Bereket Mathewos, Yunis Musema, Abeba Bekele, Bantalem Yeshanew, Gizachew Tadele, Efrem Teferi, Agazi Ameha, Tedbabe Degefie. *Ethiop Med J, 2019, Supp. 3*

ORIGINAL ARTICLE

COMMUNITY-BASED NEWBORN CARE IN ETHIOPIA: IMPLEMENTATION STRENGTH AND LESSONS LEARNED

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ABSTRACT

Introduction: *Building on lessons learned from integrated community case management of common childhood illnesses, Ethiopia launched community-based newborn care in March 2013 with the goal of reducing newborn and child mortality. The strategies of community-based newborn care included, among others, identification and managing sick newborns at the community level when referral is not possible.*

Objective: *To assess the strength of the community-based newborn care program implementation in terms of inputs, process, and outputs, and document key lessons learned through the implementation of the first phase of the program in the four agrarian regions of Ethiopia.*

Method. *Mixed methods were employed; a secondary analysis of quantitative data from routine program databases collected March 2013 through December 2016 and desk review and after-action reviews with stakeholders, in the first phase community-based newborn care program zones.*

Results: *Trained service providers were available in all health posts(HPs) and 91%(95 CI: 90-92) of health posts had the essential drugs, amoxicillin and gentamycin for community case management of sick newborns on the day of visit. A third (32%) of the expected very severe disease cases sought care at HPs. Nearly three quarters (74%) of these cases were treated at health posts, and 90% of the cases completed their treatment.*

Conclusions: *community-based newborn care can be implemented effectively in similar contexts if it is well planned, there is good-coordination with partners and stakeholders, uninterrupted supply is ensured, and continuous support and supervision is in place.*

Key words*: community-based newborn care, sick young infant, implementation strength, Ethiopia, health extension workers.*

INTRODUCTION

Building on lessons learned from integrated community case management (iCCM) of common childhood illnesses (1), Ethiopia launched community-based newborn care in March2013 (2). The goal of CBNC was to reduce newborn and child mortality. CBNC seeks to achieve its goal through further strengthening Primary Health Care Units (PHCUs) and the Health Extension Program (HEP). These include improving linkages between PHCUs and health posts (HPs) and the performance of health extension workers (HEWs) and the Health Development Army (HDA) to scale up community-based maternal and newborn health (MNH) services (3). Strategies of CBNC included early identification of pregnant women, provision of focused antenatal care (ANC), promotion of skilled birth attendance, postnatal care (PNC), identification and managing of sick newborns at the community level, and information, education, and communication (IEC)/behavior change communication (BCC) and community mobilization. This paper focuses only on assessing the implementation of one of the key strategies: managing sick young infants at the community level.

Understanding whether a program was implemented correctly per the implementation guideline allows evaluators to interpret the relationship between the program and observed outcomes more accurately (4). Such assessment also provides an accurate description of the program components and their associated degree of program integrity, thus fostering more accurate replication of the intervention (5). Theresa Diaz et al. proposed a model to conduct process and outcome evaluations and implementation research of child health programs in Africa using integrated community case management as an example (6).

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We used this model to assess the implementation of CBNC, with due focus on process and output level indicators, and to document the early lessons learned in Ethiopia.

This paper focuses on: examining the extent to which the program has been implemented per the plan, the process, and quantifying the outputs of program. These outputs include trained staff availability, supply availability, supportive supervision and follow up, and service utilization by intended beneficiaries, as well as exploring HEWs' capacities for assessing, classifying, and providing correct treatment. It also documents key lessons learned in the first phase in the CBNC zones of Ethiopia.

The assessment enables the Federal Ministry of Health (FMOH), donors, and implementing partners to examine the scale and the intensity of CBNC program, and the extent to which its key components were implemented as intended. The lessons learned will help to inform the course adjustments needed to garner the intended outcomes from the program in the next steps of the program.

MATERIALS AND METHODS

This assessment employed mixed methods: a secondary analysis of quantitative data and desk review and after-action reviews (AARs). For this assessment, domains of the implementation strength and relevant data sources for each domain from the implementation guide were identified. Then, a data extraction tool was developed to obtain the data from each source. Program data from routine program databases collected from March 2013 to December 2016 were used to measure the intensity and coverage of the program. For qualitative data document review, AARs with key stakeholders and program implementers were conducted.

Data sources

The FMOH CBNC task force, in collaboration with stakeholders, developed and approved data-collection forms integrating information on CBNC and iCCM:

- iCCM/CBNC Supportive Supervision/ Follow-up Checklist (Form C): This form is completed during post-training follow-up and regular supervision visits to HPs.
- Performance Review and Clinical Mentoring Meeting (PRCMM) data extraction form: This form was completed biannually by implementing partners at the meeting. PRCMM is a review meeting conducted at woreda level with HEWs, health center staff, and woreda representatives, which brings all HEWs together after training and provides an opportunity to mentor and coach them. It is also used to collect some important data to inform progress and quality of the program(3).
- Training database: an Excel spreadsheet that documents the ways HPs and HEWs participate in the training as trainings happen.

Supervision and the PRCMM data were obtained from implementing partners (Table 1) and training data were obtained from FMOH's training data compiled in the excel sheet.

Setting

The first phase of CBNC was implemented in seven selected zones of four agrarian regional states (Table 1): East Gojam and North Shoa (Amhara), Eastern (Tigray), East Shoa (Oromia) and Gurage, Sidama, and Wolayta (SNNPR).Out of the seven first-phase zones, five(East Gojam, North Shoa, East Shoa, Gurage, and Sidama)were included in this study. Data were not available for the remaining two zones (Eastern Tigray and Wolayta) as it was in a different format and data elements did not match. We used data from all HPs in the five CBNC learning zones. For qualitative data, the study team conducted document review and AARs with key stakeholders and program implementers.

Study design

For this study, strength of implementation is defined as quantifying the output of program processes, service utilization, and service providers' (HEWs') capacity to deliver appropriate care. Thus, it combines three important types of output data:

1. Data on training, supply, and supervision
2. Data on utilization – such as number of cases initiating treatment
3. Data on HEWs' capacity – such as proportion of cases correctly classified and cases correctly treated

Then findings from the data were compared against selected key activities in the implementation guide to assess implementation fidelity. We sought expert opinions and reviewed literature for variables that did not have targets for implementation strength to set the appropriate benchmarks. We used findings from AARs to complement findings from the routine data.

[9]CBNC task force: Group of child health experts from different organization, organized by FMOH to advise on national CBNC implementation

Table 1: Phase 1 CBNC Implementing Partners and Zonal Profile (All Figures in the Tables Represent 2013 Data)

Implementing Partner	Zone	Population	Women in Reproductive Age (WRA)	Expected Newborns	# Urban Woredas	# Rural Woredas	# Rural Kebeles	# of HPs	# of HEWs	# of HCs	# of Hospitals
Save the Children	East Shewa	1,583,855	350,032	54,960	3	10	301	299	660	55	3
	Gurage	1,572,303	366,347	54,402	2	13	409	409	844	65	2
	Sidama	3,471,310	808,815	120,107	2	20	545	545	1,133	118	3
L10K	North Shewa	1,388,617	306,884	48,185	2	13	267	267	498	51	2
	East Gojam	2,397,876	565,899	80,808	2	16	392	402	665	100	2
IFHP	Eastern Wolayta	868,326	204,057	29,870	2	7	143	124	284	41	2
	Total	11,282,287	2,602,033	388,333	13	79	2,057	2,046	4,084	430	14

Data collection and analysis

We extracted data from relevant sources using extraction tools developed for this purpose. We used an AAR guide to obtain qualitative information on how the program was implemented as compared to the implementation guide. The team conducted AARs in August 2016. Members of the National Child Survival Technical Working Group (NCSTWG), regional managers, and zonal program coordinators of Save the Children participated in the AAR.

Quantitative analyses were carried out in Stata 11.2 (7). Descriptive statistics were calculated for selected indicators. Indicators of correct classification or treatment were calculated by comparing the HEW's classification and treatment with the agreement of supervisors on the supervision form. PRCMM data extracted from HPs were annualized to standardize calculation of expected very severe disease (VSD) cases for a year.

Ethical consideration:

CBNC is a national program owned and led by FMOH and implemented by partners. For this study, consensus was reached with FMOH, NCSTWG, and implementing partners to conduct analysis on their routine supervision data and AARs and a support letter was obtained from FMOH, MNCH directorate.

RESULTS

A total of 1,891 HPs from the five Phase 1 zones were included. CBNC implementation in these zones was launched in March 2014. Data were routinely collected from March 2014 to December 2016. HEWs' training was conducted from March 2014 to December 2015 in two rounds. Post training follow up (PTFU) was conducted from February 2014 to July 2016 and Performance Review and Clinical Mentoring Meetings (PRCMMs) were conducted from December 2014 to April 2015. PRCMM data were extracted from HPs over eight months after CBNC initiation on average. The distribution varies regionally, from 6.6 months in Amhara to 10 in Oromia.

Implementation of CBNC

The program had a comprehensive implementation guide, which clearly laid out the guiding principles, goals, and objectives of the program, strategies to achieve the objectives, and main activities to be carried out (3).The AAR participants mentioned that implementation was in line with the guiding principles and the proposed strategies of the implementation guide.

[10] Annualized: Yearly expected number for VSD cases was divided to 12 months and 8 months' data was taken as denominator for this analysis

However, there were some inconsistencies between what was planned and what actually happened on the ground.

Training: To have a skilled service provider at service delivery points, one of CBNC's key activities was training of health workers (HWs) and HEWs. The CBNC task force revised the existing iCCM training materials to include a package of CBNC interventions like the management of VSD in young infants by HEWs in the community, when referral is not possible (3).

The training was cascaded from the national-level master training of trainers to HEWs training. Nearly all HEWs in the target zones were trained on CBNC, and 98% of HPs initiated CBNC in these zones (Table 2).

Table 2: Plan Versus Achievement on CBNC Training, PTFU, Routine Supportive Supervision (RSS), and PRCMM by zone

Basic profile					**Plan**		**Achievements**				
Region	**Zone**	**# Woreda**	**# HCs**	**# HPs**	**Training of Trainers for HWs**	**Basic CBNC/ IMNCI Training for HWs from HCs**	**HEWs on CBNC Training**	**# HWs on CBNC Training of Trainers**	**# HWs from HC on Basic CBNC Training**	**# HEWs Trained on CBNC**	**# CBNC Initiated HPs**
Amhara	North Shoa	17	89	286	76	178	586	79 (104%)	127 (71%)	586 (100%)	267 (93%)
	East Gojam	16	100	402	64	200	900	57 (89%)	199 (100%)	900 (100%)	402 (100%)
Oromia	East Shewa	10	55	291	50	110	578	38 (76%)	133 (121%) *	578 (100%)	288 (99%)
SNNP	Sidama	20	135	545	40	270	1,203	39 (98%)	305 (113%) *	1,203 (100%)	545 (100%)
	Gurage	13	72	412	26	144	708	26 (100%)	307 (213%) *	708 (100%)	389 (94%)
Total		76	451	1,936	256	902	3,975	239 (93%)	1,071 (119%)	3,975 (100%)	1,891 (98%)

*There were gap filling trainings as there were high staff turnover

Supervision and PRCMM:
The implementation guide stated that all HPs would receive PTFU within four to six weeks after training. A team of trained professionals from Woreda health offices, HCs, and implementing partners would conduct the PTFU using a standard checklist. The PTFU data showed that almost all HPs have received PTFU (Table 3). However, according to the AAR participants, less than half of the HPs received it within the specified period, it was delayed on average for three months.

The first training for HEWs was conducted in March 2014, and only 24% of the HPs received PTFU before May 31, 2014.The implementation guide suggests that at least one direct case observation should be made in all HPs during PTFU, but the proportion of HPs that had direct case observation was only 2.4% (95% CI: 1.7-3.1).

Eighty-five percent of HPs have received at least one routine supportive supervision (RSS) after CBNC initiation. Thirty-eight percent had a second round of RSS and 8% had three rounds or more. Implementing partnersand PHCU staff conducted all the visits jointly. None of the PHCUs took the initiative to conduct CBNC-focused RSS without partner prompting them.

[11]Implementing partners: nongovernmental organizations that conducted training of HEWS and HWs, PTFU, RSS and PRCMM in the implementation zones

Table 3: Distribution of HPs that received PTFU and RSS and Conducted PRCMM by Region and Zone

Region	Zone	HEWs Trained on CBNC	HPs Initiated in CBNC	HPs Received PTFU	HPs Participated in PRCMM1	HEWs Participated in PRCMM1	HPs Participated in PRCMM2	HEWs Participated in PRCMM2	HPs Received at Least One RSS Jointly By Implementing Partners and PHCU	HPs Received at Least One CBNC-Focused Supported Supervision by PHCU
Oromia	East Shewa	578	288	277 (96%)	283 (98%)	494 (85%)	281 (97%)	464 (80%)	281 (98%)	0
SNNP	Sidama	1,203	545	538 (99%)	533 (98%)	846 (70%)	545 (100%)	855 (71%)	545 (100%)	0
SNNP	Gurage	708	389	383 (98%)	343 (88%)	514 (72%)	364 (94%)	528 (75%)	364 (94%)	0
Amhara	North Shoa	586	267	267 (100%)	266 (99%)	375 (63%)	30 (11%)	55 (9%)	130 (49%)	0
Amhara	East Gojam	900	402	402 (100%)	402 (100%)	793 (88%)	382 (95%)	765 (75%)	281 (70%)	0
Total		3,975	1,891	1,867 (99%)	1,827 (96%)	3,022 (76%)	1,602 (84%)	2,667 (67%)	432 (23%)	0

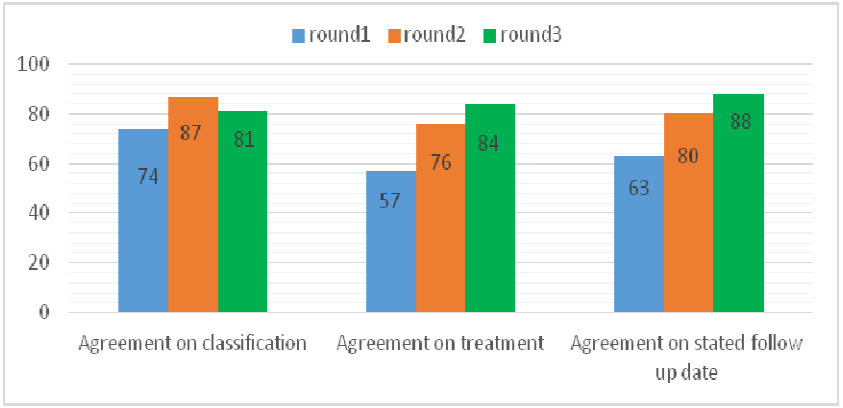

Figure1: Agreement level of classification and treatment between HEWs and supervising HWs by round of visit

According to the implementation guide, PRCMM should happen three to six months after training, and it should happen twice a year. Eighty-five percent of HPs and 76% of HEWs participated in the first round of PRCMM, which was conducted nine months after the CBNC training.

The team conducted further descriptive analysis to look into HEWs' skills, the availability of supplies, and service utilization using expected number of VSD cases for the year. We don't have incidence data for VSD in young infants hence the expected number is based on the national estimation that FMOH's plan and policy directorate provided for woreda based planning(8). According to this estimation, 7.6% of young infants are expected to develop VSD.

During the study period, 1,101 cases were classified as VSD by HEWs. Sick young infant (0-2 months) registration books were reviewed across three rounds of visits by supervising HWs, to observe HEWs' skill and capacity in assessing, classifying, and treating sick young infants. HEWs' skill and capacity to classify, treat and follow up on VSD cases correctly increased by 7%, 27%, and 25% respectively, revealing an improvement since the first round of visits (Figure 1).

Supply availability

Table 4 presents the proportion of HPs with key CBNC commodities, supplies, and job aids on the day of supervision as well as HPs with stock available in the month before the visits.

About 18%(95% CI = 16-20) of HPs reported stock outs of dispersible amoxicillin in the previous month, but only 8% (95% CI = 7-9) had stock outs one month before RSS. Over 80% of HPs had gentamicin during PTFU and RSS.

Table 4: Availability of Essential CBNC Commodities and Supplies During Supportive Supervision and One Month Before the Visit.

Item	Variable	Available on Day of Visit				Available in the Last Month Before the Visit			
		No. of HPs With the Item (n)	No. of HPs Providing Data (N)	%	95% CI	n	N	%	95% CI
Dispersible amoxicillin	1st round	1,600	2,034	79	77-80	1,509	1,842	82	80-84
	2nd+ round	1,558	1,716	91	90-92	1,481	1,611	92	91-93
Gentamycin	1st round	1,613	2,028	80	78-81	1,527	1,841	83	81-85
	2nd+ round	1,565	1,715	91	90-92	1,494	1,619	92	90-93
2cc syringe and needle	1st round	1,893	2,031	93	92-94	1,720	1,818	95	94-96
	2nd+ round	1,634	1,764	93	91-94	1,549	1,661	93	92-94
Thermometer	1st round	1,962	2,049	96	95-97				
	2nd+ round	1,787	1,806	99	98.6-99.5				
Weighing scale	1st round	1,953	2,059	95	94-96				
	2nd+ round	1,754	1,819	97	96-98				
CBNC register	1st round	1,992	2,048	97	96.5-98				
	2nd+ round	1,803	1,810	99	99.3-99.8				
Timer	1st round	1,708	2,038	84	82-85				
	2nd+ round	1668	1,804	92	91-94				

Service utilization for VSD

We analyzed PRCMM data to estimate the proportion of sick young infants who sought care for VSD in the study HPs (Table 5) from the expected VSD cases. Nearly a third (32%) of expected VSD cases sought care at the HP level. When further analyzed for the number of VSD cases per HP in the eight-month period, over half of the HPs (52%; 95%CI: 51-54) did not see any VSD cases, 17% (95%CI: 15-18) saw one case, 11% (95%CI: 10-12) saw two cases, 6.6% (95% CI: 5.8-7.4) saw three cases, and only 1% (95%CI:0.7 -1.5) saw eight cases, or one case per month.

Service initiation and completion

Of the cases that sought care in study HPs, nearly three quarters (74%) of the cases were treated at the HP and the remainder were referred to a higher level facility (9). The number of cases treated at HPs vary among zones (table 5); however, 90% of the cases that started treatment at HPs completed their treatment of seven days (once daily) injectable gentamicin and twice a day oral amoxicillin.Overall CBNC program implementation strength was rated comparing the result with targets on implementation guidelines and benchmarks set based on expert opinion (Table 6).

Table 5: Proportion of Cases in Which Caregivers Sought Care, Started Treatment, and Completed Treatment for VSD After

Zone	Number of HPs	Mean Number of Months Data Covers	Expected Number of VSD Cases*	VSD Cases Caregivers Sought Care for at HP	Cases Started Treatment at HP	Cases Completed Treatment at HP (7 Days)	cases referred to other facilities[12]
East Shewa	288	8.4 (8.2-8.6)	3,611	970 (38%)	577 (59%)	500 (87%)	393 (41%)
Sidama	545	10 (9.8-10.2)	7,915	2,339 (35%)	1,967 (84%)	1,809 (92%)	372 (16%)
Gurage	389	10.4 (10.3-10.6)	3,585	1,268 (41%)	1,006 (79%)	849 (84%)	262 (21%)
North Shoa	267	9.6 (8.8-10.2)	3,166	198 (8%)	132 (67%)	120 (91%)	66 (33%)
East Gojam	402	6.6 (6.4-6.8)	5,467	751 (25%)	425 (57%)	409 (96%)	326 (43%)
Total	1,891	8.8 (8.7-8.9)	23,744	5,526 (32%)	4,107 (74%)	3,687 (90%)	1419 (26%)

* The number of expected cases is annualized and adjusted to reflect actual months the data covers (eight months on average).

Table 6: Program Implementation Strength: Comparison of Implementation Guide's Targets with Actual Implementation

Program Implementation Variable	Target	Achievement	Strength (Strong, Average, Weak)
HEW training A	100%	100%	Strong
HPs initiating CBNC A	100%	98%	Strong
HPs having PTFU any time after training A	100%	99%	Strong
HPs having two+ PRCMM A	100%	85%	Strong
Proportion of HEWs participating in PRCMM A	100%	71%	Strong
HPs having at least one joint RSS from implementing partners and PHCU A	20%	85%	Strong
CBNC drugs availability A		91%	Strong
Treatment completionB		90%	Strong
HEWs' ability to classify correctly B		81%	Average
HEWs' ability to treat correctly B		84%	Average
Service utilization for VSD at HP (expected cases) C		32%	Average
HPs having timely PTFU (4-6 weeks after training) A	100%	50% (AAR finding)	Weak
HPs having RSS from PHCU A	80%	0	Weak

[12] referral quality and compliance with referral is discussed in the referral paper

[13] Treatment completion: According to the CBNC chart booklet, treatment for VSD cases is gentamycin injection, once daily for 7 days and oral dispersible amoxicillin

[A] 90-100 (S), 80-89 (Av), < 80 (W)
[B] 85-100 (S), 75-84 (Av), < 75 (W)
[C] > 70 (S), 30-69 (Av), < 30 (W)

DISCUSSION

Previous experience with iCCM (10, 11) has helped to develop a well-defined implementation guide, which has framed each activity so that it happens in an orderly fashion with well-defined roles and responsibilities for all stakeholders. CBNC has largely been implemented as planned in the study areas. All HEWs have been trained in CBNC.A high proportion of HPs have had PTFU and PRCMMs. This result is similar to the implementation strength study conducted in iCCM (12). However, there were areas that did not strictly follow the implementation guide, such as the roll-out modality of HEW training. The implementation guide suggested that PHCU staff should train HEW sat the HCs to allow timely and frequent follow up, ownership and sustainability of the program. A HC has, on average, five HPs and 10 HEWs under it. However, only nearly one HW per HC had TOT on CBNC. This resulted in shortage of facilitators at the district level. As a result, partners had to take leadership in training HEWs using their trainer pool and TOT-trained HWs from different HCs. This in turn resulted in extended training duration, delaying PTFU and ultimately PRCMM.

PTFU and RSS are believed to improve HEWs' consistency in providing care to sick children (12). Because of a smaller pool of trainers than expected and the volume of HEWs to be trained, follow up was not timely – it was on average **three** months late. Potentially this might have contributed to less confidence and skill and thus suboptimal performance. The assessment has shown that most regular supervision was led and conducted by partners, and less was done to strengthen local government systems. The same was true during iCCM, where partners hired consultants to conduct PTFU following the initial training (12).According to the national health structure, five HPs are linked to one HC, and the HC staff provide weekly supervision and on-the-job mentoring (13).However, none of the PHCUs could conduct RSS on their own using the standard checklist (iCCM/ CBNC supervision checklist).HWs' training on CBNC was conducted following HEWs' training and PTFU.As a result, HWs who support HPs lacked confidence in supporting HEWs on CBNC, though the sequence in subsequent phases was adjusted. Further strengthening Government ownership and functions of the PHCU are critical for successful national scaling up of CBNC.

As service utilization data indicates, more than half of HPs did not see any VSD cases, and only 1% of HPs saw at least one case per month. With very few cases, developing and maintaining the skill and competency of HEWs to assess, classify, and treat would be very difficult. In addition to skills-based training of HEWs, PTFU, RSS and PRCMMs are intended to improve quality of care and strengthen links between HPs and HCs. This approach built on lessons learned from iCCM. A similar approach within the PHCU system needs to be developed to maintain skills obtained through trainings.

HPs did not have much shortage of essential commodities, as implementing partners were providing the supplies directly to zones and districts in parallel to the existing system. A similar procedure to iCCM was followed to equip HPs with essential supplies for CBNC(10). Unlike iCCM, the availability of drugs was good on the days of visits. However, this is a parallel system, and partners have invested significantly to ensure supply availability at the service delivery point. An iCCM study (14) assessed supply availability in intervention and control sites and found that control sites had shortages of supplies to treat malaria and diarrhea, which was part of the HEP even before iCCM. A study conducted to assess the effect of iCCM on malaria case management found that control HPs where there was no iCCM intervention, had shortages of drugs compared to intervention HPs which received their supply through implementing partners. As a result, control area HEWs were less likely to deliver case management, use the algorithm, or record in the register—all of which reinforce skills (15).Both findings indicate the importance of strengthening the supply system to ensure sustainability (16).

Service utilization remained low compared to the expected number of sick children, and this was also true for iCCM services (17). Identifying and treating or referring over 70% of total PSBI cases was needed to result in significant mortality reduction in Sylhet district, Bangladesh (18). These data, however, need to be interpreted cautiously, as the expected number is for the entire zone, but the data analyzed here only come from HPs. Some cases might have gone directly to the HC or hospital (19, 20).Learning from the iCCM lessons, a stronger focus was given to community sensitization and mobilization through the HDA, an existing community structure, to improve service utilization. Several factors might have contributed to low service utilization (3).More needs to be done to address barriers to care seeking and service utilization. The national expectation for VSD incidence could also be unrealistic. Further study on setting accurate denominators should be considered.

As CBNC is built on the experience of iCCM, HEWs have demonstrated better skill in assessing, classifying, and treating cases. However, with very few cases, developing the skill and competency of HEWs to assess, classify, and treat is very difficult. The study on effectiveness of supportive supervision of iCCM (21) has shown that frequent visits improve HEWs' consistency on classification and treatment of pneumonia in children under age of five. There should be regular supportive supervision and mentoring visits from the supervising health facility to refresh HEWs' knowledge and skills so that they retain skills, stay motivated and are competent.

Low rates of early PNC visits (22) might also contribute to low case identification and service utilization. Studies have shown early postpartum visits by community health workers have helped identify and improve care seeking for PSBI, feeding problems and other newborn illnesses (19,23). The treatment completion rate for VSD was better than it was for pneumonia during iCCM implementation (16). The same was true with the Community-Based Newborn Intervention work in Ethiopia (COMBINE) (24)

One limitation is that this study analyzed routine data, which were collected for program monitoring purposes to improve program quality, and therefore for a different objective than this study. Furthermore, all the data came from HPs, and so there are no data from HCs to give a complete picture of service utilization and treatment completion. The data also do not allow us to conduct dose response analysis to assess the effect of implementation strength on the outcome of the program.

Conclusion

Community health workers, in this case HEWs, can manage very sick young infants when referral is not possible with high-quality training, prompt coaching, RSS, and PRCMMs. However, the program needs to be well planned, integrated with the existing health system, and capable of supervising HEWs and higher level health facility staff better. For HEWs to provide optimal quality service PTFU, RSS, and PRCMMs are essential. For the program to be effective, partners' support should be well coordinated and should be used to build the capacity of health staff in the MOH structure (RHBs and district health offices) and the system in general. Partners have invested a large amount of their time and energy in rolling out training and conducting PTFU, RSS, PRCMM, and delivering supplies to the districts.

But more should be done to strengthen the system to integrate CBNC and routinize its implementation such as implementing the program with the integration principle and practice in mind by donors and implementing partners alike. Government should also envision having dedicated human resource within the RHB and district health offices for child health.

Recommendations:

Partners of FMOH should build the capacity of MOH staff and strengthen the system, especially in logistics management and information systems, supervision and quality improvement systems such as PTFU, RSS and PRCMMs, and the health information system to ensure strong CBNC implementation will achieve its goal.

ACKNOWLEDGMENT

The authors acknowledge the effort of all individuals and their institutions in assisting with this study. Appreciation is given to UNICEF for funding the organizations from which we obtained the data for this study. We express our sincere gratitude to Save the Children field office staff, program managers and NCSTWG members for their participation in AAR. We extend our appreciation to the FMOH, MNCH directorate staff for their support of the study. Our gratitude goes to Save the Children US staff. Our sincere thanks go to the editors, especially to Mary Tayler and Stephen Wall for their valuable comments and brilliant suggestions.

Conflict of interest:

The author have no conflicts of interest to declare.

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