

***Participatory  
Community  
Solutions  
for the Uptake  
of Maternal  
and Newborn  
Health Care  
across  
the Care  
Continuum***



**EXPERIENCE FROM L10K'S IMPLEMENTATION  
IN ETHIOPIA**

## ABSTRACT

For over a decade, The Last Ten Kilometers (L10K) project has supported communities in Ethiopia to take ownership of their health care through innovative community-based strategies. The project has tested participatory community quality improvement and engagement initiatives to strengthen health service quality and health provider skills. L10K found that these interventions created community awareness of and collaborative solutions for service delivery challenges. Our approach improved health system capacity and increased maternal and newborn health service uptake across the care continuum. This experience suggests that scale-up of quality improvement initiatives would benefit from community engagement throughout design, implementation, and monitoring processes.

## INTRODUCTION

### Background

In Ethiopia and globally, poor care-seeking behavior, distance and other geographical barriers to care, lack of transport, lack of communication and knowledge of health system literacy, and costs [1-4] are reasons for low uptake of maternal and newborn health (MNH) services across the continuum of care [5-8]. The primary shortcomings of the Ethiopian referral system are the delays in reaching facilities and the late presentation of complications [9]. The 2016 Ethiopian Demographic and Health Survey reports that while 62% of pregnant women made at least one skilled antenatal visit, only 28% delivered their babies with the assistance of a skilled person, and even fewer (17%) received postnatal care (PNC) within 48 hours of the birth [6].

Community participation is fundamental to building a resilient health system [10, 11]. It has been shown to improve health outcomes, access, equity, acceptability, service quality, and responsiveness [12]. Evidence shows that community-based interventions reduce morbidity and mortality for women, newborns, and babies, and improves care-related outcomes [15–17]. Community participation in MNH program planning and implementation, as well as in quality improvement (QI) processes for MNH services, improves service quality

and use [11, 14] and lowers newborn mortality rates [18]. Community engagement can also create accountability and promote a sense of ownership and improve acceptance of health policies and sustainability of QI interventions [22, 23].

### Project description

For more than 10 years, the Last Ten Kilometers (L10K) project, funded by the Bill & Melinda Gates Foundation, has been supporting communities throughout the four most populous regions of Ethiopia (Amhara, Oromia, Southern Nations, Nationalities and Peoples [SNNP], and Tigray) to take ownership of their health care. In 115 woredas and 3,070 kebeles, L10K introduced innovative strategies to give women access to high-quality family planning; and antenatal care (ANC), delivery; PNC services; and newborn care services.

### Intervention strategies

L10K tested early care-seeking and referral solutions, participatory community quality improvement (PCQI), and participatory community solutions (PC-Solutions) to improve quality of MNH care. These three strategies, explained below, allow community members to identify challenges that hinder access to high-quality services and work with decision-makers to help more people get the care they need.

**Early Care-seeking and Referral Solutions (December 2012–13 in 16 referral hospitals, 16 primary health care units [PHCUs], 102 health posts):** Through a three-step change process—mapping referral resources, designing participatory innovations, and actively managing referrals—L10K worked with community representatives (women development army [WDA] members, kebele administrators, and community leaders) and health care providers from hospitals to health posts to identify barriers and map community resources for critical MNH services. The primary health care unit and the woreda health office then used this information to manage the referral system between the different levels of health care.

### **Participatory Community Quality Improvement Strategy (December 2012–2014 in 14 woredas:**

PCQI involved a cyclical process. This included identifying barriers to high-quality MNH services through community and health post assessments; developing and implementing action plans; identifying and supporting community QI teams, and monitoring progress [21].

### **PC-Solutions strategy (March 2016–October 2017 in 8 woredas across 4 regions):**

PC-Solutions builds on PCQI and early care-seeking and referral solutions [21, 24] to improve early MNH care-seeking through a combined facility and community QI strategy. The PC-Solutions strategy is a four-step (plan-do-study-act) QI process. A joint situational analysis at PHCUs conducted workflow mapping, client exit interviews, document review, and focus group discussions with mothers and WDA members, followed by a community meeting to discuss findings and develop actions.

Health center and community QI teams collated and triangulated administrative data from health centers and kebele health posts to inform QI cycle “plan” and “study” fora. Community members identified bottlenecks and solutions and helped implement and monitor the process to improve facility quality and performance.

**The first phase of the PC-Solution strategy prioritized and implemented early ANC and PNC, continuity of ANC visits, and partograph use over 2 years. Intrapartum and newborn care quality were introduced after a reassessment at the end of the Fiscal Year 2017.**

## METHODS

We monitored the referral solution strategy from selected kebele intervention cases by reviewing service statistics from facility (both health center HC and hospital) registers, referral slips, and referral feedbacks, and captured the data on the DHIS2 database. L10K's obstetric complication and referral audit study explored barriers to access to comprehensive emergency obstetric and newborn care at 16 referral hospitals in L10K districts. Data were collected through hospital records review and at-home follow-up interviews with patients who survived complications. L10K also conducted a quasi-experimental household survey to assess the contribution of PCQI and PC-Solution strategies on improving MNH care behaviors and practices [21, 25].

For this brief, we synthesized referral solution management information system data, referral audit survey reports, the PC-Solution effectiveness evaluation report, the PCQI article, and a PC-Solution paper.

## RESULTS

### Strengthened health system for provision of MNH services

Each of the strategies engaged stakeholders throughout the design and implementation, which improved facilities' readiness to respond to community needs and improved the two-way referral system between communities and hospitals.

#### Active collaboration across levels

In each of the three strategies, learning and review fora led to scaled and better-tailored services, and improved communication and consultation quality and team cohesion and personal relationships among primary care professionals and senior hospital clinicians.

**“The project was participatory in that everyone who was supposed to be stakeholder was participating in the project and focused on continuous assessment of the problems and identifying potential solutions, plan accordingly and continues like this to get better results ....”**

*—Health center staff, Tigray (PC-Solution)*

Participants reported that full stakeholder participation, strong coordination, robust support, continuous performance review, and staff commitment facilitated the proper implementation of these strategies. There were leadership buy-in and continuous support from the referral hospital, woreda health office, and zonal health department senior management and governing board for smooth implementation of the strategies across the continuum. This, in turn, increased providers' accountability to community and commitment.

**“...we established a strong relationship among community, WDAs, health extension workers (HEWs), and health center staff.”**

*—Health center staff, SNNP (PC-Solution)*

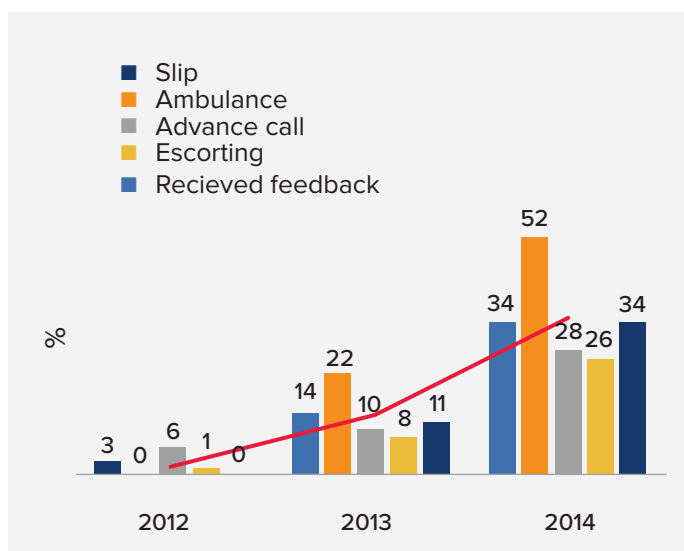


### Strengthened two-way referral system

The facility referral systems maturity index improved from 40% to 90% during the intervention period. Criteria included assigning referral focal people to coordinate referrals; distributing ambulance call numbers to communities for direct-call 24/7 ambulance services; availability and use of standard referral protocols, and regular review of referral problems and service statistics between referral hospital and PHCU staff and HEWs.

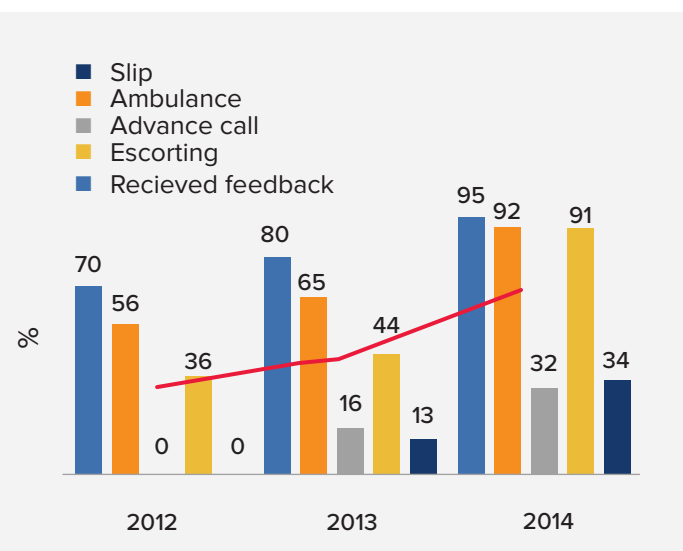
Program monitoring data from referral solution intervention facilities indicated that the referral and communication system was strengthened. Accordingly, there was an increase in two-way referrals and referral protocol adherence from health post to community to health center (Figure 1). Likewise, the percent of expected pregnancies in the health center catchment area referred to hospitals from the health centers that adhered to specific referral protocols increased (Figure 2).

**FIGURE 1. Trend in Adherence to Specific Referral Protocols among Referrals to Health Center from Community, July 2012 to December 2014**



An obstetric complication and referral audit of 56 cases from 16 referral hospitals that were referred from intervention PHCUs from April to June 2015 showed that 77% of them had evidence of referral from health centers. According to the referral

**FIGURE 2. Trend in Adherence to Specific Referral Protocols among Referrals from Health Center to Hospital, July 2012 to December 2014**

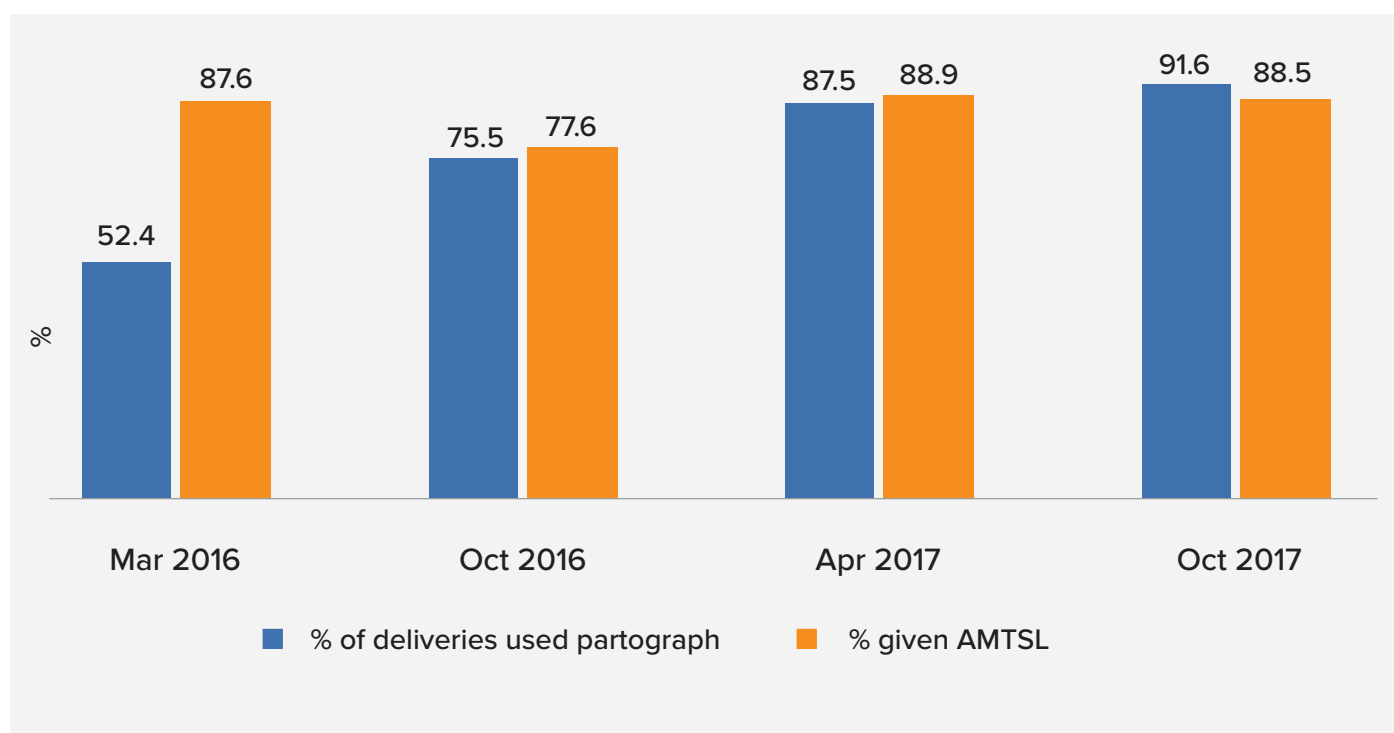


evidence found at the hospital, about half of the cases were escorted during transfer to hospital; 84% used ambulances; 21% of cases called to inform hospitals in advance; and more than 90% of them were sent with referral slips.

### Improved delivery management practices in facilities readiness

In eight PC-Solution intervention health centers, 11,014 records of women were reviewed. Partograph use increased by 76% (774), and 86% (870) mothers received prophylactic uterotonics (Figure 3).

**FIGURE 3.** Partograph Use and Administration of Prophylactic Uterotonics, March 2016-October 2017



Reports from the referral solution strategy indicated that the percentage of basic emergency obstetric and newborn care (BEmONC) functions performed increased from 62% in April 2013 to 84% in August 2014. The percentage of BEmONC functions performed in the PC-Solution intervention PHCUs increased from 13% in March 2016 to 15% in October 2017. Though this is much higher than the recent

national survey findings [26], a significant number of health centers did not provide parenteral anticonvulsants. As such, the availability of critical drugs needs to be improved and facilities need to upgrade their provision of BEmONC functions. Changes in the components of the BEmONC functions between baseline and post-intervention are shown in Table 1.

**TABLE 1.** Percentage of Health Centers that Provided Specific BEmONC Functions

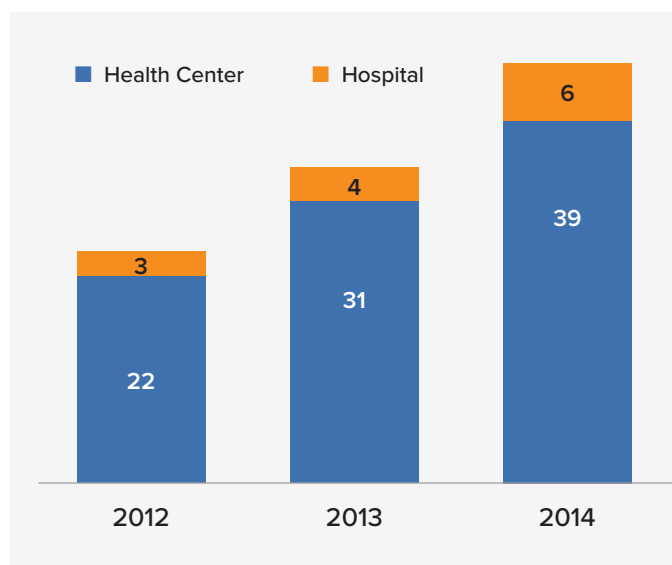
SIGNAL FUNCTION	BASELINE		FOLLOW-UP	
	% Referral solution (April 2013)	% PC-Solution (March 2016)	% Referral solution (August 2014)	% PC-Solution (October 2017)
Parental antibiotics	50	85	88	78
Parenteral uterotonic	81	85	100	78
Parenteral MgSO4/ diazepam	19	33	63	33
Removal of retained products	69	90	100	73
Manual removal of placenta	94	78	94	70
Assisted vaginal birth	31	78	50	83
Neonatal resuscitation	94	78	100	80
Performed the 7 signal functions	62	13	84	15

### Improved provision of essential and obstetric care

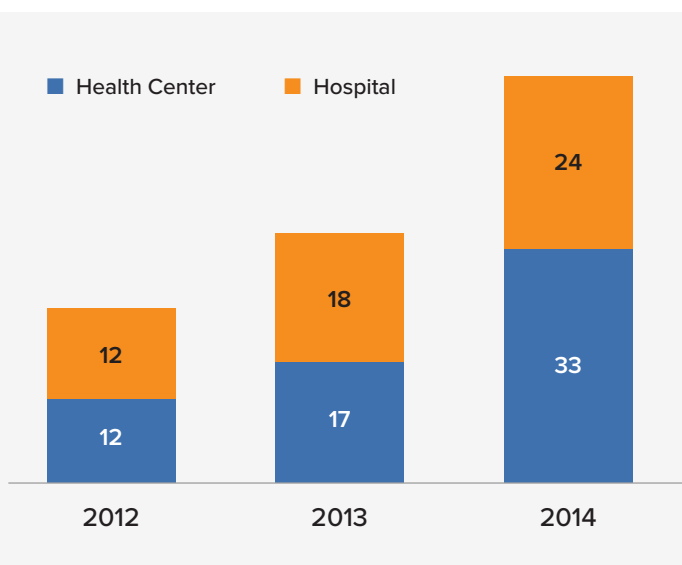
Service statistics indicated that the percentage of the expected deliveries that took place at the referral solution intervention areas increased from 22% in 2012 to 56% in 2014 (Figure 4). Likewise, the facility delivery rate increased from 57% in March

2016 to 64% in October 2017 in the PC-Solution intervention areas. The percentage of the expected obstetric complications managed, representing met need for BEmONC, increased from 25% in 2012 to 45% in 2014 at referral intervention areas (Figure 5). However, the fulfilled need for BEmONC stalled at about 18% on average in PC-Solution areas.

**FIGURE 4.** Trend in proportion of Expected Births Delivered at Facilities, 2012–2014



**FIGURE 5.** Trend in Met Need for EmONC, 2012–2014

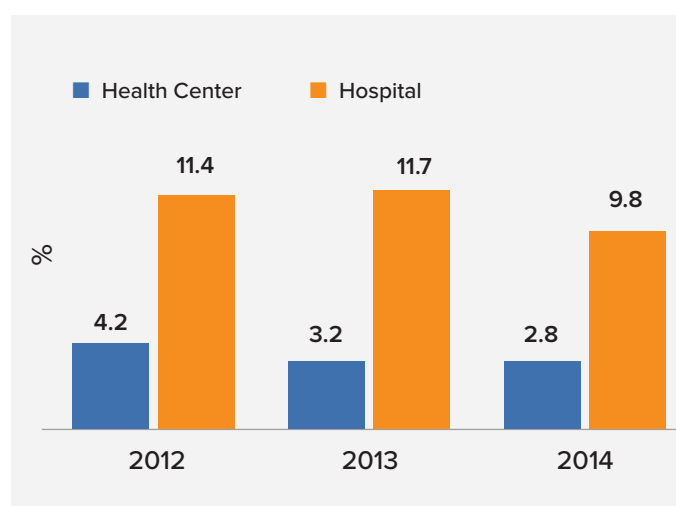


In the PC-Solution intervention areas, data on low-birthweight babies, newborn sepsis, and asphyxia were collected retrospectively for six months to understand service use. The syphilis-testing rate increased from 26% in March 2016 to 38% in October 2017. The proportion of asphyxiated newborns managed with Ambu-bag and mask increased from 29% to 93% during the intervention period. The proportion of preterm/low-birthweight babies initiated on kangaroo

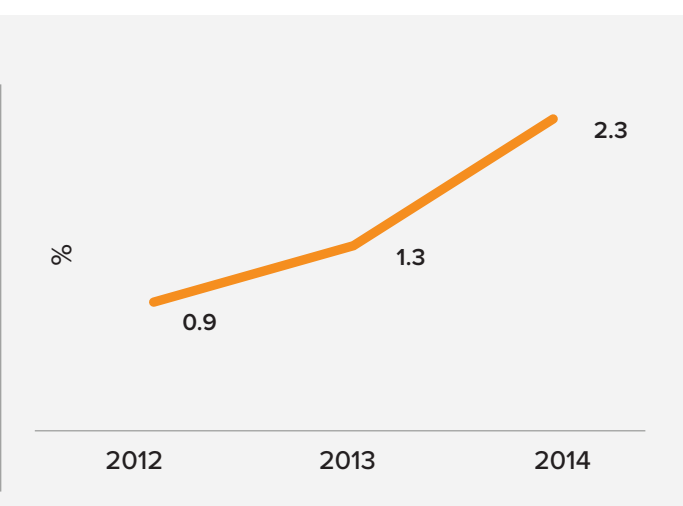
mother care increased from 13% to 92% in the same period. The percent of expected possible serious bacterial infection cases managed at health centers declined over the survey period.

Referral solution intervention health centers and hospitals showed a slight reduction in the stillbirth rate (Figure 6). The emergency cesarean section rate significantly improved over time in the referral hospitals (Figure 7).

**FIGURE 6. Proportion of Stillbirth by Health Center and its Referral Hospitals, 2012–2014**



**FIGURE 7. Proportion of Expected Births Delivered by Cesarean Section at Referral Hospitals, 2012–2014**



## Improved maternal and newborn health care practices across the continuum

Quasi-experimental studies to evaluate the intervention effects in MNH care practices across the continuum of the PCQI and PC-Solution strategies demonstrated a statistically significant improvement in the uptake of ANC, institutional delivery, and PNC (Table 2).

### Improved use of antenatal care

The average treatment effects of PCQI on MNH behavior and practices demonstrated a significantly higher coverage for four or more ANC visits (65.2%

in the intervention group vs. 51.3% in the control group) and complete ANC (70.7% in the intervention group vs. 53.6% in the control group). In facilities that applied the PC-Solution strategy, ANC in the first trimester increased by 7.6 percentage points, from 32.1% in the control group to 38.9% in the intervention area.

### Improved institutional delivery coverage

Institutional deliveries significantly increased by 11 and 8 percentage points which are attributable to the PCQI and PC-solution intervention effect (68.1 vs. 57.6), respectively.

## Improved uptake of postnatal care

There was no evidence of the effect of PCQI intervention on PNC use. However, the PC-Solution intervention demonstrated a significant intervention

effect on PNC uptake. Statistically, significant intervention effects were also observed on PNC in 48 hours and any PNC within 6 weeks postpartum of the mother (both home and facility).

**TABLE 2: Propensity Score Matched Difference-in-Difference Treatment Effect Estimations of MNH Care Practices, by Strategy**

MNH Indicators	Intervention		Comparison		Difference-in-difference	
	PC-S	PCQI	PC-S	PCQI	PC-S	PCQI
% at least one ANC	97.5	-	94.1	-	3.0	-
% ANC in 1st trimester	38.9	-	32.1	-	7.6	-
% ANC 4+	60.9	51.3	59.7	65.2	0.2	13.9*
% Complete ANC	66.9	53.6	65.1	70.7	0.4	17.1*
% Institutional delivery	79.5	57.6	72.7	68.1	7.9 *	10.5*
% Early PNC in 48 hours of the mother (both home and facility)	48.8	9.2	35.5	8.5	15.3 *	-0.7

\* p-value <0.05

## CONCLUSIONS

L10K implemented community-based QI interventions with a high level of engagement from communities in the planning, implementation, and monitoring. This participatory process empowered communities to identify local solutions to their challenges and, as a result, they promoted women's health care-seeking behavior in their communities.

The success of the QI intervention design in this study promises change beyond the timeframe of the L10K project. The uptake of QI in central community structures such as the WDA and buy-in

from health leaders at kebele and woreda levels indicate that community-level QI is easy to implement within the social and cultural context. Therefore, with continued WDA engagement and health management, community QI will continue in the demonstration areas and can be readily replicated and scaled by the government of Ethiopia.

The scale-up of QI initiatives benefit from local stakeholder involvement throughout design and implementation. Moreover, a strong support system—which includes facilitating review forums, conducting supervision, and mentoring from partners and woreda health office—is critical to the implementation of these participatory interventions.



## REFERENCES

1. Holmes W, Kennedy E. Reaching emergency obstetric care: overcoming the 'second delay'. Melbourne: Burnet Institute on behalf of Compass. 2010.
2. Essendi H, Mills S, Fotso J-C. Barriers to formal emergency obstetric care services' utilization. *Journal of Urban Health*. 2011;88(2):356–69.
3. Eckermann E, Deodato G. Maternity waiting homes in Southern Lao PDR: the unique 'silk home'. *Journal of Obstetrics and Gynaecology Research*. 2008;34(5):767–75.
4. Spaans W, Van Roosmalen J, Van Wiechen C. A maternity waiting home experience in Zimbabwe. *International Journal of Gynecology & Obstetrics*. 1998;61(2):179–80.
5. FMOH. National Strategy for Newborn and Child Survival in Ethiopia: 2016–2020. Addis Ababa, Ethiopia: Federal Ministry of Health; 2015.
6. Central Statistical Agency (CSA) [Ethiopia], ICF International. Ethiopia Demographic and Health Survey 2016 Addis Ababa, Ethiopia and Rockville, Maryland, USA: CSA and ICF; 2016.
7. FMOH. Implementation Guide for 24 hours postnatal care and stay. Addis Ababa, Ethiopia: Federal Ministry of Health; 2018.
8. Central Statistical Agency (CSA) [Ethiopia], ICF International. Ethiopia demographic and health survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ICF International. 2012;430.
9. Kitilla T. Reasons for referrals and time spent from referring sites to arrival at Tikur Anbessa Hospital in emergency obstetric. A prospective study. *Ethiopian Journal of Health Development*. 2001;15(1):17–24.
10. Van Lerberghe W. The world health report 2008: primary health care: now more than ever. World Health Organization; 2008.
11. Marston C, Hinton R, Kean S, Baral S, Ahuja A, Costello A et al. Community participation for transformative action on women's, children's and adolescents' health. *Bulletin of the World Health Organization*. 2016;94(5):376.
12. WHO. Community participation in local health and sustainable development: Approaches and techniques. World Health Organization; Geneva; 2002.
13. Lassi ZS, Mallick D, Das JK, Mal L, Salam RA, Bhutta ZA. Essential interventions for child health. *Reproductive health*. 2014;11(1):S4.
14. WHO. WHO recommendations on health promotion interventions for maternal and newborn health 2015. World Health Organization; 2015.
15. Marston C, Renedo A, McGowan C, Portela A. Effects of community participation on improving uptake of skilled care for maternal and newborn health: a systematic review. *PloS one*. 2013;8(2):e55012.
16. Bath J, Wakerman J. Impact of community participation in primary health care: what is the evidence? *Australian Journal of Primary Health*. 2015;21(1):2–8.
17. Prost A, Colbourn T, Seward N, Azad K, Coomarasamy A, Copas A et al. Women's groups practising participatory learning and action to improve maternal and newborn health in low-resource settings: a systematic review and meta-analysis. *The Lancet*. 2013;381(9879):1736–46. doi:[https://doi.org/10.1016/S0140-6736\(13\)60685-6](https://doi.org/10.1016/S0140-6736(13)60685-6).

18. Colbourn T, Nambiar B, Bondo A, Makwenda C, Tsetekani E, Makonda-Ridley A et al. Effects of quality improvement in health facilities and community mobilization through women's groups on maternal, neonatal and perinatal mortality in three districts of Malawi: MaiKhandu, a cluster randomized controlled effectiveness trial. *International health*. 2013;5(3):180–95.
19. Sibley LM, Tesfaye S, Fekadu Desta B, Hailemichael Frew A, Kebede A, Mohammed H et al. Improving Maternal and Newborn Health Care Delivery in Rural Amhara and Oromiya Regions of Ethiopia Through the Maternal and Newborn Health in Ethiopia Partnership. *Journal of Midwifery & Women's Health*. 2014;59(s1):S6-S20. doi:10.1111/jmwh.12147.
20. Olayo R, Wafula C, Aseyo E, Loum C, Kaseje D. A quasi-experimental assessment of the effectiveness of the Community Health Strategy on health outcomes in Kenya. *BMC Health Services Research*. 2014;14(1):S3. doi:10.1186/1472-6963-14-S1-S3.
21. Wereta T, Karim A, Betemariam W, Fesseha N, Dagne S, Workneh A et al. Effectiveness of participatory community quality improvement strategy on improving maternal and newborn health care behavior and practices: A propensity score analysis. *BMC Pregnancy and Childbirth*. 2018.
22. Marston C, Renedo A, McGowan CR, Portela A. Effects of Community Participation on Improving Uptake of Skilled Care for Maternal and Newborn Health: A Systematic Review. *PLOS ONE*. 2013;8(2):e55012. doi:10.1371/journal.pone.0055012.
23. Rosato M, Laverack G, Grabman LH, Tripathy P, Nair N, Mwansambo C et al. Community participation: lessons for maternal, newborn, and child health. *The Lancet*. 2008;372(9642):962–71.
24. Tiruneh G, Karim A, Yihun B, Betemariam W, Fesseha N, Wereta T. Effective Referral System for the Utilization of Critical Maternal and Newborn Health at Rural Health Centers of Ethiopia. *American Public Health Association Annual Meeting Chicago, USA2015*.
25. Tiruneh GT, Zemichael NF, Betemariam WA, Karim AM. Effectiveness of participatory community solutions strategy on improving household and provider health care behaviors and practices: A mixed-method evaluation. *PLOS ONE*. 2020;15(2):e0228137. doi:10.1371/journal.pone.0228137.
26. EPHI, FMOH, AMDD. Ethiopian Emergency Obstetric and Newborn Care (EmONC) Assessment 2016: Final Report. Ethiopian Public Health Institute, Addis Ababa, Ethiopia; Federal Ministry of Health, Addis Ababa, Ethiopia; and Averting Maternal Death and Disability (AMDD), Columbia University, New York, USA; 2017.

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