professional anytime after birth by study arm



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PNC: Early initiation of breastfeeding

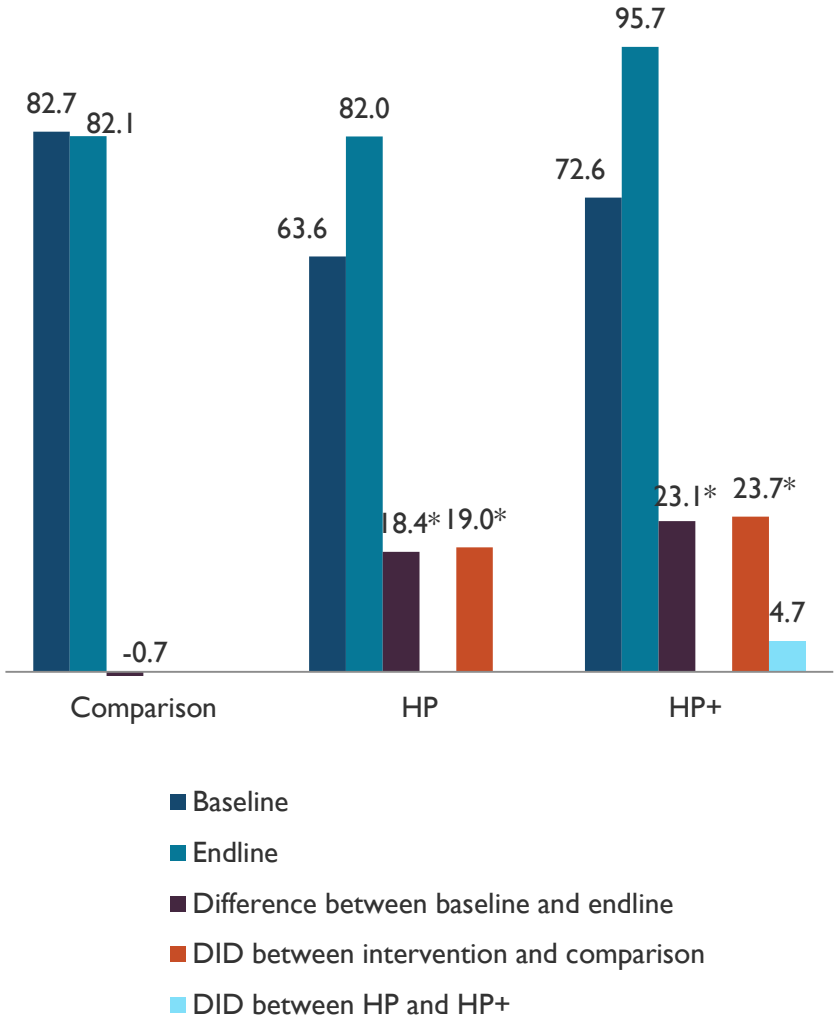
Though early initiation of breastfeeding was not part of the outcome indicators, we investigated its changes since counseling women on breastfeeding was part of the MNHPs' responsibilities. **Results show substantial improvement since baseline in both intervention arms, while the comparison arm remained unchanged.** The HP arm increased by 18.4 percentage points at endline and when compared with the comparison arm made significant gains of 19 percentage points.

The HP+ arm likewise experienced a **major increase** since baseline of 23.1 percentage points. The intervention had showed a significantly added positive effect of 23.7 percentage points over the comparison arm.

The DID analysis showed no significant difference between the HP and HP+ interventions on early initiation of breastfeeding.

Like some of the indicators expressed before, the baseline value was higher in the comparison arm than in the intervention arms.

DID: Percentage of women who initiated breastfeeding within one hour of birth



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What were the perceived enablers and barriers to utilization of care for women in the intervention arms?

Enablers to seeking care

Qualitative analyses conducted at endline explored the enablers and barriers influencing a woman's usage of facility-based services. Respondents included women, community members, and health facility staff. The following factors were emergent themes deemed to facilitate their utilization:

(1) Women cited the **MNHPs' counseling and advice** to be enabling factors, as the counseling increased women's awareness of the importance of facility-based care and the dangers associated with using traditional herbs. Their **respectful attitudes and "polite approach"** during home visits were also explicitly appreciated and fostered women's trust in them, leading to their greater utilization of the MNHP's referrals.

"The health promoter helped me make the decision to go to the health facility regularly during my pregnancy ... and she told me if I notice any difference in my health like having headache, dizziness, I should go straight to the hospital. And her manner of approach was respectful. That influenced me to follow her advice." –Woman, HP+ arm

(2) The **encouragement and support received from community and family members** were also frequently cited to be an enabling factor. Support manifested itself financially (e.g., transportation fare), materially (e.g., foods or diapers for newborns), politically (fines levied if a woman delivers at home), and physically (taking care of children while woman was attending clinic). Verbal reminders and encouragements to go to health facilities were another common form of support.

"This was the decision that my family members also helped me to make. They advised me to take my baby to the facility to avoid sickness like fever. If the baby is not healthy, none of my family members will be happy with me because they will refer to me as a careless mother." –Woman, HP+ arm

Enablers to seeking care

(3) Some respondents also explicitly mentioned how women visited the clinics for the sake of **their and their newborn's health**. Mothers valued a safe pregnancy, delivery, and baby "free from polio and measles." A number of respondents echoed the sentiment and cited the **free services and medicines**, particularly marklates (or immunizations), offered by the health facilities as a factor that drew them to seek facility-based care

(4) To a lesser extent, **positive previous experience delivering at the health facility** and **self-efficacy** were mentioned to be contributing factors enabling women to attend the health facilities.

"I am the kind of person who does not sit and wait for other people to tell me what to do for my child and what not to do for him because I gave birth to him and I know what is good for him and what is not good for him. I want all the best for him especially good health so I took him for every marklate that due him." –Woman, HP

Barriers to seeking care

(1) **Long distance to health facilities** was frequently mentioned to be a deterrent when trying to seek care. Many cited the long distances in conjunction with bad road conditions and lack of transportation available to safely shuttle women to the facilities. Two women reported that though they had the intention of delivering at the facility, because of the long distance, they ended up giving birth en route to the clinic.

(2) Respondents also frequently cited **limited finances** to be a barrier. Low financial resources rendered women unable to acquire the transportation to attend facilities. Additionally, some felt shame because they could not afford to purchase new, clean clothes for themselves and their newborns. They therefore did not want to deliver at the facility for fear of judgment. A few respondents also mentioned that they could not afford to purchase food at the health facility, which forced them to return home when the food supply brought in ran low.

(3) Respondents mentioned that women had **competing priorities** vying for their time. Women who could not find people to take care of their children, family members, or farms/gardens were unable to attend the health facility.

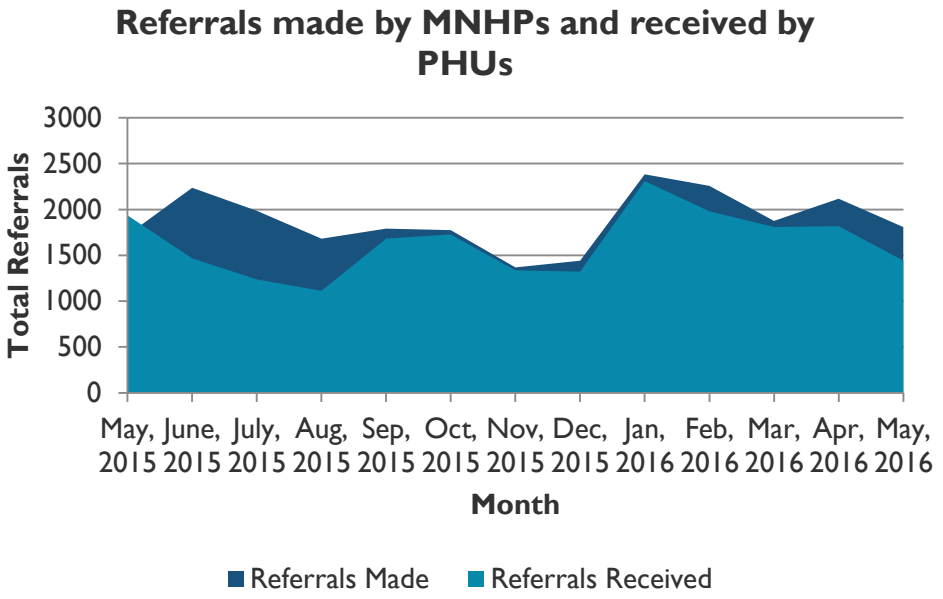
(4) To a lesser extent, other barriers mentioned were **poor treatment of women in the hands of nurses** and **distrust of MNHPs**. Some stated that women were reluctant to seek care because of the disrespect felt from health staff. In terms of distrust, there were also a few stories of husbands who were suspicious of MNHPs, believing that the cadre members were arranging extramarital affairs for their wives. One respondent described how some women believed MNHPs to even engage in witchcraft activities at night and thus did not want attend the health facility.

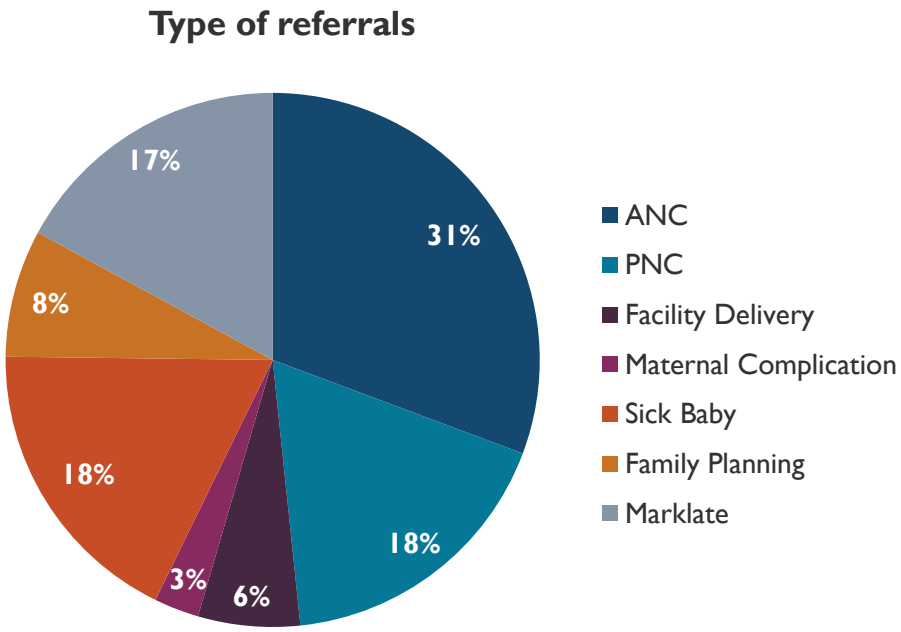
"Others don't have dresses to wear to come to the hospital, and again some feel if they deliver at the health facility, they may expect them to wear new clothes or napkins on the newborn which they don't have." –Community Beneficiary, HP arm

"Some women do not adhere to the health promoter's advice because of their witchcraft activities in the night. If a woman knows that she has eaten another person's child and it's her own turn to repay the debt, she will not bother herself to take her child to the health facility because she is already aware of the game." –Community Beneficiary, HP arm

Referrals by MNHPs from monitoring data

Corresponding monitoring data (graph right) revealed that primary health units (PHUs) received an average of 1,957 referrals every month. Over the course of the ENCC pilot, MNHPs referred approximately 30,000 women in the HP arm and 24,000 women in the HP+ arm. A high percentage of women (86%) who have received the referrals followed through and visited the health facilities.





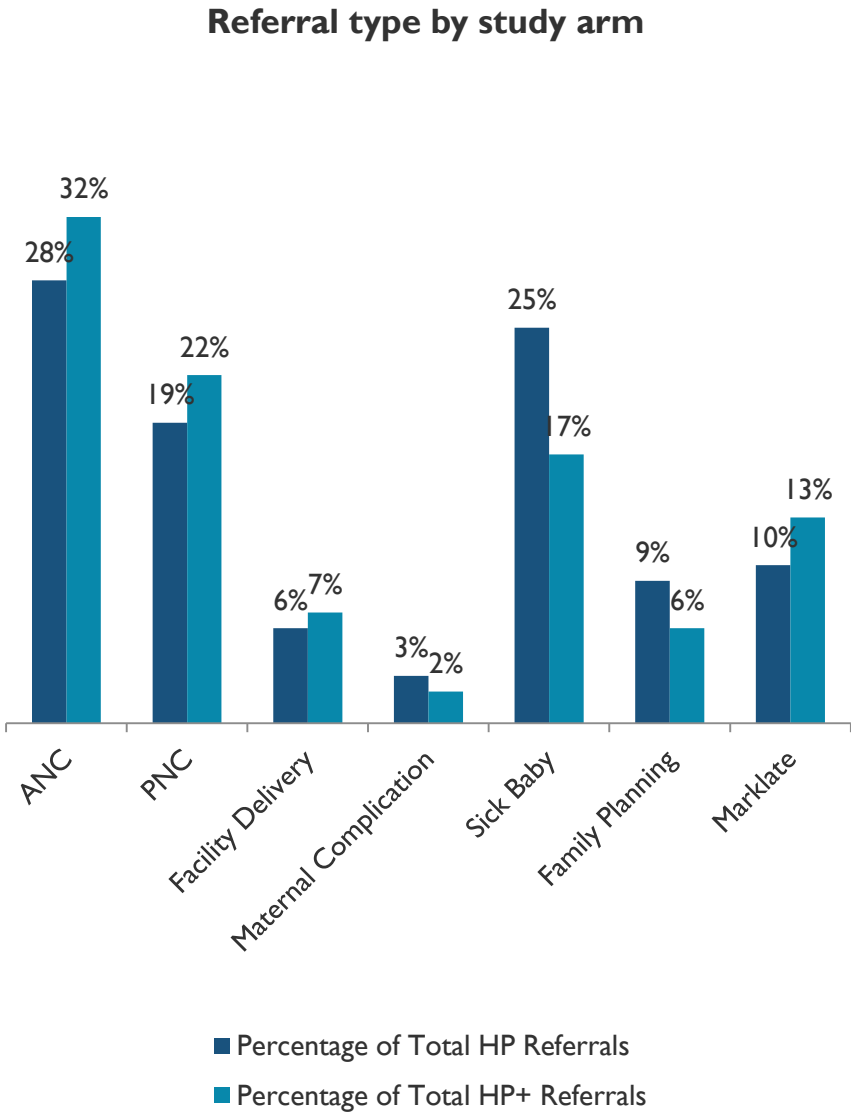
The highest number of referrals (31%) made were for ANC, followed by PNC (18%) and sick infants (18%). Marklates (or immunizations) were the third most frequent type, constituting 17 percent of referrals. This is an interesting finding given that less than 30 percent of women (28% in HP and 16% in HP+) reported to have been aware that MNHPs gave referrals for immunizations. Notably, only 6 percent of referrals were for facility deliveries.

Referrals by MNHPs

A breakdown of referral categories by HP and HP+ arms showed that a slightly higher percentage of referrals were made by the HP+ arm for ANC (HP+: 32%, HP: 28%), delivery (HP+: 7%, HP: 6%), PNC (HP+22%, HP:19%), and immunization (HP+13%, HP:10%). On the other hand, MNHPs in the HP arm made more referrals for sick infants and family planning.

Interestingly, there was indication in the qualitative analyses that some MNHPs were getting paid for giving referrals, though services are supposed to be free:

> *"Before ever she issues a referral, you pay five hundred Leones first. If you don't have that five hundred Leones but you need to go to the facility, she will loan you and when you come back you have to pay later.* "-Mother, HP+ arm



Has maternal MNCH knowledge on ANC, delivery, and PNC improved since baseline in the intervention arms?

The following quote from a mother epitomized the need to improve knowledge on MNCH:

"We never knew danger signs like bleeding and vaginal discharge. We sit and wait till it gets worst before going to the health facility which led to many deaths." –Mother

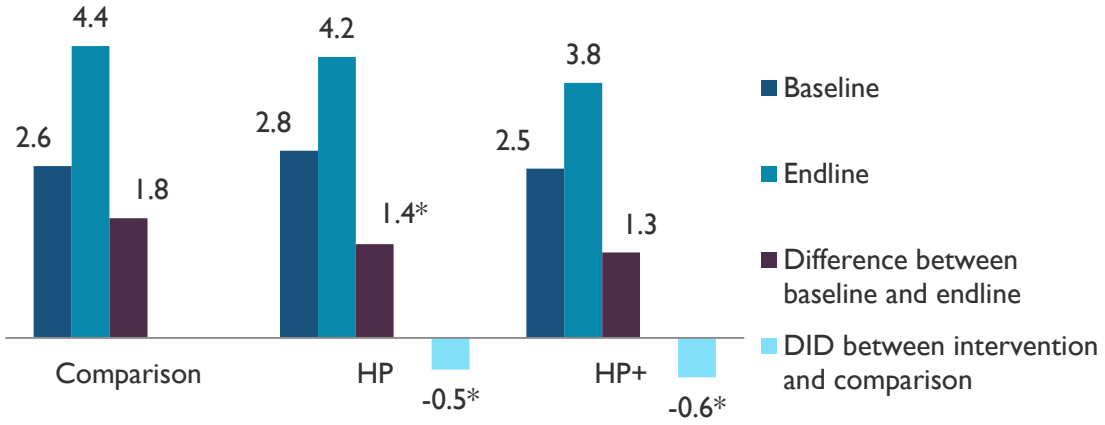
Maternal knowledge: danger signs

Knowledge related to MNCH was measured by knowledge about danger signs during pregnancy, delivery, and the postnatal period. As shown by the figures on the next slide, **the interventions did not have any effect on women's knowledge of labor, postpartum, newborn danger signs, and newborn care components. In fact, the increase in knowledge of all but newborn danger signs was higher in the comparison arm than in the intervention arms. Therefore, while there was an overall improvement, knowledge alone most likely did not contribute to the observed increase in utilization of health facilities.** Though knowledge was determined to be an intermediate outcome in the TOC, a transfer of knowledge from MNHP to the woman was not evident for the majority of danger signs. MNHPs were more likely to have acted as the direct agent bringing about the changes in women's health-seeking behaviors.

There may be several avenues through which women's knowledge could have improved in all three arms. In the intervention areas, awareness could have increased from the MNHPs' counseling during home visits. Additionally, maternal knowledge could have improved through the counseling from health professionals during ANC visits, explaining the rise observed in the comparison arm.

Maternal knowledge: danger signs

Knowledge of danger signs during labor



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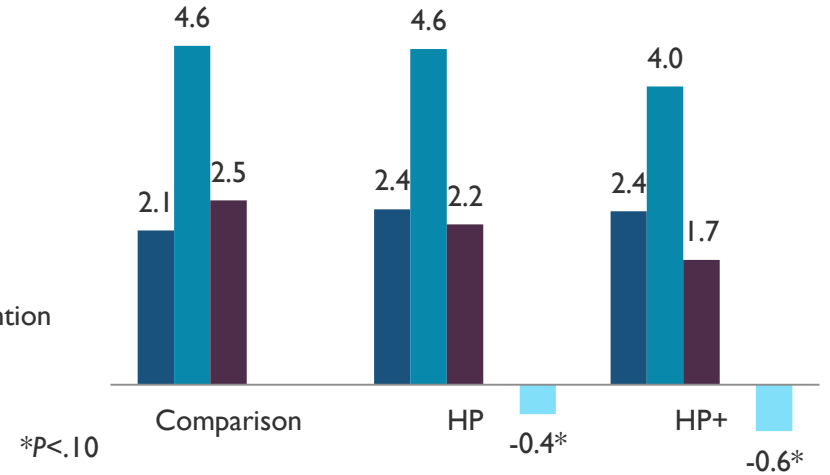
Knowledge of postpartum danger signs



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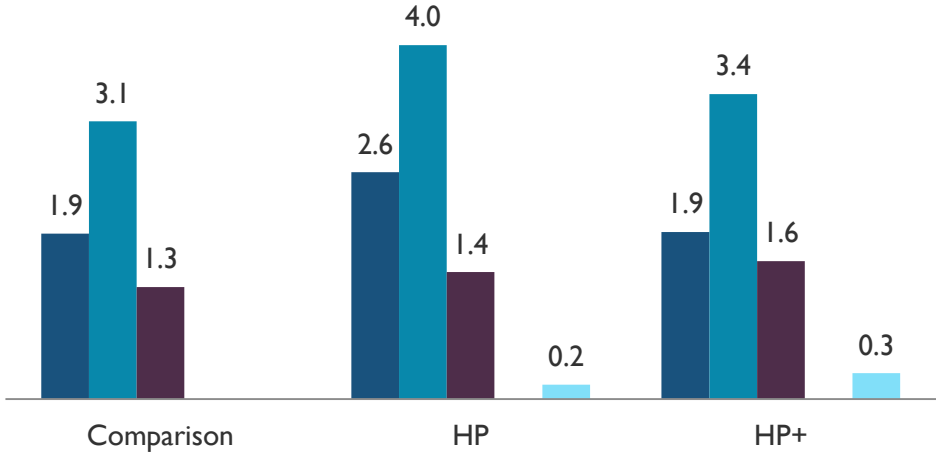
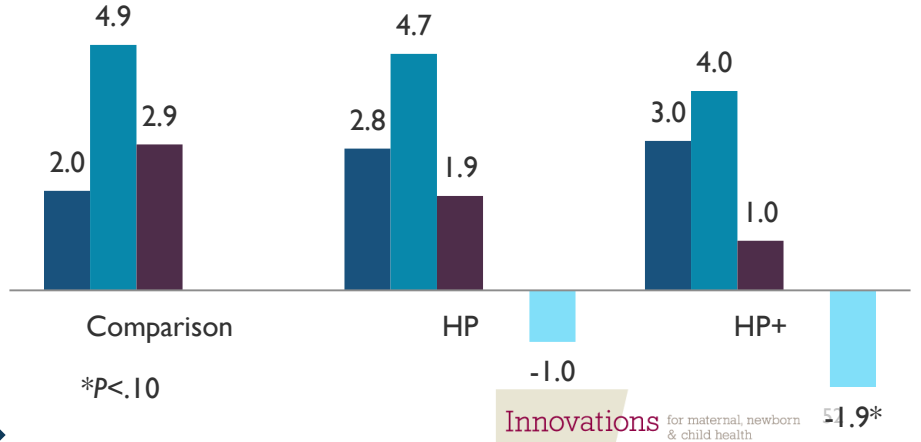
Knowledge of newborn danger signs



Knowledge of components of newborn care



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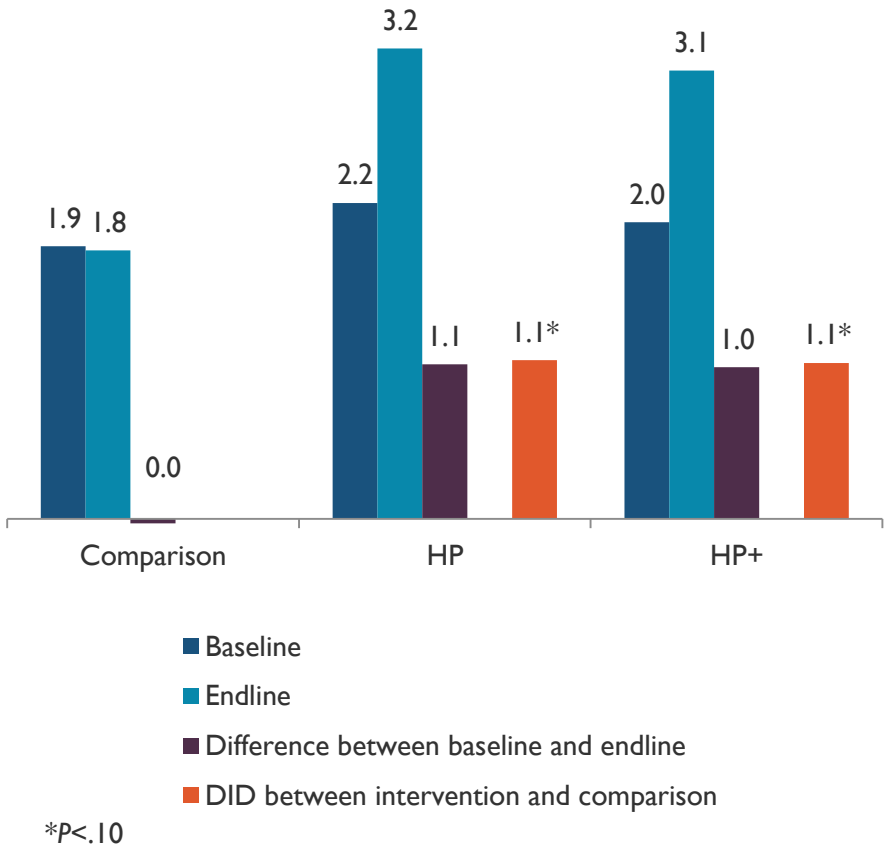
Maternal knowledge: birth preparedness components

Unlike most of the danger signs, the interventions did have a significant effect on knowledge of birth preparedness components. This finding underscores that MNHPS were discussing during the home visits with women the specific measures that should be taken prior to birth.

DID: Women's knowledge of birth preparedness components



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Components of a birth preparedness plan include the decision to go to a facility, saving money, making other financial plans in case of emergencies (e.g., loans), identifying a mode of transportation, arranging for a blood donor to be present in case of complications, discussing plans with family, acquiring approval for plans from family decisionmakers, purchasing essential/nonessential items for safe delivery, and arranging for someone to take care of child/children when woman is sick.

Maternal knowledge (finding from qualitative study)

Respondents in the qualitative analyses at endline agreed **that overall, women were more aware of the importance of going to the health facility for their health and the health of their baby**.

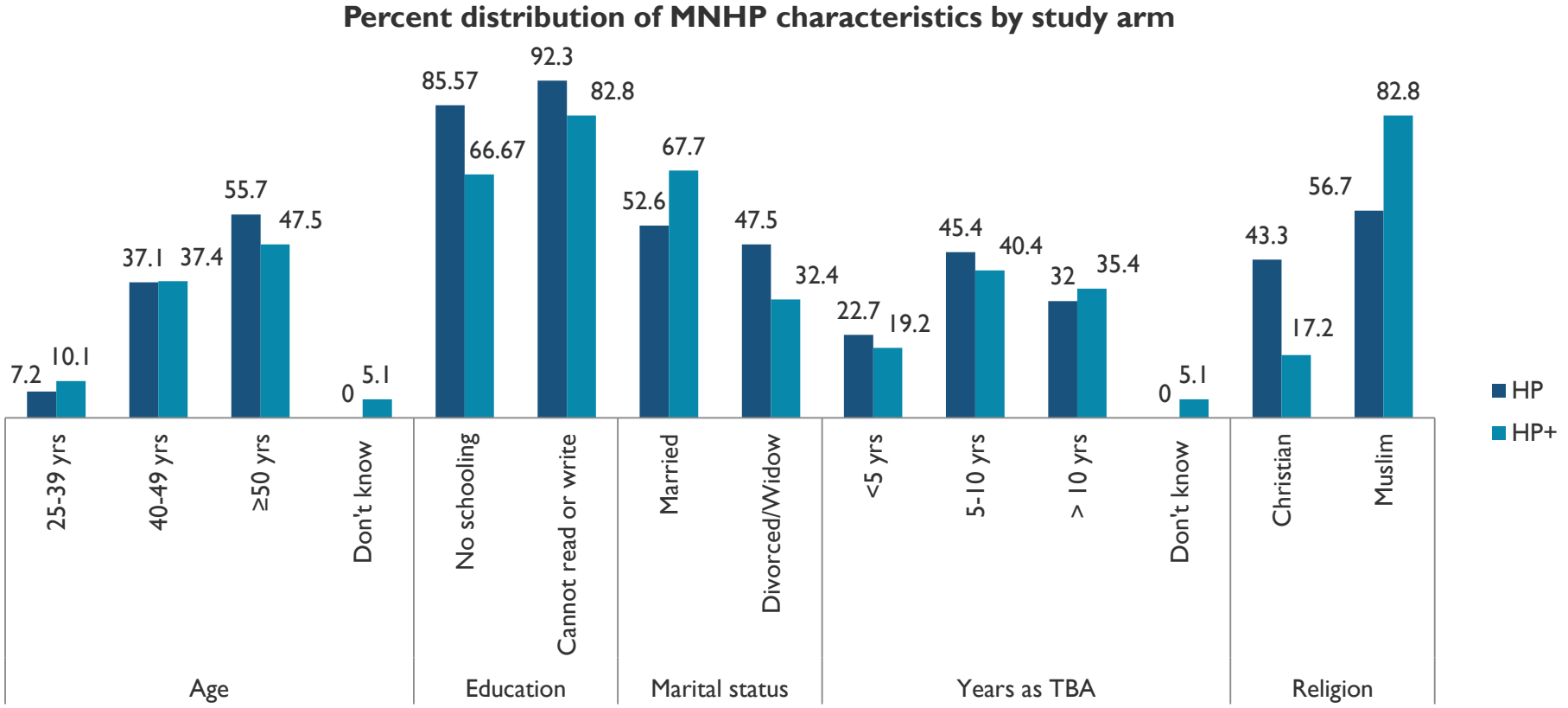
Specifically, they were more aware of what to do and what not to do during pregnancy and more aware of the dangers that can occur if they do not go to the facility for delivery.

However, some women went to the facility because the MNHPs told them to, while others were already aware of the importance of going to the facility even before they were visited by an MNHP.

"[The health promoter] comes to my place to talk to me and advise me on health issues, that is the same way she visits all the other women …to advise them and talk to them. [Previously] we were not advised. We never knew danger signs like bleeding and virginal discharge. We sit and wait till it get worst before going to the health facility which led to many death." – Woman, HP

The MNHP cadre

MNHP profile



The background characteristics of the MNHPs were similar between the two intervention arms. About half of the MNHPs were 50 years or older in both arms. An overwhelming majority of MNHPs in the HP arm never attended school (86% versus 67% in the HP+ arm). However, a large majority of the cadre in both arms could not read or write: approximately 92% in the HP arm and 83% in the HP+ arm fell under this category.

A little more than three-quarters of the cadre across the arms had extensive experience has a TBA, having worked in the position for five years or longer. In terms of religion, Islam was the predominant faith for both arms with a larger proportion of MNHPs in the HP+ arm identifying as a Muslim (83%) than their HP counterparts (57%).

MNHP workload

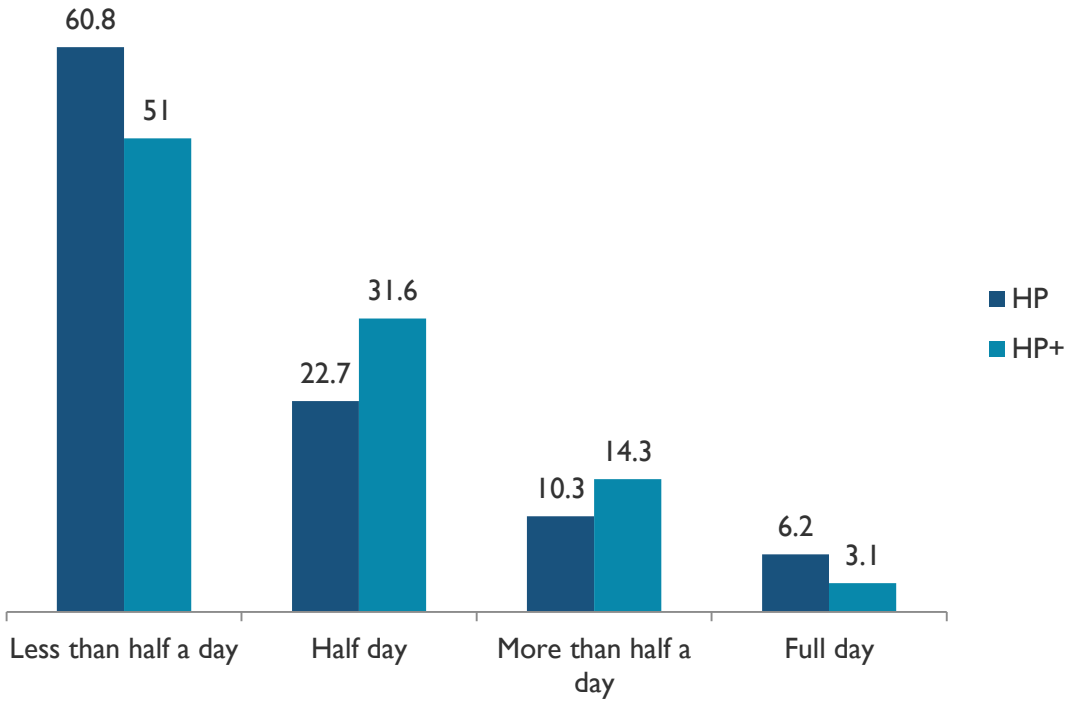
Average number of days per week worked as an MNHP:

3.08 days/week for HP MNHPs

3.07 days/week for HP+ MNHPs

99% of MNHPs in the HP arm and **92.9%** of MNHPs in the HP+ arm reported that the amount of workload was ***"just right"***

Percentage of MNHPs who reported the average number of hours per day working as an MNHP by study arm



MNHPs in both arms reported the workload was manageable; virtually all in the HP arm and 92.9% in the HP+ arm agreed with the statement that the amount of work as an MNHP was "just right." Half of the MNHPs in the HP+ arm and 60.8% of MNHPs in the HP arm reported that their services took less than half a day to carry out.

MNHP access to health facilities

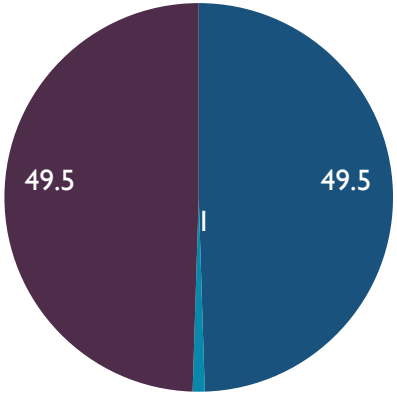
Average number of minutes to reach the health facility from the MNHP's home:

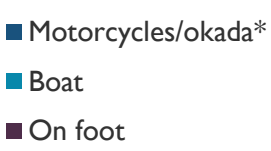
85.3 minutes for MNHPs in the HP arm

75.7 minutes for MNHPs in the HP+ arm

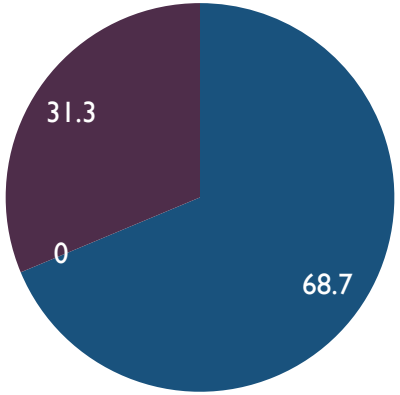
Most common mode of transportation to reach the health facilities:

MNHPs in the HP arm





MNHPs in the HP+ arm



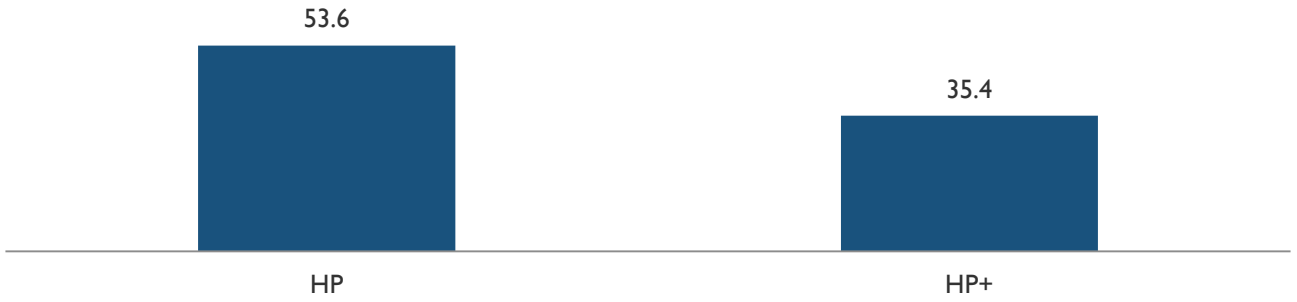
*Okada: motorcycle taxi

Does MNHPs' knowledge on MNCH differ between the intervention arms?

Knowledge of danger signs

MNHPs' knowledge on MNCH revealed some differences between the two intervention arms. An analysis was conducted to see if the MNHPs mentioned the following three important danger signs during pregnancy: bleeding, convulsion, and swollen faces/hands/feet. Approximately half of the MNHPs in the HP arm (53.6%) mentioned these three danger signs without prompting, as opposed to only 35% in the HP+ arm.

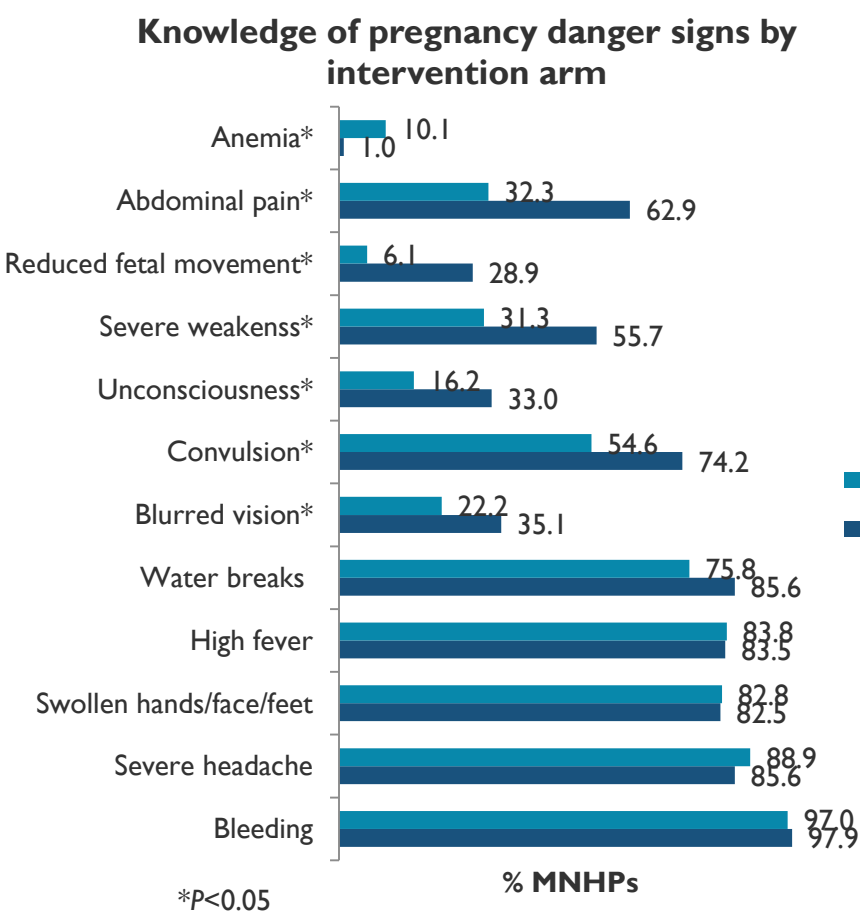
MNHPs mentioned three danger signs of pregnancies (bleeding, convulsion, swollen hands/feet)

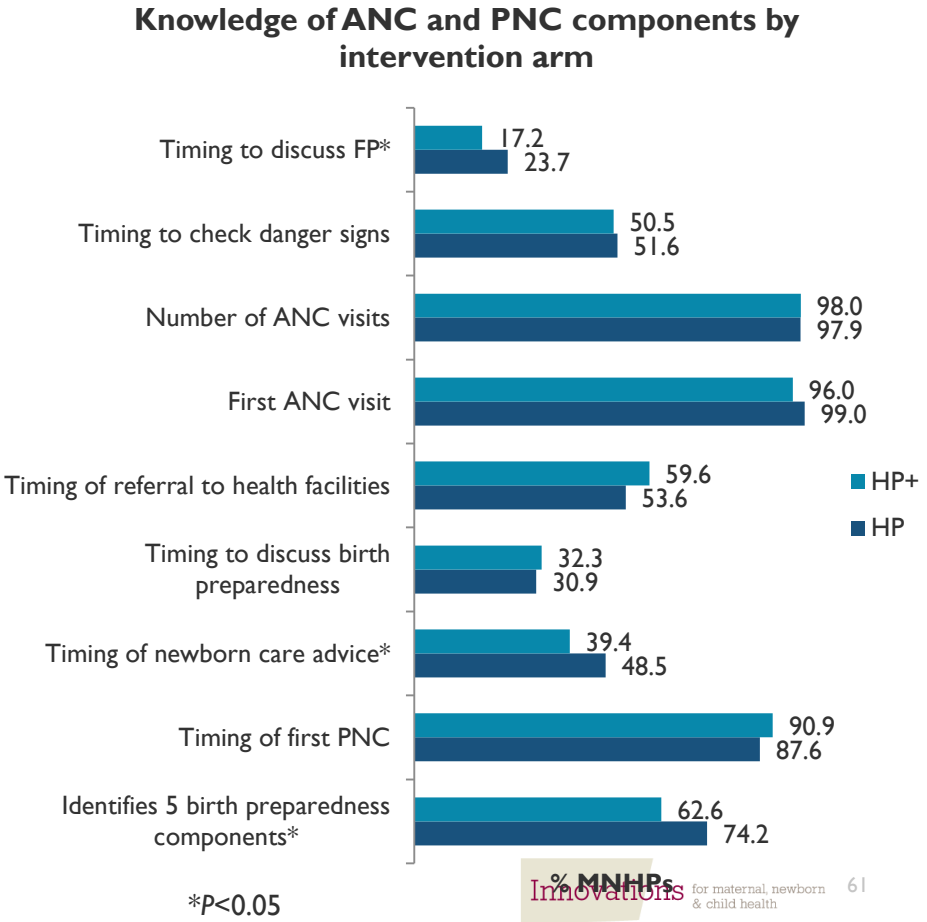


Knowledge of danger signs

A further examination revealed that MNHPs in the HP+ arm mentioned less frequently some key pregnancy danger signs, such as reduced fetal movement, severe abdominal pain, and anemia, than their counterparts in the HP arm. This is somewhat surprising given that the background characteristics were similar for all MNHPs (slide 56) and that all MNHPs went through the same training and were monitored and supervised in the same manner.

In terms of ANC and PNC components, the level of MNHPs' knowledge were similar between the arms except for their knowledge on the timing to discuss family planning and give newborn care advice, in which more MNHPS in the HP arm were aware of the correct timings than those in the HP+ arm. Across both arms, knowledge of five birth preparedness components, timing to discuss the birth preparedness components, and timing to discuss family planning were relatively low compared the other components.



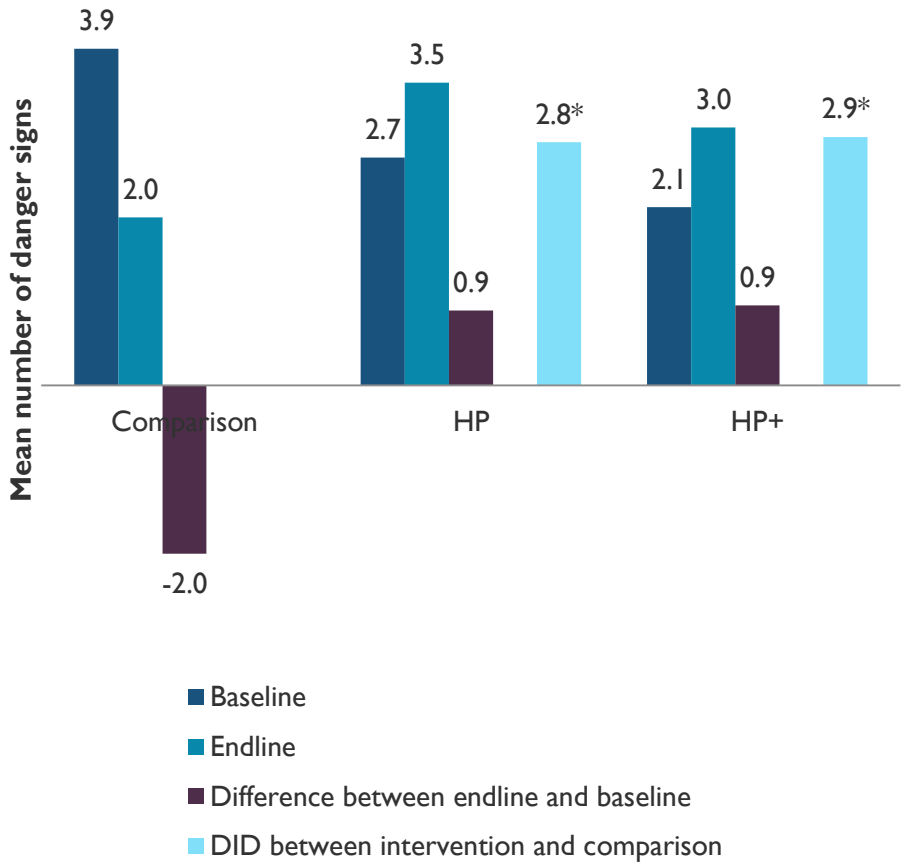


Assessment of pregnancy danger signs by MNHPs

Effect of the interventions on the MNHPs' assessment of danger signs as reported by women

A scale consisting of five components was constructed to determine the average number of danger signs MNHPs examined during a woman's pregnancy. **Findings show a significant positive effect of both intervention arms over the comparison arm**; the difference between the HP and comparison values was 2.8 percentage points and between the HP+ and comparison values, 2.9 percentage points.

Danger signs checked by MNHPs at baseline and endline by study arm



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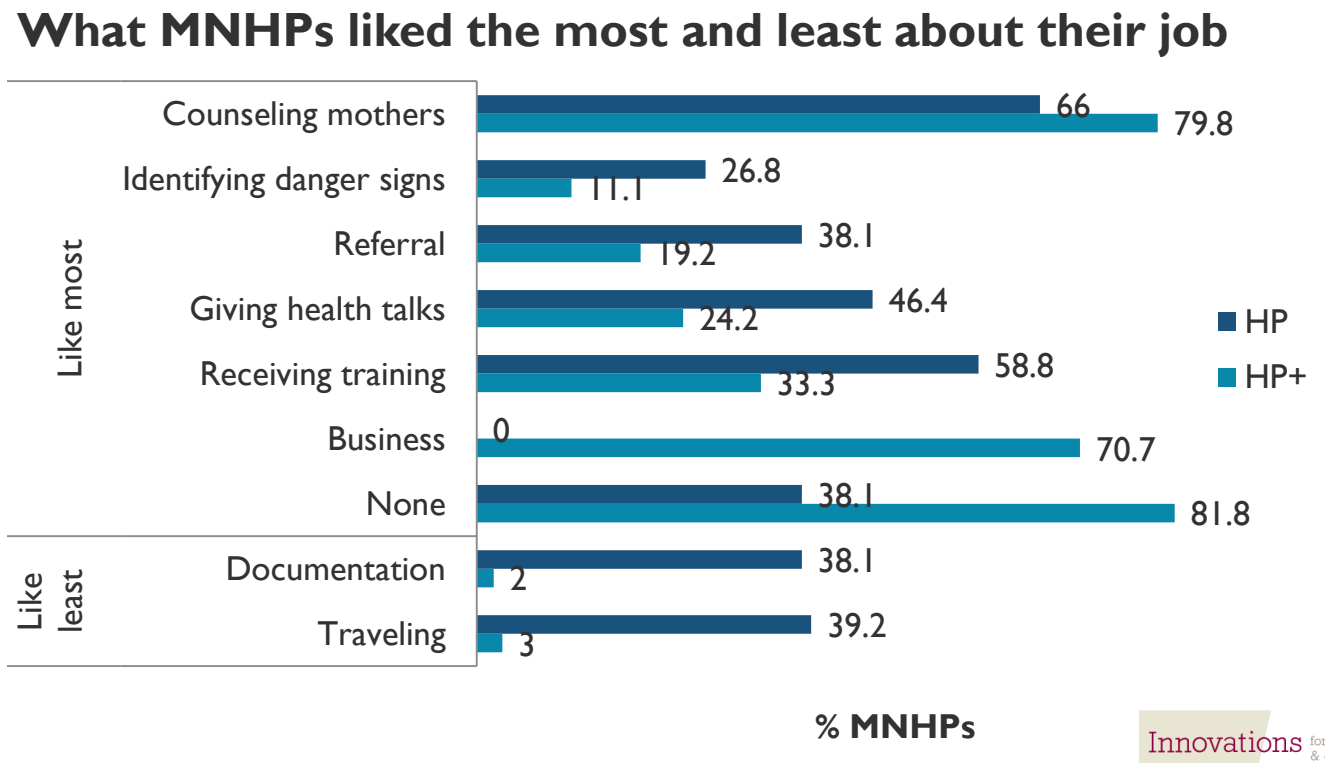
How satisfied were the MNHPs with their job as health promoters and what were some perceived challenges in their role?

MNHP job satisfaction

All MNHPs in the HP arm and 99% in the HP+ arm reported to be happy with their role. However, what they liked most and least about their work differed between the intervention arms. While MNHPs from both arms expressed highest satisfaction when counseling mothers, a higher percentage of MNHPs in the HP arm reported satisfaction from receiving training than those in the HP+ arm. The second most-liked component of their job for MNHPs in the HP+ arm was their business social enterprise.

Traveling and documentation were rated to be the two least satisfying aspects for the MNHPs in the HP arm compared with almost nil in the HP+ arm. This discrepancy could be because those in the HP+ arm were motivated by their MFSE sales and profit, potentially displacing any negative feelings of their job generated from documentation or traveling.



Challenges faced by MNHPs

1. Distance / Transport

Distance and transportation were an issue for MNHPs, as well as MCH aides. MNHPs said that they spend their own money for transport for themselves and their clients to reach the facility, especially during an emergency. For MCH aides, they mentioned that supervision would be more frequent and improved if transportation was provided.

"The distance I cover to the other communities is one such problem. Sometimes I feel like turning down the job."
– MNHP, HP arm

2. Difficulty with clients

Although MNHPs were generally accepted by the community, some mentioned challenges with community members when doing their work. Some women, for example, were reluctant to listen to the MNHPs and refused to go to the facility. Others even became argumentative. Some women waited to the last minute until the condition became worse to finally go to the facility.

"If the HPs [health promoters] go out to talk to their clients, some of them are very reluctant to listen to the HPs. This often results into some problems. When such happens, I will report to the chief [DMO] who in turn invites the two parties (the HPs and the patient) for settlement."
– MCH aide, HP arm

3. Challenges at the PHU

MNHPs mentioned that there were no accommodations for them at the PHU when they accompany and stay with women for delivery. Food was also a major issue: some MNHPs had to rely on client's family members to provide food for them, while others mentioned having to buy food for their client. One MNHP said that she sometimes had to stay with relatives in the area for accommodation and food.

"There is provision for the pregnant women. For me, I spread my cloth lapper on the floor to sleep. Sometimes the family sends no food for them... I have to find food for myself most time."
– MNHP, HP+ arm

Several MNHPs expressed frustration that MCH Aides were compensated, while the MNHPs did not get a fair share.

Challenges faced by MNHPs

4. Documentation

Documentation was also consistently found to be an issue throughout the course of the pilot. PD1 found that some MNHPs were refused help with writing as they were told that since they were "paid" for the work, they should do it themselves. Program staff also encountered challenges when attempting to go through all the necessary paperwork during monthly meetings. Moreover, older MNHPs struggled more with documentation than did their younger counterparts.

"Documentation is a problem, even though documentation is sometimes done wrongly. Sometimes MNHPs take the book to the center to be done for them. There is much improvement in their work." –MCH aide, HP arm

"How to write the names and addresses of the clients is a major problem. If there is no one to write for me I have to wait until he/she comes." –MNHP, HP+ arm

Has the interaction between the MNHPs and women and their families increased since baseline *(when MNHPs were TBAs)*?

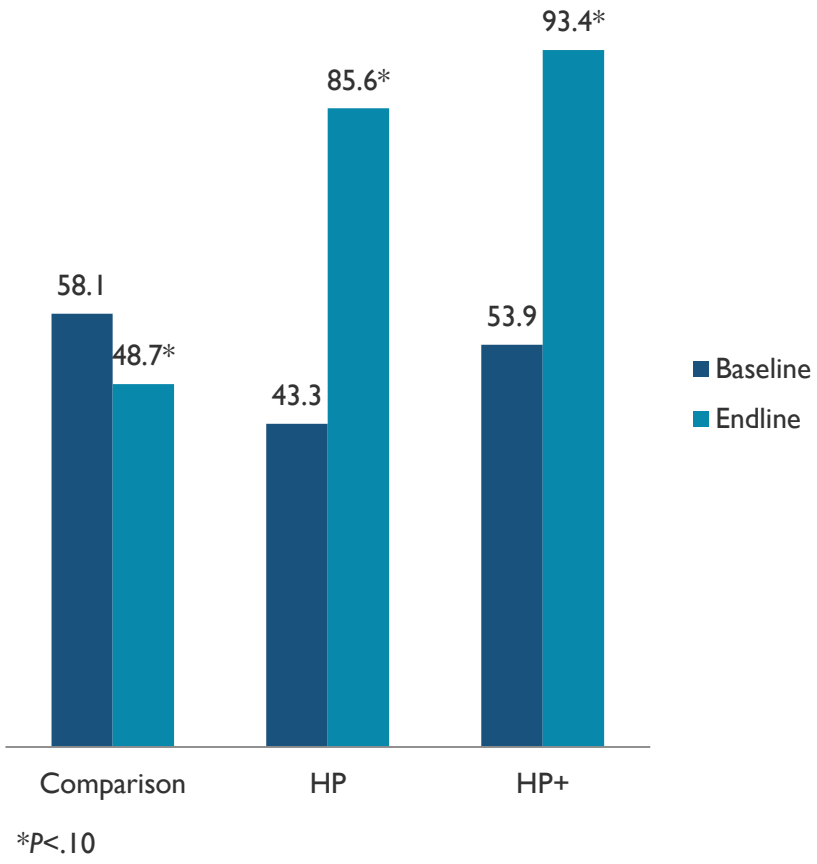
MNHP coverage of catchment areas

MNHPs were highly active in covering their assigned areas. Women confirmed such findings, with **85.6 percent** and **93.4 percent** of women from the HP and HP+ arms, respectively, responding that they were visited by an MNHP during their recent pregnancy.

Each MNHP was assigned to cover at least two villages. The MNHP survey found that nearly all (90%) were able to cover all their assigned villages in the last three months.

	HP	HP+	Total
Total number of MNHPs	97	99	196
Average number of villages assigned to one MNHP	2.3	2.0	2.1
Covered all assigned villages in last three months (%)	87.6	93.9	90.8

Percentage of women who were visited by an MNHP/TBA during pregnancy at baseline and endline by study arm



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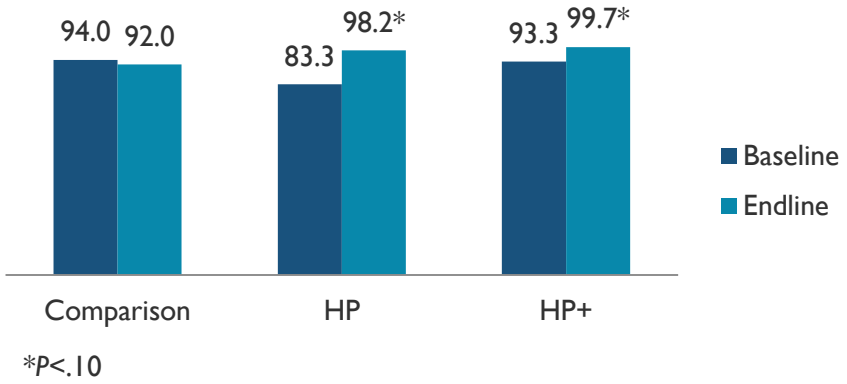
MNHP coverage of catchment areas

Over 90% of women were referred by TBAs to health facilities for delivery in the comparison arm at baseline, and this remained unchanged by endline. However, in the intervention arms, the proportion referred increased significantly, rendering the practice to be almost universal.

Percentage of women who received referral or advice from MNHPs/TBAs on where to deliver by study arm



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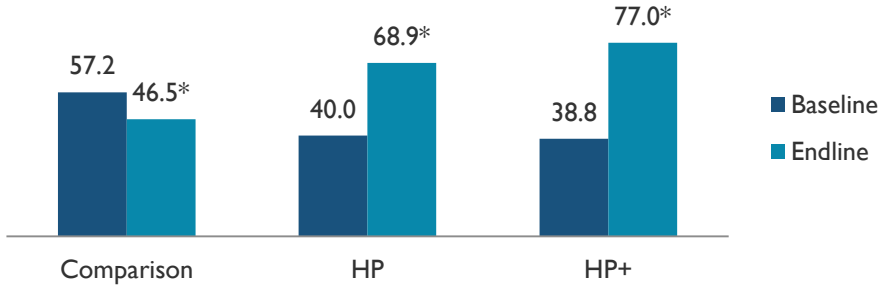
MNHPs were trained to make three home visits within the first week of an infant's birth. The recommended first visit was to be made within 24 hours of birth. The percentage of women who were visited within the first 24 hours after birth by an MNHP increased by 30 percentage points in the HP arm (from 40% to 69%), and nearly doubled (from 39% to 77%) in the HP+ arm. Anecdotal information from the program staff confirmed that MNHPs also visited the mothers whom they have referred to the health facilities.

Percentage of women whose MNHP/TBA visited within 24 hours of birth by study arm



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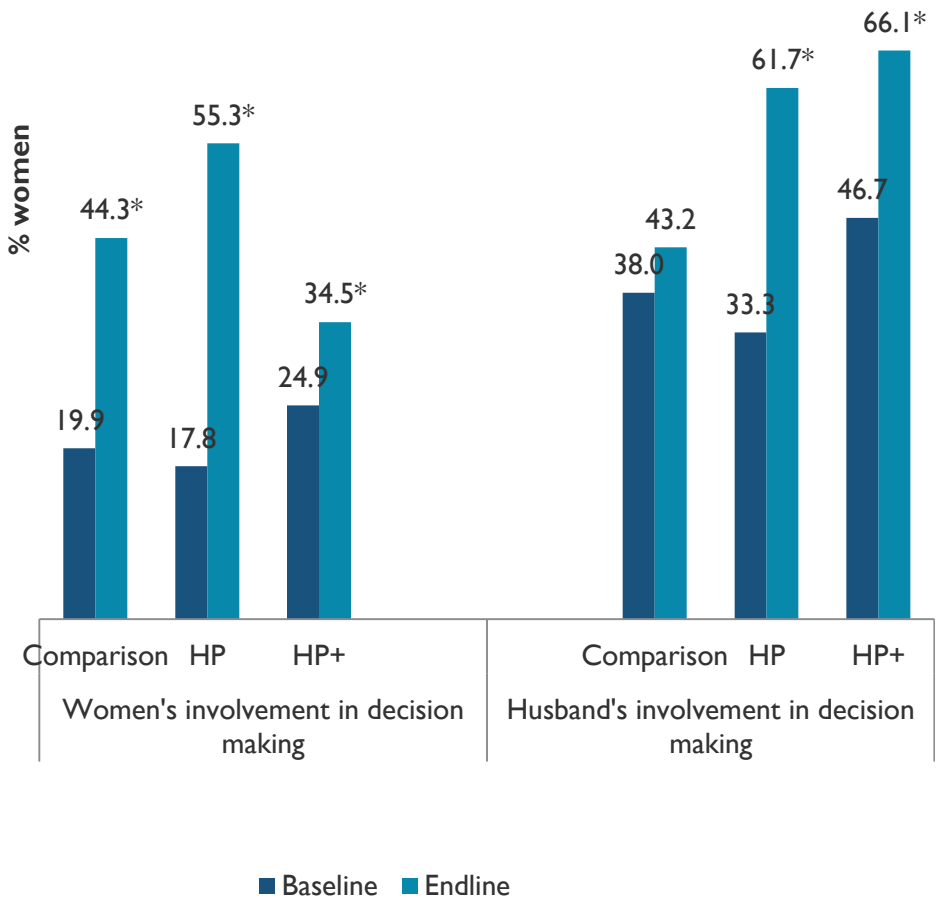
Decisionmaking

MNHPs were trained to include husbands and other family members in the dialogue when counseling women about birth preparedness and danger signs. The figure on the right depicts the extent of women's and their husband's involvement when making a decision on where to deliver.

Women's involvement in the decision making significantly increased in all three arms. The HP arm showed the highest improvement with a threefold increase from 17.8% at baseline to 55.3% at endline. The HP+ arm had an approximate 10 percentage-point increase and the comparison arm increased by 24 percentage points.

Strikingly, the husband's involvement in the interventions arms significantly increased since baseline. It increased by 28.4 percentage points in the HP arm and 19.4 percentage points in the HP+ arm, compared to only 5.2 percentage points in the comparison arm.

Percentage of women who identified themselves or their husband to be involved in the decisionmaking about where to deliver



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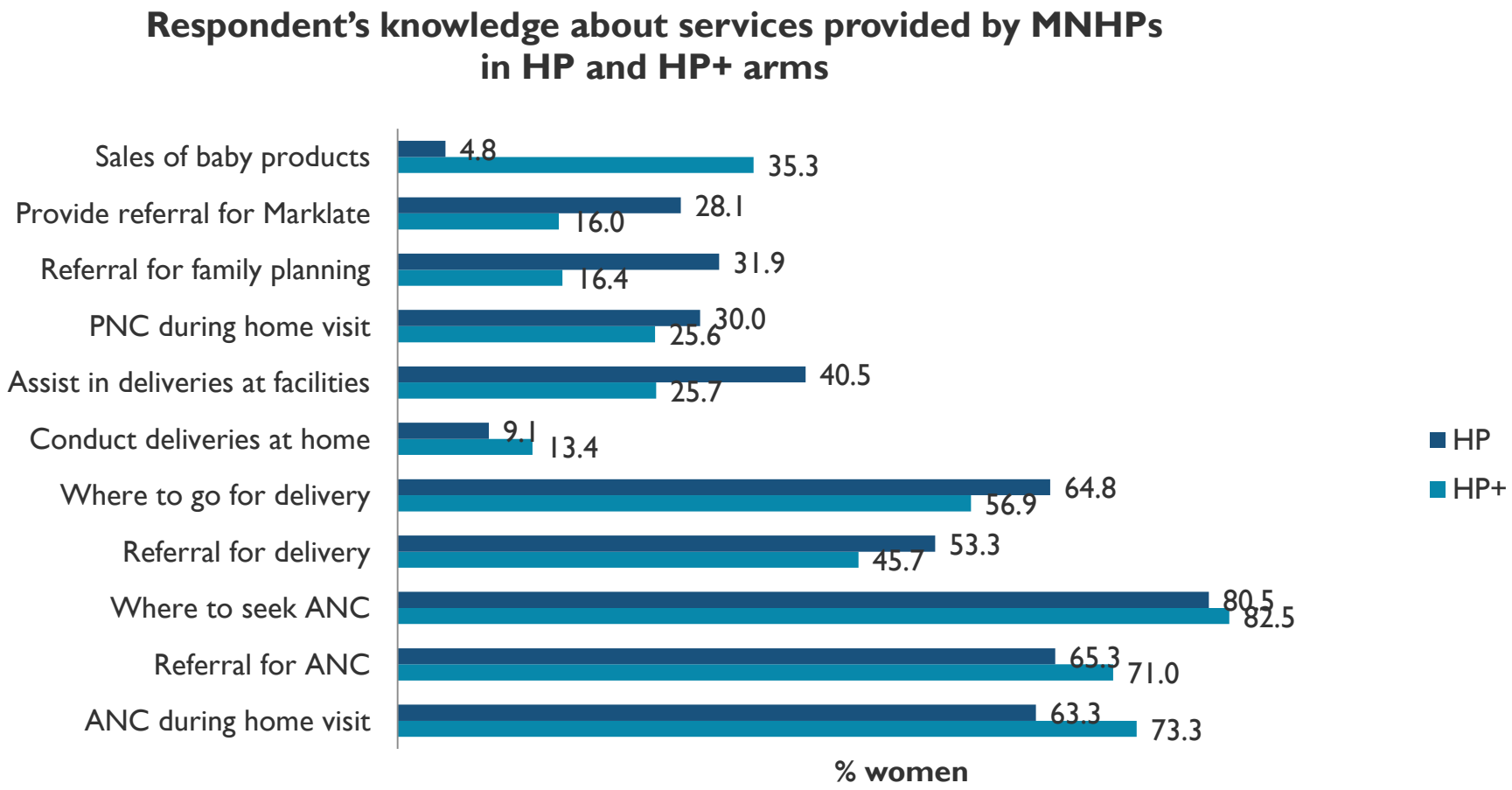
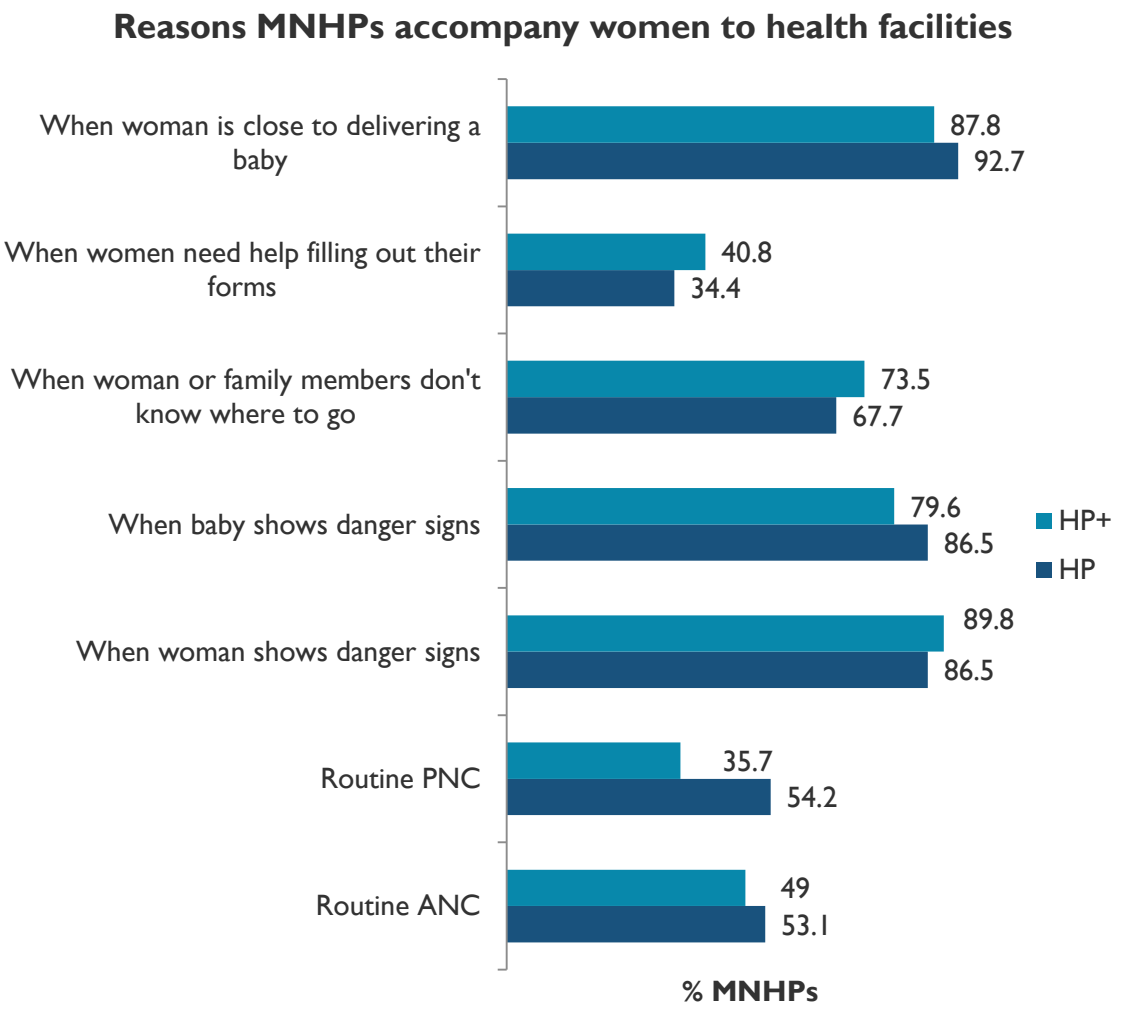
Awareness of MNHP services

Mothers were asked to list the services the MNHPs provide in their communities. While mothers were aware of the cadre's ANC and delivery-related services, they did not know much about other referral services that are also offered, such as family planning or immunization.



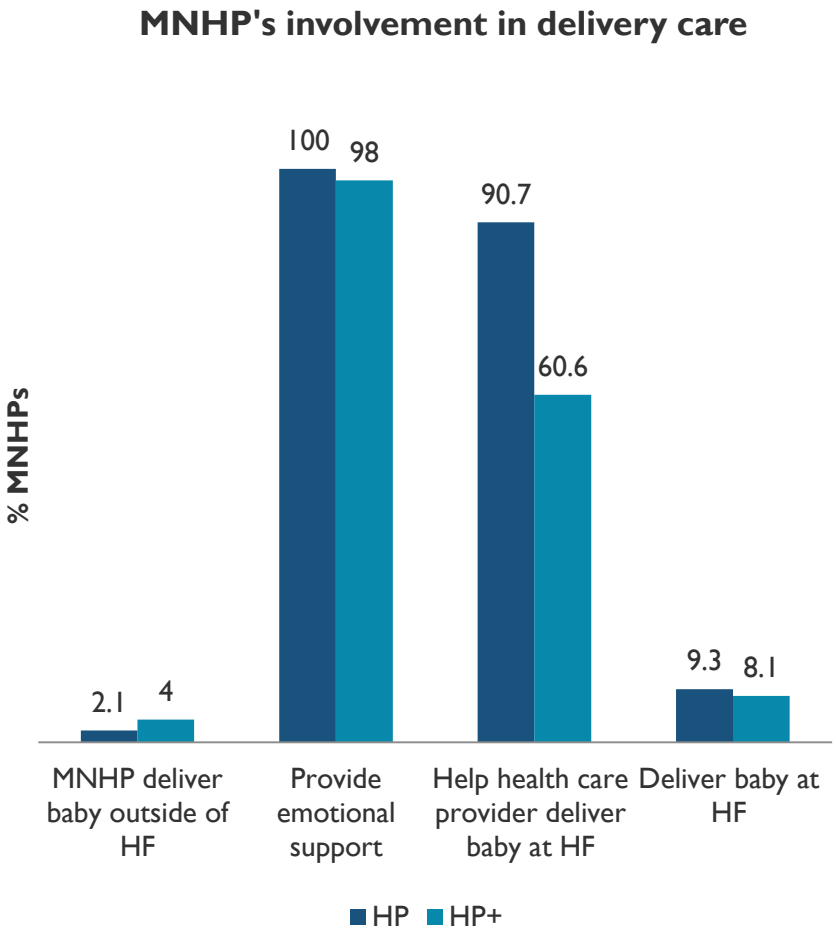
Components to MNHPs' interaction with women

Virtually all MNHPs provided emotional support to mothers during pregnancy in both arms. In many instances, MNHPs accompanied women to the health facilities, especially when women were close to delivering, exhibited danger signs, or did not know where to go for delivery.



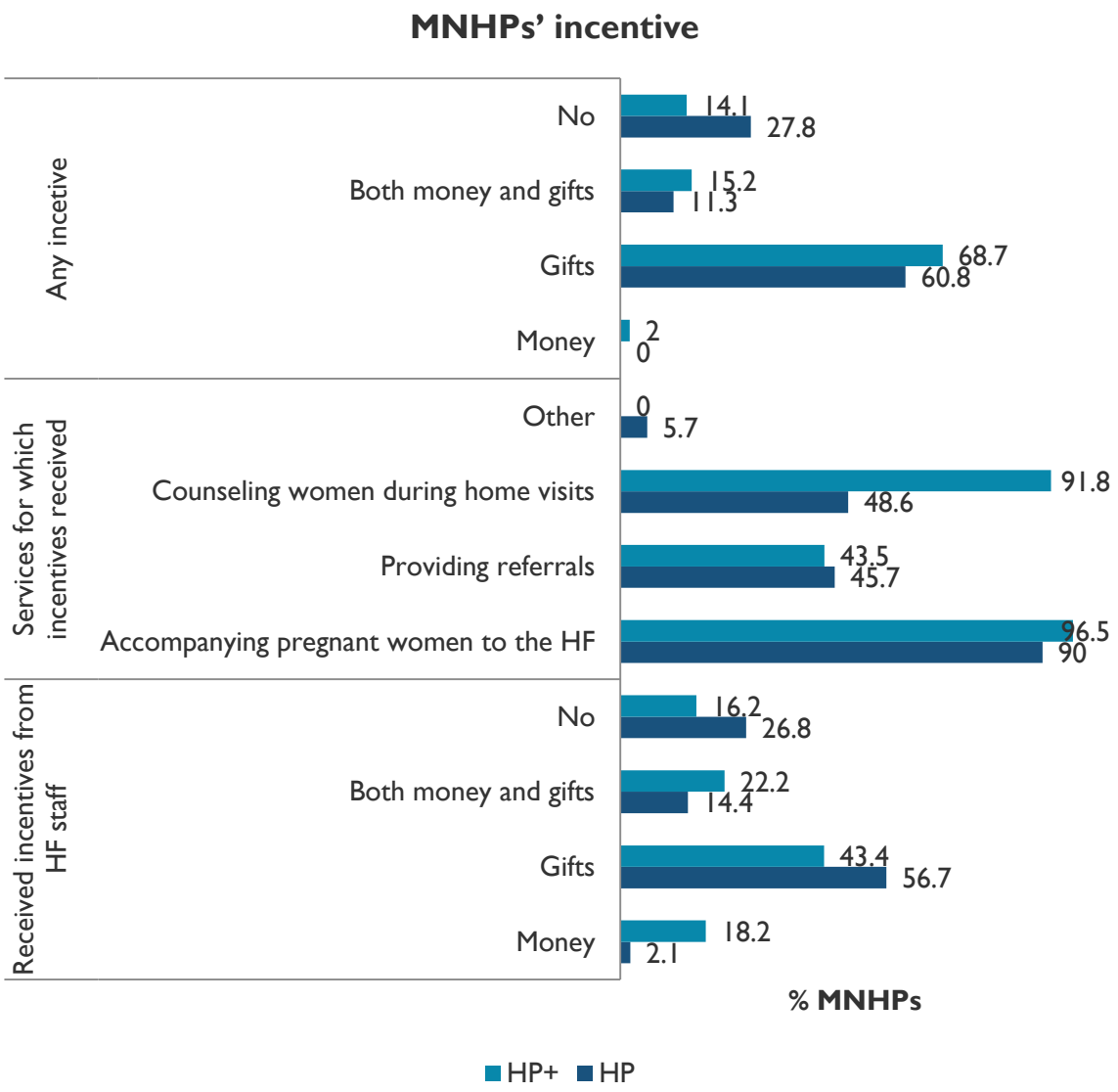
Components to MNHPs' interaction with women during delivery

Once at the facility, MNHPs take an active role in helping the health care workers in service provision to women. Ninety-one percent and 61% of MNHPs in the HP and HP+ arms, respectively, reported to have "helped" the care providers in delivering babies. The nature of the help is unclear but could take the form of holding the baby after birth, wrapping the baby, or cleaning the newborn after delivery. It was also not evident whether the MNHPs were actively assisting in delivering the babies. Interestingly, a small percentage of MNHPs mentioned conducting deliveries at the health facilities. This could be a scenario in which the mother was already in labor by the time she arrived at the health facility, thus necessitating that a delivery be performed before the health staff can arrive.



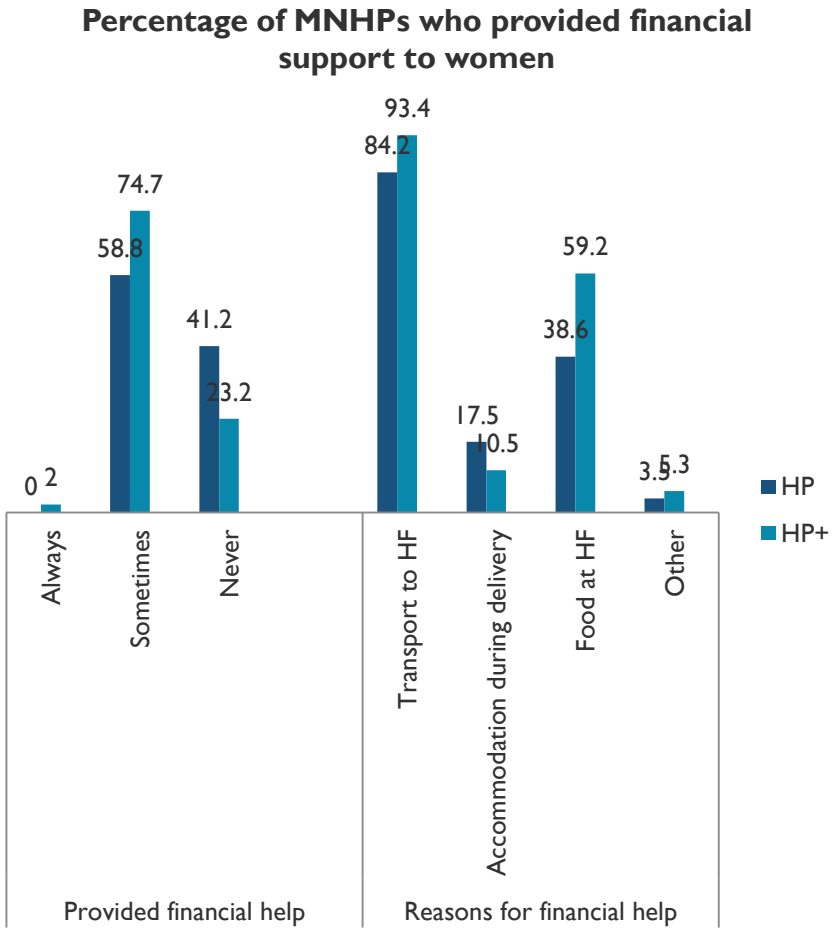
Incentives

While the services MNHPs provide are free, a culture of showing appreciation for the cadre's services was evident. Appreciation was mainly expressed through the form of gifts. The health facility staff also gave gifts or money to the MNHPs. A conversation with the program staff revealed that the nature of the gifts from the health providers were small items such as soap. The money was often paid as a remuneration for the cost that the MNHPs incurred for transportation.



MNHPs' financial support to mothers

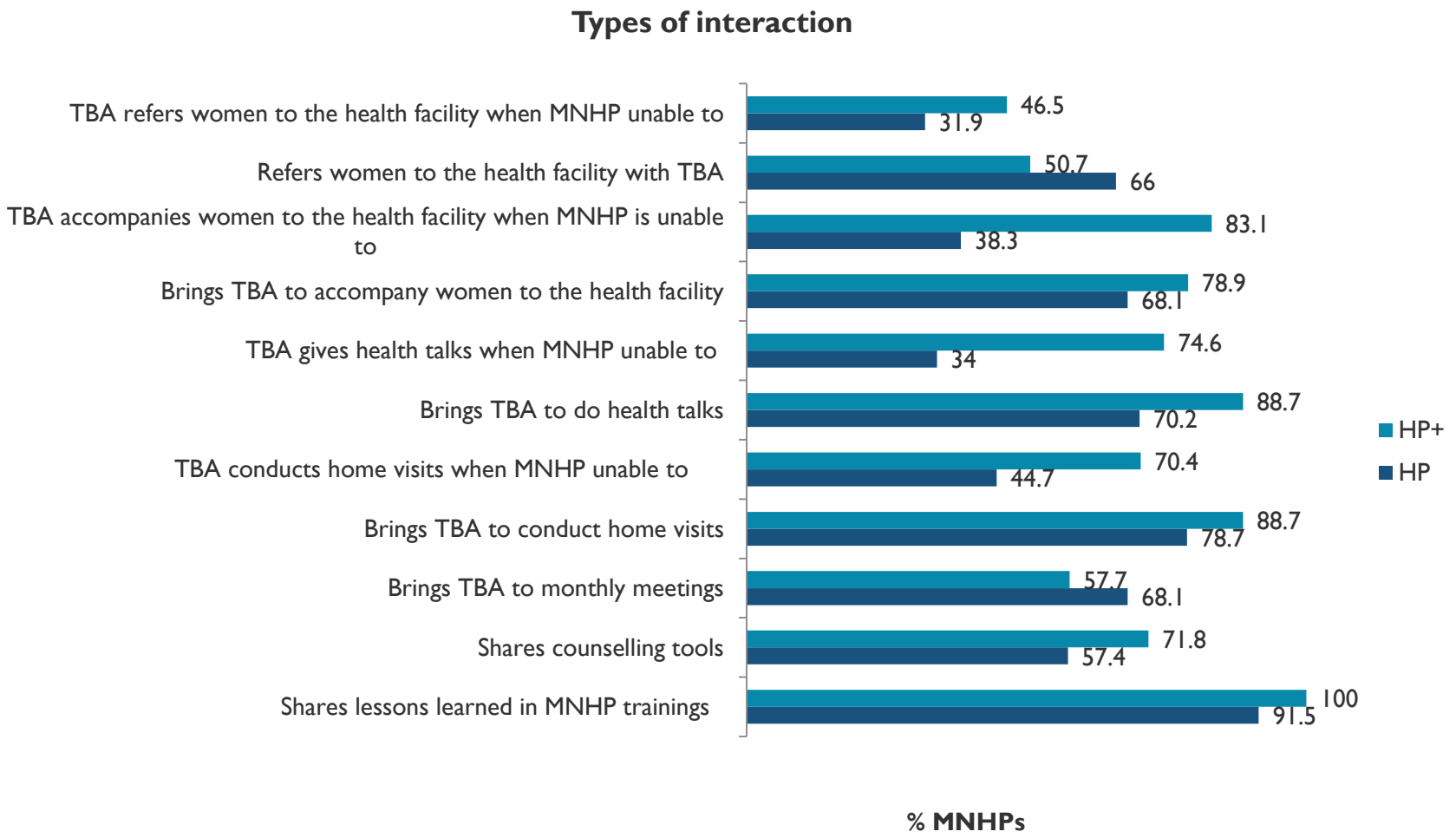
From time to time, MNHPs also helped the women or families financially when needed. Over half in the HP arm and 75% in the HP+ arm reported to have provided financial support to the mothers. In majority of these cases, the reason was to cover transportation costs.



How do the MNHPs interact with the TBAs in the area?

Interaction between MNHPs and TBAs

60 percent of MNHPs know a non-MNHP TBA in their assigned village.



Social enterprise:
Are the MNHPs making profit from selling goods in the HP+ arm? If so, how are they utilizing their profit?

MNHPs and community perceptions of MFSE

In general, MNHPs were happy with their business. As previously mentioned in slide 64, the MFSE component was a great source of satisfaction for 71% of MNHPs. Community members were likewise happy with the business they were doing.

"Well that is very good, for instance if someone is living in Tikonko which is 7 miles from Bo but at the time of delivery she has to come to Bo to buy the baby items like baby oil but when the health promoter came, women buy the products from them at low cost and they were prevented them from paying transport to Bo. It is a very good thing because they are reducing the burden on the women because they are not moving again to buy things because it is at their door." –DHMT

A few mothers and MNHPs have indicated that the MNHPs extend credit to some of the mothers to enable them to buy goods and pay the MNHP back over time.

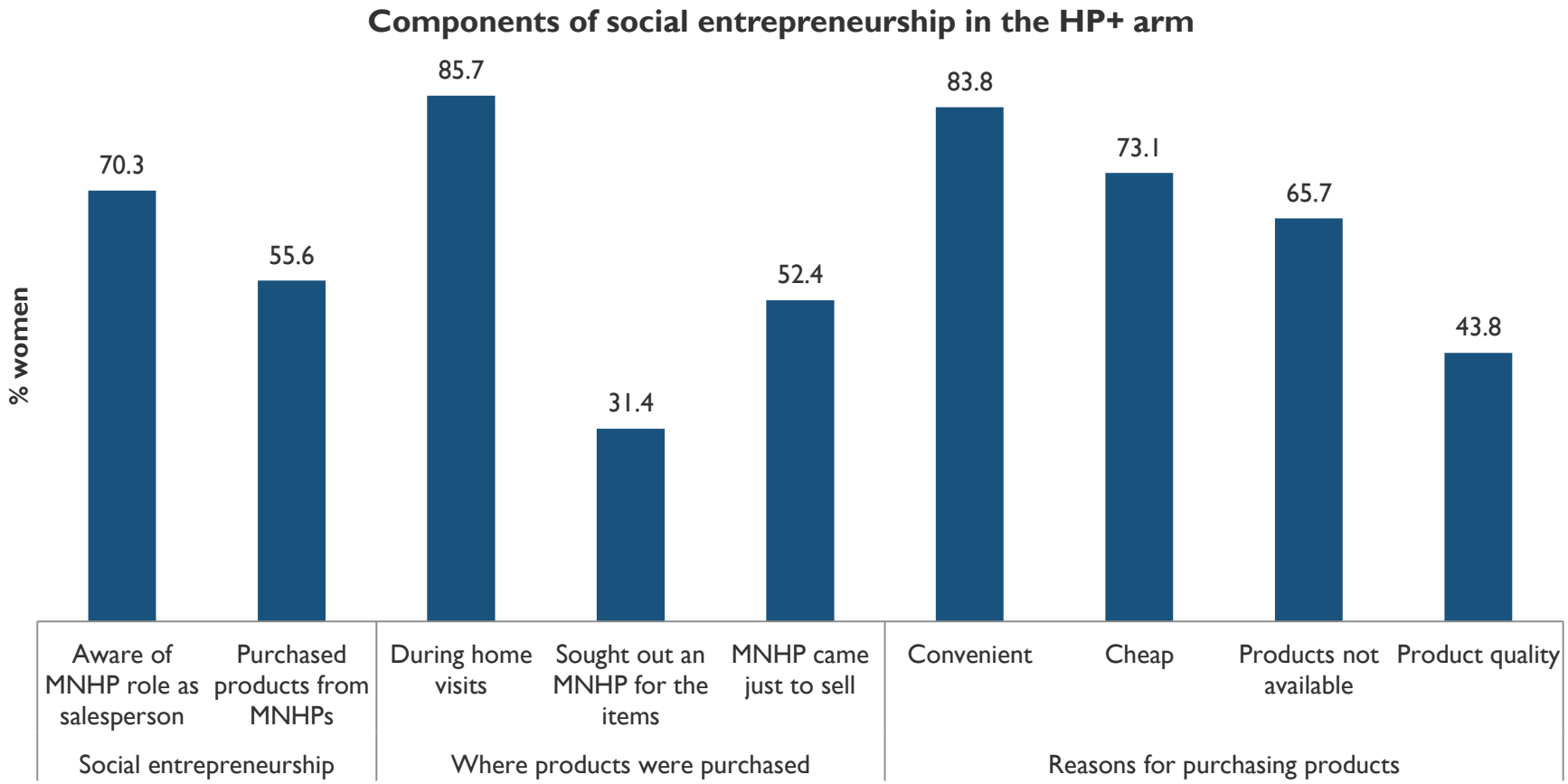
"*She gives me good on loan which I pay back later. I may not have money at the time she come with her business.*" –Mother, HP+ arm

Some MNHPs mentioned that they receive more respect because of their business, whereas others stated they are respected because of the advice that they give and not because they sell products. Women confirmed that the cadre's status in the community was still high even without selling goods.

"Even without selling goods their status has been very great in terms of the respect the women and the community give to them. Selling of these goods is just an additional thing because the women have access to these baby items now." – Community Beneficiary

Women's interaction with MNHP business

Fifty-six percent of women in the HP+ arm purchased products from the MNHPs, with most purchases occurring during home visits. The main reason given for buying an item was convenience—essential items were brought to their doorsteps, which saved them time and transportation money. Other top reasons were the products' affordability and their lack of availability in the community.



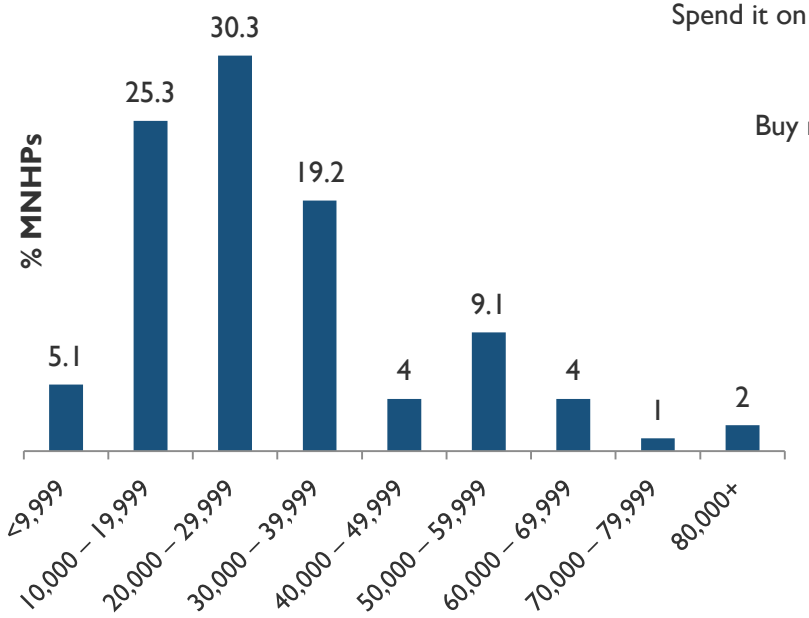
Profit from sales

MNHPs in the HP+ group paid off their start-up loan by November 2015.

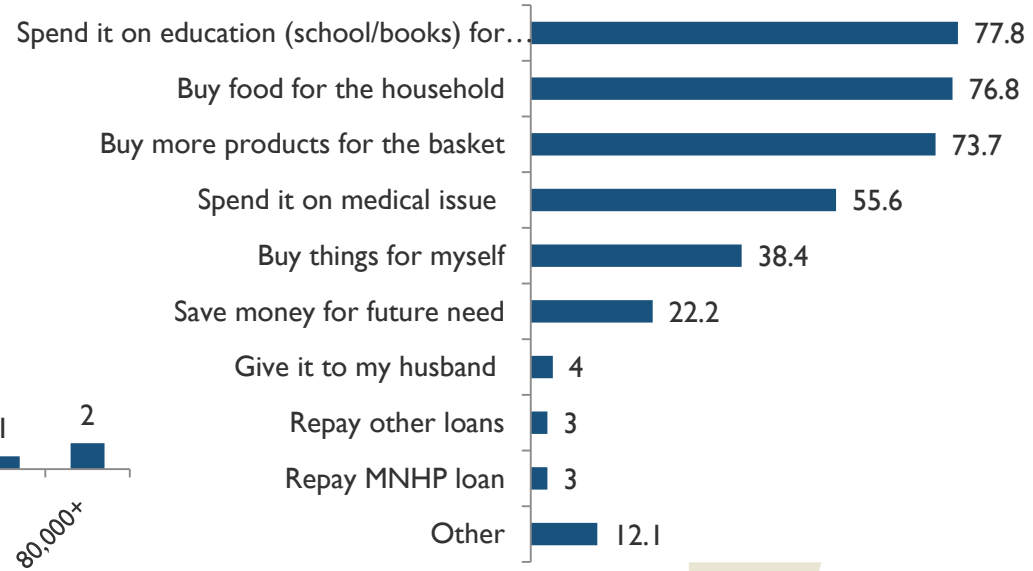
MNHPs achieved 100% repayment of their initial loans and even generated a profit out of their sales. Most MNHPs (30.5%) made a profit of 20,000 to 29,999 leones. Approximately 56 percent made 10,000 to 29,999 leones, which was comparable to what community health workers earned under the former national community health worker policy.

Ninety-seven percent of MNHPs felt neutral about the profit they made selling goods. However, all reported that the business has helped them and their household pay for things they were previously unable to cover. Notably, MNHPs used money from the sales to contribute to family well-being. Seventy-eight percent and 77% of MNHPs used their profits to provide for their children's education and household needs, respectively.

Reported amount of profit per month (leones)



How profit is used



How have the MNHPs been accepted by the formal health system and community?

Acceptability of MNHP role

Acceptability of the MNHPs by key local stakeholders was examined through IDIs during the endline assessment to assess the cadre's fit within the formal health system.

Acceptability by the community:

- In general, community members were happy with the work that MNHPs were doing and respected the new cadre. Though a few MNHPs mentioned that some in the community do not take their messages seriously, overall, women were happy to follow their advice, knowing that the MNHPs received training. A few respondents even mentioned that communities treated the MNHPs and nurses equally.
- Community members also provided support to MNHPs through domestic work (e.g., tending to the MNHP's garden) and community by-laws (e.g., fining women who do not go to the facility after being referred by an MNHP). Some MNHPs mentioned that although some community members take their messages seriously, others don't. Some community members also have negative attitudes towards MNHPs.
- Despite high acceptability for the MNHPs by the community, there were still some misconceptions that the MNHPs were being paid by the project to do their work.

"I will like to assure you that I and the community people appreciate their new role as MNHPs about 100 percent. The more reason why the community appreciates them is because of they are sacrificing a lot to get their job done. They are doing a life-saving job without payment. They leave all their domestic work including their farm work just to satisfy this of their new role health promoters."–Community beneficiary, HP arm

"Initially, they were encouraging her and appreciating her but now, it less because they feel it she is been given a lot of money by Concern project and she does not show to the community. E.g. even when we receive this information they said we give bribe to the HP that was why we were chosen. It was really a problem. Initially there was full support but not so now. When HP complains the works as she was selected but no other action taken, things have changed negatively instead of positively for her now. There are no supports given to her by this community as far as I know." –Mother, HP+ arm

Acceptability of MNHP role

Acceptability by higher-level DHMT staff:

- DHMT members mentioned that they respected the work MNHPs did. They believed that the cadre was performing well and saw them to be instrumental in the community.
- One senior-level health official reported to have encouraged husbands of MNHPs to give their wives some money (~30,000 leones) for their volunteerism. The official also invited MNHPs to attend meetings, recognizing MNHPs to be an important component of the formal health system.

"The community knows them very well, they are respected, and the community also sees them as part of the health staff. And they see them as people who are complementing the work of the health care service providers." –DHMT staff

"Well since the ENCC has started working in the district, it is like they have sealed the gap because there has been a gap between the TBAs and the health care workers. Because the health care workers were seeing the TBAs as rivals but since the ENCC project came they have bridged that gap because they are working directly under their supervision. They trained them so because of that the gap has been sealed." –DHMT staff

Acceptability of MNHP role

- Onward looking, DHMT members voiced their desire to bring the intervention to other chiefdoms and incorporate MNHPs into the country's new CHW policy. They expressed interested in having supervisors continue monitoring MNHPs and available funds for ongoing training and materials. However, DHMT staff members speculate that if ENCC were to be scaled up to other regions, there may be an issue of whether to hire only younger TBAs as the long distances, aforementioned in previous slides, were found to be an issue for older MNHPs. Moreover, members declared the need for MNHPs to be remunerated for their services as CHWs to further ensure sustainability of the cadre and prevent high turnover.

"The policy is saying that the CHW are the link between the people and the health centers and the CHWs are trained to do sensitization, referrals, do test for malaria, and we are even going to give them drugs for malaria, diarrhea, and we are going to incorporate the MNHPs. And those who cannot read and write we will bring adult education for them." –DHMT

"It will not be sustainable if they [CHWs and MNHPs] *continue to be on volunteering basis. Even for now we are having problems with community health workers because they are just getting Le15,000 per month when they go to attend meetings and we are seeing lot of drop out….You know we are recruiting them* [CHWs] *from their catchment area so they don't actually pay transport within the villages, but when they are invited for meetings they have to move from their catchment areas and go to the center where the meeting is, and that is every month and the money they pay from their villages to that center is more than Le15,000. And even though the project is successful now but I think there will be growing expectations which should be taken into consideration."* –DHMT

Conclusion

Summary

The broad objective of the ENCC pilot was to increase the usage of MNCH services at the health facilities. Through the Free Health Care Initiative in 2010, costs for such services were eliminated by the GoSL for children under 5 years of age and pregnant and lactating women in an effort to improve health outcomes. The key tenet of the pilot was to leverage the experience, network, and respect TBAs held within the community to improve coverage of essential care among mothers and newborns. The two-year pilot provided training and supervision to 200 TBAs and rebranded them as maternal and newborn health promoters (MNHPs).

The TOC chart on slide 9 shows the pathways through which MNHPs were planned to affect the utilization of MNCH-related care. The pilot would improve MNHPs' counseling skills and MNCH knowledge. The cadre would then impart their knowledge to communities and women, increasing their awareness, eventually leading to increased utilization of care. ENCC tested two approaches: In one approach (HP arm), MNHPs received only training on key messages on ANC, pregnancy, and PNC and provided counseling and referral through home visits; in the second approach (HP+ arm), there was a social franchise component in which MNHPs had the opportunity to earn money by selling some essential health-related goods.

In this report, we presented triangulated findings from quantitative surveys, repeated qualitative studies, and program monitoring data. That goal was to elicit the effectiveness of the HP and HP+ interventions (alone and combined) on utilization of MNCH services and to examine whether the intervention followed the pathways of change as outlined in the TOC. The following concluding slides summarize the findings of this mixed-method evaluation study, including the successes and challenges ENCC had during its three years of implementation.

Effect on key outcome and intermediate indicators

- The HP+ arm had a significant effect on facility-based deliveries. A 12 percentage-point increase in utilization of facilities for deliveries in the HP+ arm was observed over the comparison arm. The HP+ arm had an added gain of 9.5 percentage points over the HP arm.
- There was no effect of the interventions on ANC attendance during the first trimester. However, the HP+ arm had a significant effect on four or more ANC visits during pregnancy (8.8 percentage points over the comparison arm). The HP+ arm showed a 19 percentage-point gain over the HP arm.
- Both interventions showed effects on PNC; the intervention arms demonstrated an additional effect of over 20 percentage points on PNC maternal check-ups by health professionals and over 15 percentage points on PNC newborn check-ups by health professionals.
- The interventions did not improve knowledge of danger signs among mothers. However, there was a significant effect of each arm in improving maternal knowledge of birth preparedness components

Coverage and engagement of MNHPs with mothers and community

- A high level of interaction was observed between MNHPs and women. The majority of the cadre was able to cover the entirety of their catchment area.
- MNHPs were able to see 86% of women in the HP arm and 93% of women in the HP+ arm. This amounted to more than a 40 percentage-point increase for both arms since baseline, which was the level of coverage when MNHPs were TBAs.
- Counseling and referrals to facilities for deliveries was universally conducted by MNHPs in both HP and HP+ arms. Results from the household survey show that between baseline and endline, referrals by MNHPs for institutional deliveries increased by approximately15 percentage points in the HP arm and 7 percentage points in the HP+ arm.
- The percentage of women who were visited by an MNHP within 24 hours of birth increased nearly 30 percentage points in HP arm and nearly doubled in the HP+ arm.
- Husbands became more involved in the decisionmaking process for pregnancy and delivery. The HP arm had an increase of 28 percentage points and the HP+ arm increased by19 percentage points. In contrast, the comparison arm improved by only 5 percentage points.
- In the HP+ arm, though coverage of MNHP counseling services during pregnancy was over 90%, only 70% of surveyed mothers were aware that MNHPs also sold essential products. Approximately 56% of women who were aware of MNHPs' social enterprise purchased an item from them.

The MNHPs' experience

- MNHPs were all former TBAs, with the majority having 5 years of TBA experience. Most had little or no formal education.
- While all the MNHPs received the same training, there was a gap in knowledge of key danger signs between MNHPs in the HP arm and those in the HP+ arm. MNHPs from the HP+ arm showed poorer knowledge on certain knowledge components than their HP counterparts.
- MNHPs generally accompanied women to the health facilities, especially when women were close to delivering or showed danger signs.
- Besides accompanying women to the health facilities for ANC, delivery, and PNC, MNHPs were also engaged in providing care once at the health facilities. MNHPs in the HP arm overwhelmingly (91% in HP arm versus 61% in HP+) reported that they helped deliver babies at the health facilities.
- There was a culture of families and health staff remunerating the MNHPs. Remunerations most often took the form of small gifts.
- MNHPs were generally happy in their roles. Interestingly, what the cadre liked most and least about their work differed between the arms. While MNHPs from both arms expressed highest satisfaction when counseling mothers, a higher percentage of MNHPs in the HP arm than in the HP+ arm reported that training was a great source of satisfaction (58.8% versus only 33.3%). Traveling and documenting were the two least satisfying aspects for the MNHPs in the HP arm compared with almost nil in the HP+ arm.

Successes

- MNHPs achieved high household coverage and provided extensive support to mothers, helping them access health facilities, prepare for birth, and recognize danger signs even during the Ebola epidemic.
- 100% retention of MNHPs throughout the life of the pilot.
- The cadre was strongly accepted and supported by women and their families, community leaders, health facility staff, and the DHMT.
- The relationship between MNHPs and the health system was formalized, increasing communities' trust in health facilities.
- All MNHPs participating in the MFSE component were able to repay their loans. Profits from sales were invested into the family's well-being.
- There was strong support from senior-level DHMT members in ENCC project activities. Key DHMT staff were interested in continuing the MNHP cadre even after the pilot's conclusion.
- There is potential for all 197 MNHPs to be added to Bo District's official CHW roster.

Challenges

- Low literacy of MNHPs made documentation and record-keeping difficult.
- Lack of developed road networks made travel to health facilities difficult for both mothers and MNHPs. Bad road conditions also caused issues for MNHPs to cover their entire catchment area.
- A few community members voiced misconceptions about the new role of MNHPs. Some believed that MNHPs were paid for their work and therefore did not think that the cadre should receive any community assistance.
- Because of Ebola, project activities were halted for six months.
- There is a need for continued funding to sustain the current product supply chain for the social enterprise.

Overall, the MNHPs were relatively well integrated into the formal health system and accepted by the communities, which was a key success and a crucial intermediate step to achieve the final outcomes. However, given the already high baseline coverage levels of certain indicators and a short project timeline, more time and resources were needed to fully observe the cadre's overall effect on health outcomes.

Lessons learned

- Key to increasing coverage of MNCH services is leveraging TBAs' strength as respected members within the community and engaging them as "agents of change."
- With capacity-building opportunities such as adult literacy programs, community health members like TBAs and MNHPs can be powerful allies to the formal health services.
- Efforts to improve TBAs' and women's knowledge of MNCH should continue for better health-seeking behavior.
- Continue engaging family members, especially husbands, in the discourse and decisionmaking process of utilization of facility-based care.
- Critically further explore what it would require to achieve additional increase in utilization of services given the already high coverage levels of the indicators.
- Focus should also be given on the supply side that is on strengthening quality of care to meet increasing demand for facility-based services. Suboptimum quality of care runs the risk of discouraging women from utilization of care.
- Identify innovative ways to overcome physical barriers (lack of transportation, bad road conditions, etc.) to accessing health facilities on time to avoid delays in obtaining skilled care.

Next steps

- Collaborate with the Bo DHMT and advocate for the inclusion of community members, particularly former TBAs, in the Ministry of Health and Sanitation's national community health workforce.
- Identify ways to incorporate TBAs in the workforce in a sustainable fashion through exploring incentive or remuneration models for TBAs' effort.
- Engage all parties of stakeholders including donors and civil society to address the cost, return of investment, and sustainability of volunteer forces like TBAs as salaried cadres.

Thank you

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