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MINISTRY OF HEALTH-ETHIOPIA

# SPECIAL BULLETIN

MINISTRY OF HEALTH, ETHIOPIA

THE TWENTY-THIRD ANNUAL REVIEW MEETING OF THE HEALTH SECTOR

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Responsive Health System in the New Beginnings!



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**Responsive Health System in the New Beginnings!**

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## FOREWORD



### NAOD WENDRAD

*Director of Policy, Plan, Monitoring,  
and Evaluation Directorate*

Dear participants of the 23<sup>rd</sup> Annual Review Meeting (ARM) and readers of this edition of the bulletin, I would like to extend my warmest welcome to this august event of the health sector. As you all know, the health sector has made the information revolution one of the priorities of the health sector both in the first and second health sector transformation plans (HSTP). Being the lead directorate to spearhead the information revolution agenda, the Policy, Plan, Monitoring, and Evaluation Directorate (PPMED) of the Ministry of Health (MOH) has been striving to enhance evidence generation and use to inform the designing of health programs and improve health system performance. To this end, the PPMED has been producing and distributing scientific evidence with the special bulletin annually for the last nine years.

Improving the culture of information use is pivotal to advancing the Information Revolution agenda. As such, PPMED has been publishing the bulletin with major objectives that would enhance the culture of information use; enhancing capacities of the health system to generate and synthesize scientific evidence; and dissemination of evidence among participants of the ARM and to researchers, policymakers, programmers, implementers and stakeholders of the health sector.

This Special Bulletin for this 23<sup>rd</sup> ARM is the 10<sup>th</sup> issue in a series published for the last nine years as part of the publications distributed during the ARM. This edition of the special bulletin contains three categories of articles; research articles, new initiatives, and best practices. The research articles bring scientific evidence to policymakers and implementers on the effectiveness and efficiency of interventions that have been implemented. The new initiatives section is essential to shedding light on the new policy and strategic issues of the health sector while the best practices bring experiences from the field for possible replication and scale-up of practices at large. The evidence organized in the three categories of this edition of the bulletin, I hope, would inform our efforts to build a more responsive health system in the New Beginnings the country has embarked.

I sincerely would like to extend my appreciation and thanks to all MOH directorates, regional health bureaus, agencies, researchers, programmers, and other health care cadres for their efforts and contributions in publishing the articles. I am also grateful to the editorial board members, PPMED staff, contributors, and reviewers for their extraordinary efforts to realize the publication of this special bulletin.

Have a good read!

**Naod Wendrad**

**Director of Policy, Plan, Monitoring, and Evaluation Directorate**

## EDITORIAL

### Responsive Health System in the New Beginnings!

In Ethiopia, the health sector has made impressive gains in the last decade. Recently, it has been plagued by formidable challenges, particularly in the past two fiscal years. Since March 2019, the health sector has been suffering from the effects of the COVID-19 pandemic that shocked the health system, disrupted essential health services provisions, and has brought additional multifaceted challenges to the health system. Conflicts that resulted in internally displaced people in the country have also posed added dimensions to the hurdles the health system is currently grappling with. Emergencies that followed conflicts have strained the health system with additional human and material resource needs. Responding to the arising health service needs of the public in the face of an unpredictable and ever-changing world has been the key focus of the health system in the last two years to sustain the momentum and build on the gains.

A well-functioning health system is pivotal for delivering quality health services to every segment of the population in all settings. The world health organization (WHO) has set three goals that require a health system to deliver high-quality and equitable health services; improving the health of the population, fairness in financial contribution, and improving the responsiveness of the health system.

According to WHO, health responsiveness is defined as “the ability of the health system to meet the population’s legitimate expectations regarding their interaction with the health system, apart from expectations for improvements in health or wealth” These legitimate expectations were defined based on the international human rights norms and professional ethics. Like any other social system such as education, justice, the health system is expected to meet the common social goals expected of all social systems in addition to its goal of producing health in the population that is equitably distributed. As such, the population expects the health system to treat people with dignity, autonomy, confidentiality, prompt attention, provision of social needs, basic amenities, choice of health care provider.

To improve responsiveness of the health system, Ethiopia has recently made notable efforts. Cultivating compassionate, respectful and caring (CRC) health workforce has been one of the four transformation agendas prioritized during Health Sector Transformation Plan (HSTP-I), which is re coined as motivated competent and compassionate professional (MCCP) during HSTP-II. In addition, improving responsiveness of the health system is one of the four objectives of HSTP-II.

Nonetheless, the responsiveness of the health system to non-health-related social goals becomes relevant only after we make sure that the health system has the capacity to meet the other goals of a health system. To realize these goals in today’s ever-changing world, the health system needs to be quick to respond or react appropriately with strategies tailored to fit the local contexts and desires of people. The ability of the health system to respond to changing health needs of populations, therefore, entails the capacity to respond to the prevailing health needs of the public. To meet its goal, the health system needs to have the ability to respond to the health needs of the public through designing and implementing interventions that are agile enough to accommodate the prevailing contexts and desires of the public in the contemporary period. This requires a huge investment in the health system to make it nimble enough to accommodate any arising needs over time.

The response to the COVID-19 pandemic in low- and middle-income countries (LMICs) has been affected by fragile health systems, competing priorities, and poverty. The emergence of the pandemic proved that most LMICs were not operationally ready to prevent, detect or control this and similar health emergencies and it illustrated the importance of developing public health response strategies for timely measures. Such strategies should enable the health system to develop the capacity to deliver the same level of essential services during emergencies; the capacity to make organizational adaptations during emergencies, and the capacity to transform its functions and structure to respond to a changing environment, during shocks and when exposed to long-term challenges.

Ethiopia has developed a five-year plan (2020-2025) to improve the health status of the public by protecting people from health emergencies, improving the health system responsiveness, and accelerating the progress towards universal health coverage. To pursue its course and navigate through the right trajectory to realize the visions of the sector, the health system needs to be responsive enough to address any emerging shocks and while keeping on delivering the usual essential health services. To this end, the health system needs to espouse cutting-edge approaches to ensure its agility to respond to the arising needs of the public and make sure the health service delivery system is arranged in a way to meet the desires of populations and their prevailing contexts and arising needs. The generation of scientific evidence to inform the application of such adaptive management approaches is critical to make sure the health system is agile enough to respond to any arising needs of the health system and public health emergencies.

# SECTION ONE



**RESEARCH ARTICLES**

# Readiness of Primary Hospitals in Providing Neonatal Intensive Care Services in Ethiopia



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## ABSTRACT



**Background:** Ethiopia's neonatal mortality rate has not significantly dropped over the years. Considering this, the country has introduced various interventions such as the utilization of newborn corners and neonatal intensive care units to avert preventable neonatal deaths. This study was conducted to assess the readiness of primary hospitals in providing neonatal intensive care services.



**Methods:** A health facility-based cross-sectional study design was employed where data were collected using both prospective and retrospective techniques using a format adapted from national documents. SPSS version 25 was used for data entry and descriptive analysis. Data were collected from 107 of 113 (94.7%) primary hospitals within the USAID Transform: Primary Health Care Activity's intervention areas.



**Results:** The minimum national standard requirement of a level one neonatal intensive care unit for infrastructure was met by 63% of the 107 primary hospitals while 44% had fulfilled the requirements for kangaroo mother care units. The average number of neonatal intensive care unit trained personnel per primary hospital was 2.6 for nurses, 0.8 for general practitioners, and 2.9 for support staff; all of which are less than the minimum recommended national standard. The minimum national requirement for medical equipment and renewable for primary hospital level was fulfilled by 24% of the hospitals, whereas 65% and 87% of the hospitals fulfilled minimum national standards for essential laboratory tests and clinical services and procedures respectively. The average number of admissions during the six months before the data collection was 87.2 sick newborns per facility with a 'discharged improved' rate of 71.5%, referral out rate of 18.4%, and level one neonatal intensive care unit death rate of 6.6%. The remaining newborns had either left against medical advice or were still undergoing treatment during data collection.



**Conclusions:** The overall readiness of primary hospitals to deliver neonatal intensive care services in terms of infrastructure, human resources, and medical equipment was found to be low. There is a need to fill gaps in infrastructure, medical equipment, renewables, and human resources of neonatal intensive care units of primary hospitals to provide a better quality of service.



**Keywords:** Neonatal intensive care, NICU, Newborn care, Neonatal care, Primary hospital.

## Background

Globally, 2.7 million newborns die every year during the first month of life because of birth asphyxia, complications of preterm birth, and infections. Most of the neonatal deaths and stillbirths (99%) occur in Low and Lower-Middle-Income Countries with half of the deaths happening at home (1). In Africa, about 1.16 million babies die every year in their first month of life, and half of them, on the first day of their life. Another 3.3 million children will die before they reach their fifth birthday (2). About 75% of neonatal deaths

could be avoided with existing simple low-cost tools (1).

Ethiopia's neonatal mortality rate has not shown a significant decline over the years. As indicated by the 2019 Ethiopian mini-Demographic Health Survey, even a slight increment was observed from 29 deaths per 1000 live births (LB) in 2016 to 33 deaths per 1,000 LBs in 2019 (3).

Most neonatal deaths can be prevented through the utilization of quality essential newborn care (ENC) services immediately after delivery along with quality

obstetric care. However, the ENC services provision is limited in Ethiopia. The proportion of health facilities in the country delivering hygienic cord care, immediate and exclusive breastfeeding, and thermal care were 52%, 53%, and 52% respectively, with a mean availability of newborn signal functions of 38% (4). The neonatal mortality rate of the country is disproportionately high accounting for 44% of under-five deaths (5). To reduce the stagnating neonatal mortality rate, the country has put in place various interventions which include but are not limited to the establishment of newborn corners to provide ENC services in health facilities that are mandated to conduct skilled delivery and establishment of different levels of neonatal intensive care units (NICU) with kangaroo mother care (KMC) centers in hospitals. NICUs are set up to provide advanced care for sick newborns that require more specialized care and attention (6). A NICU or an Intensive Care Nursery (ICN), is an intensive care unit (ICU) specializing in the care of sick or premature newborn infants who are likely to die as a result of simple conditions that can be easily prevented (7).

A cross-sectional study conducted in Debre Berhan hospital indicated that the availability of all the required infrastructure, equipment, trained manpower, and supplies is key to providing quality neonatal health services in hospitals. Additionally, the proper utilization of available resources was also found to be essential (8). There is no local evidence specifically on level one NICUs found in primary hospitals of the country and this study was conducted to fill this paucity of information.

## Objectives

The objective of this study was to assess primary hospitals' readiness to provide NICU services by assessing the status and availability of human resources, infrastructure, and medical equipment in hospitals.

## Materials and Methods

**Study setting, period, and design:** The study was conducted in four regions of the country, namely, Amhara, Oromia, South Nations Nationalities and Peoples, and Tigray, where USAID Transform: Primary Health Care Activity has been operating since January

2021. Within the Activity's intervention areas, the existing 113 primary hospitals are expected to have level one NICUs. The assessment was conducted from January 1<sup>st</sup>, to March 31<sup>st</sup>, 2020. A facility-based prospective and retrospective cross-sectional study design were used.

**Data collection:** The assessment was conducted at all the intervention primary hospitals of the Activity. A national NICU status assessment tool was adapted and used by incorporating additional minimum requirements for level one NICUs from respective national documents (6, 13). The Activity's cluster staff were data collectors at their respective catchment primary hospitals. The number of project staff involved in data collection per cluster varies from three to five, based on the size of the catchment area of a specific cluster. The staff were given an orientation on the assessment protocols including the tools by the investigators before the actual data collection. Data quality was checked by regional maternal and newborn health (MNH) officers who possess a master's degree in public health and with backgrounds in midwifery daily to identify gaps and address them immediately at the field level. The data were collected electronically and were sent to the country office after finalizing the data collection.

**Data analysis:** Data were cleaned by investigators and data entry was carried out by a data entry clerk. Data analysis was conducted at the country office level by the investigators using statistical software SPSS version 25.0. Descriptive statistics were used to analyze the data.

**Ethics:** Ethical clearance for the assessment was obtained from John Snow Incorporated (JSI) institutional review board (IRB), with reference number IRB #20-17E. Each of the 113 primary hospital leaders and responsible heads of the NICUs was handed an information sheet and copy of the ethical clearance letter from the IRB of JSI and was asked for verbal consent to go ahead with the assessment of their respective primary hospital NICUs. The NICU professionals who gave information were also asked for verbal consent.

## Results and Discussion

Data from 107 of the 113 primary hospitals (94.7%) were collected, and the findings of the assessment are categorized into five major pillars for NICU service delivery. Six of the primary hospitals were not accessible during data collection time.

**Infrastructure:** Based on the national minimum infrastructure standard expected at level one NICUs, 63% of the 107 NICUs fulfilled the minimum requirements (table 1). Similar findings were reported in other local studies and studies conducted in other countries within Africa (9, 10). KMC service is available in 85% of the 107 NICUs whereas 44% of them had KMC service delivery units fulfilling the minimum national standard for KMC of level one NICUs.

**Human resource:** The nationally recommended number of NICU trained nurses per 12 bedded level one NICUs is at least four, one to two for GPs, and four for support staff (6). The average number of NICU trained nurses per NICU at the assessed sites was 2.6, 0.8 GPs, and 2.9 support staff - all of which are less than the minimum national standard recommendations. Other studies also have shown nationwide shortages of adequate and well-trained health professionals contributing to low-quality services (8, 9, 10, 11).

**Essential medical equipment and renewables:** The national minimum standards for essential medical equipment and renewables in level one NICUs are available in 24% of the NICUs. Other studies reported shortages of medical supplies, equipment, and essential medications as widespread problems in health facilities of the country, stating them as often unavailable, broken, or inappropriate for use (8, 9). Another study finding reported that less than half of the facilities had most of the supplies and equipment needed for newborns (12).

**Laboratory tests:** The national minimum standard-essential laboratory tests for level one NICUs were available in 65% (70/107) of the NICUs. The availability of these tests ranged from 12% (13/107) for 'culture and sensitivity of anybody fluid' to 99% (106/107) for 'blood group and Rh' status determination. Other studies also have reported similar problems with the availability of necessary laboratory services to render quality NICU services (8).

**Clinical services and procedures:** The national minimum standard clinical services and procedures expected to be available at level one NICUs were present in 87% of the 107 NICUs. The availability of these clinical services and procedures ranged from 18% for 'lumbar puncture (LP)' to 99% for 'insertion of nasogastric tube'.

The average number of admissions to the 107 level one NICUs during six months prior to data collection was 87.2 sick newborns per NICU. The average improvement and discharge rate was 71.5%, the referral out rate was 18.4%, and the rate for deaths in NICUs was 6.6%. The remaining had either left against medical advice or were still undergoing treatment during the data collection. The average number of days of service interruption during the same period was 0.2 days per NICU.

## Conclusion and Recommendations

Based on this assessment, we conclude that the majority (87%) of the NICUs are delivering the minimum services expected to be delivered at the level; less than two-thirds (63%) of the Activity's intervention NICUs have the minimum recommended infrastructure for the level; less than half (44%) of KMCs of the NICUs have the minimum recommended KMC infrastructure; the available necessary human resource per NICU is far less than the minimum recommended for the level; less than a quarter (24%) of the NICUs have the minimum recommended medical equipment and renewables available for service delivery.

Based on the gaps this assessment has shown, there is a need for investment to improve the infrastructure, human resources, medical equipment renewables, and drugs for a better quality NICU service delivery at the primary hospital level.



## References

1. Catherine A. et al. Equity in antenatal care quality: an analysis of 91 national household surveys. *The Lancet Global Health*. 2018; 6 (11): 1186-95.
2. The partnership for Maternal, Newborn and Child Health. 2006. In: Joy L, Kate K, eds. Opportunities for Africa's newborns: Practical data, policy and programmatic support for newborn care in Africa. World Health Organization, 2006:12.
3. Central statistics agency (CSA) [Ethiopia] and ICF. 2019. Ethiopian mini-Demographic and Health Survey (EDHS). 2019. Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF.
4. Ethiopian Public Health Institute (EPHI). 2018. Service Availability and Readiness Assessment (SARA) 2018 Final Report. Addis Ababa, Ethiopia.
5. Maternal and Child Health Directorate, Federal Ministry of Health of Ethiopia. 2015. National Strategy for Newborn and Child Survival in Ethiopia 2015/16-2019/20. Addis Ababa, Ethiopia.
6. Federal Ministry of Health of Ethiopia (FMoH). 2014. Classification of facilities for newborn services and the minimum requirements in Ethiopia. Addis Ababa, Ethiopia.
7. Wikimedia Foundation, Inc. Neonatal Intensive Care unit guide. April 16, 2020 at 04:31 (UTC).
8. Wassie NM, Alemnesh MD. Quality of service and associated factors in neonatal intensive care unit at Debre Berhan Referral Hospital, Debre Berhan, Ethiopia: A cross-sectional study. *Medical journal of Dr. D. Y. Patil Vidyapeeth*; 2018, volume 11, issue:5, page: 412-419.
9. Abubeker KU et al. Health system readiness to support facilities for the care of preterm, low birth weight, and sick newborns in Ethiopia: a qualitative assessment. *BMC Health Services Research*; (2019) 19:860.
10. Moxon SG et al. Inpatient care of small and sick newborns: a multi-country analysis of health system bottlenecks and potential solutions. *BMC Pregnancy Childbirth* 15, S7 (2015).
11. Dickson KE et al. Every newborn: health-systems bottlenecks and strategies to accelerate scale-up in countries. *Lancet*. 2014;384(9941):438–54.
12. Ellsbury DL, Clark RH, Ursprung R, Handler DL, Dodd ED, Spitzer AR. A Multifaceted Approach to Improving Outcomes in the NICU: The Pediatrics 100000 Babies Campaign. *Pediatrics*. 2016;137(4): e20150389.
13. Federal Ministry of Health of Ethiopia (FMoH). 2019. Checklist for Neonatal Intensive Care Unit Assessment. Addis Ababa, Ethiopia.

**Annex 1: Table 1: Status of infrastructure at NICUs of primary hospitals, USAID Transform: Primary Health Care Activity, January-March 2020.**

Variables	Number (n=107)	Percent
Infrastructure (average)	68	63%
Location adjacent to the delivery room	94	88%
The NICU has direct access to the hospital's transport receiving area	80	75%
Service units are connected to allow the transport of newborns without being exposed to outside cold weather	83	78%
Room size: 8-12 square meters	89	83%
Gowning area at the entrance	72	67%
Hand washing stations	62	58%
Examination area	66	62%
Clean area for mixing iv fluids and medications	80	75%
Mothers' area for expression of breast milk, bf, and learning mother crafts	43	40%
Boiling and autoclaving	41	38%
General support area	56	52%
Procedure room	49	46%

# Efficacy and Safety of Dihydroartemisinin-piperaquine versus Artemether-Lumefantrine for the Treatment of Uncomplicated Plasmodium Falciparum Malaria in African Children: a Systematic Review and Meta-analysis of Randomized Control Trials



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## ABSTRACT



**Background:** The emergence of Plasmodium falciparum resistance to artemisinin and its derivatives poses a threat to the global effort in controlling malaria.



**Method:** A computerized systematic search method was used to search for articles from online databases PubMed, MEDLINE, Embase, and Cochrane Center for Clinical Trial database for retrieving randomized control trials. Using Rev-Man software (V5.4) and R-studio, the extracted data from eligible studies were pooled as risk ratio (RR) with a 95% confidence interval (CI).



**Result:** In this review, 25 studies which involved a total of 13,198 participants were included. PCR unadjusted treatment failure in children aged between 6 months and 15 years was significantly lower in dihydroartemisinin-piperaquine (DHA-PQ) treatment arm on day 28 than that of Artemether Lumefantrine (AL) (RR 0.14, 95% CI 0.08 to 0.26; participants = 1302; studies = 4; I<sup>2</sup> = 0%, high quality of evidence). Consistently, the PCR adjusted treatment failure was significantly lower with DHA-PQ treatment group on day 28 (RR 0.45, 95% CI 0.29 to 0.68; participants = 8508; studies = 16; I<sup>2</sup> = 51%, high quality of evidence) and on day 42 (RR 0.60, 95% CI 0.47 to 0.78; participants = 5959; studies = 17; I<sup>2</sup> = 0%, high quality of evidence). On days 28 and 42, a significant increase in serum hemoglobin level from the baseline was also observed in DHA-PQ treatment arm (SMD 0.15, 95% CI 0.05 to 0.26; participants = 2715; studies = 4; I<sup>2</sup> = 32%, high quality of evidence) and (MD 0.35, 95% CI 0.12 to 0.59; participants = 1434; studies = 3; I<sup>2</sup> = 35%, high quality of evidence), respectively. Compared to AL, DHA-PQ was associated with a slightly higher frequency of early vomiting (RR 2.26, 95% CI 1.46 to 3.50; participants = 7796; studies = 10; I<sup>2</sup> = 0%, high quality of evidence), cough (RR 1.06, 95% CI 1.01 to 1.11; participants = 8013; studies = 13; I<sup>2</sup> = 0%, high quality of evidence), and diarrhea (RR 1.16, 95% CI 1.03 to 1.31; participants = 6841; studies = 11; I<sup>2</sup> = 8%, high quality of evidence) were more frequent in DHA-PQ treatment arm.



**Conclusion and recommendation:** From this review, it can be concluded that DHA-PQ reduces new infection and recrudescence with a significant impact on hemoglobin recovery more than AL does, and both drugs are well tolerated. This may trigger DHA-PQ to become the first-line treatment option. Continuous studies that measure the efficacy of DHA-PQ and AL with 42 and 63 days follow-up are needed.



**Keywords:** Uncomplicated Plasmodium falciparum, children, Randomized control trial, Artemisinin combination therapies, Dihydroartemisinin-piperaquine, Artemether-lumefantrine, Systematic review, and meta-analysis, Africa



## Background

Malaria is the cause of two-third of deaths among children under the age of five though it is a preventable and treatable disease (1-3). All African countries, where malaria due to *plasmodium falciparum* is endemic, have introduced the currently recommended Artemisinin-Based Combination Therapy (ACT) for the confirmed cases of *plasmodium falciparum* malaria since 2004 (1). The efficacies of ACT have been effective in Africa (4, 5), numerous trials have reported that dihydroartemisinin-piperaquine (DHA-PQ) is highly effective in the treatment of uncomplicated *p. falciparum* malaria (6-10). However, a review reported that prolongation of the QTc interval from Electrocardiogram (ECG); pyrexia, early vomiting, and diarrhea were common in patients treated with DHA-PQ (11). The emergence of *P. falciparum* resistance to artemisinin and its derivatives poses a threat to global efforts in controlling malaria. Resistance to most antimalarial drugs in common use has already been reported (12-15). Although several studies were conducted to assess the efficacy of ACT in adults yielding different success rates in Africa (16-18) and most of the previous studies have compared the efficacies of Artemeter Lumefantrine (AL) and other artemisinin-based combinations, but little or no attention has been given to their safety. Given the wide range of ACT availability for the treatment of malaria and their potential adverse effects (AEs), it is vital to compare their safety profiles, there has been no systematic review or meta-analysis conducted to obtain strong evidence about the outcome of malaria treatment and artemisinin resistance in African Children.

## Objective

The aim of this review was, therefore, to compare the efficacy and safety of DHA-PQ and AL for the treatment of uncomplicated *P. falciparum* malaria in African children.

## Methods

The Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA 2020) guideline was followed to select studies to be included (19). Randomized controlled trials conducted in Africa which compared the efficacy and safety of DHA-PQ versus AL for treatment of uncomplicated *falciparum*

malaria in children, written in English, and published between 2004 to April 2021 were included. The PICOS format was used to identify eligible studies. The WHO Methods and techniques for clinical trials on antimalarial drug efficacy classification of genotyping to identify parasite populations were used to determine treatment outcome (20).

A computerized systematic search method was used to search for articles from online databases PubMed/MEDLINE, Embase, and Cochrane Center for Clinical Trial database (CENTRAL). The search was limited to human trials, randomized control trials, and published between 2004 and April 2021. Using Rev-Man software (V5.4), R-studio, and Comprehensive Meta-analysis software, the extracted data from eligible studies were pooled as risk ratio (RR) with a 95% confidence interval (CI).

## Result

In this review, 25 studies that involved a total of 13,198 participants were included. PCR unadjusted treatment failure in children aged between 6 months and 15 years was significantly lower in DHA-PQ treatment arm on day 28 than that of AL (RR 0.14, 95% CI 0.08 to 0.26; participants = 1302; studies = 4;  $I^2 = 0\%$ , high quality of evidence).

Consistently, the PCR adjusted treatment failure was significantly lower with DHA-PQ treatment group on day 28 (RR 0.45, 95% CI 0.29 to 0.68; participants = 8508; studies = 16;  $I^2 = 51\%$ , high quality of evidence) and on day 42 (RR 0.60, 95% CI 0.47 to 0.78; participants = 5959; studies = 17;  $I^2 = 0\%$ , high quality of evidence). However, the efficacy was  $\geq 95\%$  in both treatment groups on day 28.

On days 28 and 42, a significant increase in serum hemoglobin level from the baseline was also observed in DHA-PQ treatment arm (SMD 0.15, 95% CI 0.05 to 0.26; participants = 2715; studies = 4;  $I^2 = 32\%$ , high quality of evidence) and (MD 0.35, 95% CI 0.12 to 0.59; participants = 1434; studies = 3;  $I^2 = 35\%$ , high quality of

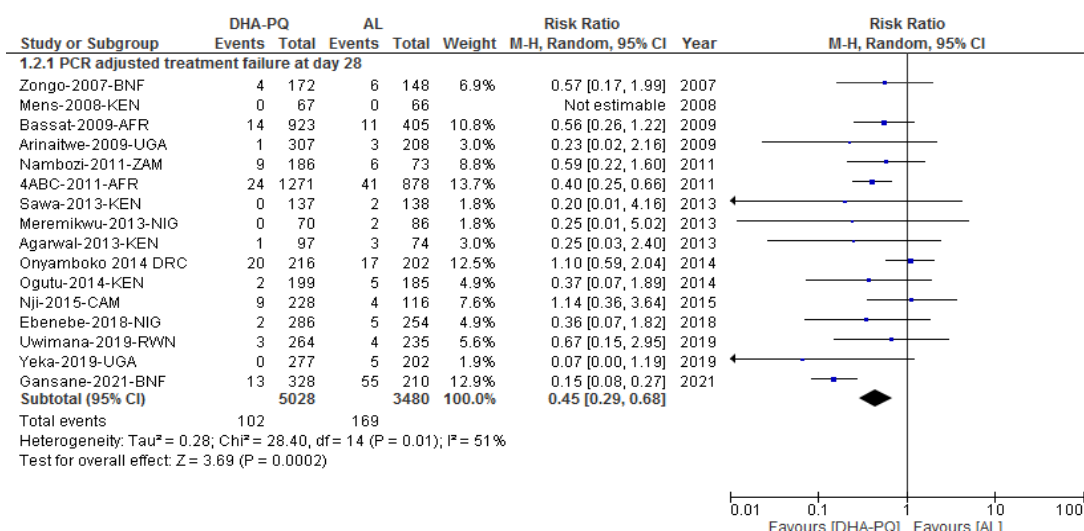


Figure 1, Forest plot of comparison between dihydroartemisinin-piperazine and artemether-lumefantrine for the treatment of uncomplicated plasmodium falciparum malaria in African children on PCR adjusted treatment failure on day 28

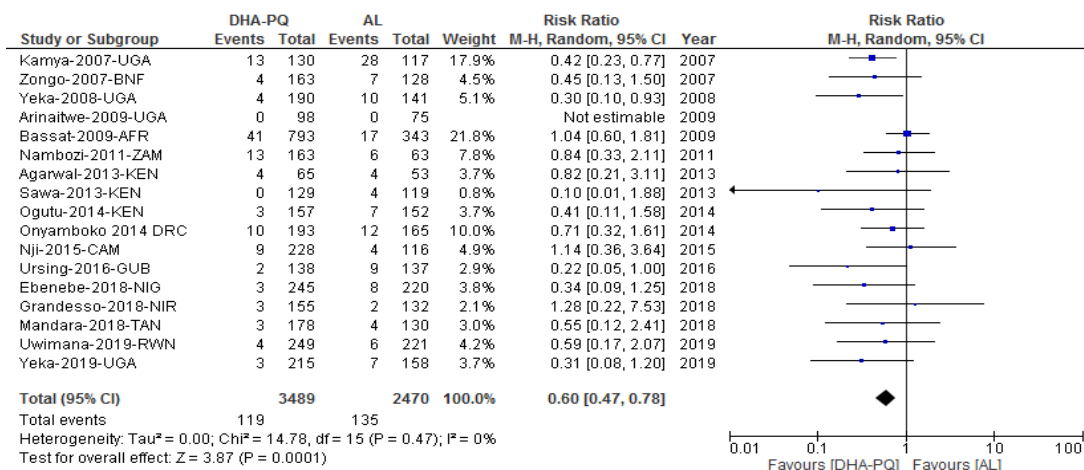


Figure 2, Forest plot of comparison between dihydroartemisinin-piperazine and artemether-lumefantrine for the treatment of uncomplicated plasmodium falciparum malaria in African children on PCR adjusted treatment failure on day 42

evidence), respectively. Compared to AL, DHA-PQ was associated with a slightly higher frequency of early vomiting (RR 2.26, 95% CI 1.46 to 3.50; participants = 7796; studies = 10; I<sup>2</sup> = 0%, high quality of evidence), vomiting (RR 1.02, 95% CI 0.87 to 1.19; participants = 8789; studies = 13; I<sup>2</sup> = 20%, high quality of evidence), cough (RR 1.06, 95% CI 1.01 to 1.11; participants = 8013; studies = 13; I<sup>2</sup> = 0%, high quality of evidence), and diarrhea (RR 1.16, 95% CI 1.03 to 1.31; participants = 6841; studies = 11; I<sup>2</sup> = 8%, high quality of evidence) were more frequent in DHA-PQ treatment arm.

### Discussion

The therapeutic efficacy of antimalarial drugs should be monitored regularly using the standard WHO protocol (21). The observed lower PCR unadjusted

treatment failure on days 28 and 42 in the DHA-PQ treatment arm was similar to that of former reviews from Africa (22, 23). This difference might be attributed to the evening doses of AL given at home unsupervised; to the administration of AL without fatty food for less than 10% of lumefantrine is absorbed in an empty stomach (24) and to the longer elimination half-life of piperazine (23–28 days) compared with that for lumefantrine (3.2 days), which provides long-lasting post-treatment prophylactic effect (25, 26). (25, 26)[25, 26][25, 26][25, 26][25, 26]For patients who live in areas where malaria transmission is higher and reinfection is likely, a longer post-treatment prophylactic period might have a great advantage (27), but due to the sub-therapeutic drug levels, selection for resistant parasite may occur

(28). For a patient who lives in an area where malaria transmission intensity is low, the benefit of the drug's longer post-treatment prophylactic period is low and the probability of developing drug resistance is higher (29). In this study, both drugs were well tolerated by children. As also seen in one study from Papua New Guinea, the overall frequency of adverse events was slightly higher in the DHA-PQ treatment arm than that of AL (30). However, Cough was more frequent in patients who were treated with AL, but headache and runny nose were common in the DHA-PQ treatment group (30). Thailand-Myanmar border (31, 32) and elsewhere in Africa (33-36) have reported that DHA-PQ causes drug-induced electrocardiographic QT prolongation. Regardless of the treatment groups, most of these adverse events are associated with age ( $\leq 18$  years) (37), efavirenz-based ART (37), efavirenz-based ART (38), and administration of DHA-PQ with food could increase piperazine exposure and it needs to be administered in fasting state (32-34).

## Conclusion and Recommendation

This systematic review and meta-analysis show higher efficacy of DHA-PQ on days 28 and 42 than that of AL and tolerability of both treatments. This may trigger DHA-PQ to become the first-line treatment option. Continuous studies that measure the efficacy of DHA-PQ and AL with 42 and 63 days follow-up are needed.

## References

1. WHO. World Malaria Report 2019: Geneva, World Health Organization, 2019
2. WHO. Guidelines for treatment of malaria, 3rd edn. Geneva, World Health Organization, 2015 [
3. World malaria report 2020: 20 years of global progress and challenges. Geneva: World Health Organization; 2020.
4. Plucinski MM, Dimbu PR, Macaia AP, Ferreira CM, Samutondo C, Quivinja J, et al. Efficacy of artemether-lumefantrine, artesunate-amodiaquine, and dihydroartemisinin-piperazine for treatment of uncomplicated *Plasmodium falciparum* malaria in Angola, 2015. *Malaria Journal*. 2017;16:62.
5. Davlantes E, Dimbu PR, Ferreira CM, Florinda Joao M, Poda D, Félix J, et al. Efficacy and safety of artemether-lumefantrine, artesunate-amodiaquine, and dihydroartemisinin-piperazine for the treatment of uncomplicated *Plasmodium falciparum* malaria in three provinces in Angola, 2017.
6. Agarwal A, McMorro M, Onyango P, Otieno K, Odera C, Williamson J, et al. A randomized trial of artemether-lumefantrine and dihydroartemisinin-piperazine in the treatment of uncomplicated malaria among children in western Kenya. *Malaria Journal*. 2013;12:254.
7. Ebenebe JC, Ntadom G, Ambe J, Wammanda R, Jiya N, Finomo F, et al. Efficacy of Artemisinin-Based Combination Treatments of Uncomplicated Falciparum Malaria in Under-Five-Year-Old Nigerian Children Ten Years Following Adoption as First-Line Antimalarials. *The American Journal of Tropical Medicine and Hygiene*. 2018;99(3):649-64.
8. Gargano N, Madrid L, Valentini G, D'Alessandro U, Halidou T, Sirima S, et al. Efficacy and Tolerability Outcomes of a Phase II, Randomized, Open-Label, Multicenter Study of a New Water-Dispersible Pediatric Formulation of Dihydroartemisinin-Piperazine for the Treatment of Uncomplicated Plasmodium falciparum Malaria in African Infants. *Antimicrobial agents and chemotherapy*. 2018;62(1).
9. Nambozi M, Van Geertruyden JP, Hachizovu S, Chaponda M, Mukwamataba D, Mulenga M, et al. Safety and efficacy of dihydroartemisinin-piperazine versus artemether-lumefantrine in the treatment of uncomplicated Plasmodium falciparum malaria in Zambian children. *Malaria Journal*. 2011;10:50.
10. Dama S, Niangaly H, Djimde M, Sagara I, Guindo CO, Zeguime A, et al. A randomized trial of dihydroartemisinin-piperazine versus artemether-lumefantrine for treatment of uncomplicated Plasmodium falciparum malaria in Mali. *Malaria Journal*. 2018;17.
11. Agency EM. Eurartesim (dihydroartemisinin /piperazine) 20 mg/160 mg and 40 mg/320 mg film-coated tablets: EU summary of product characteristics
12. Dondorp AM, Nosten F, Yi P, Das D, Phyo AP, Tarning J, et al. Artemisinin resistance in *Plasmodium falciparum* malaria. *The New England journal of medicine*. 2009;361(5):455-67.
13. Witkowski B, Khim N, Chim P, Kim S, Ke S, Kloeung N, et al. Reduced artemisinin susceptibility of *Plasmodium falciparum* ring stages in western Cambodia. *Antimicrob Agents Chemother*. 2013;57(2):914-23.
14. Amaratunga C LP, Suon S, et al. Dihydroartemisinin-piperazine resistance in Plasmodium falciparum malaria in Cambodia: a multi site prospective cohort study. *The Lancet Infectious Diseases*. 2016;16:357-65.
15. Ashley EA, Dhorda M, Fairhurst RM, Amaratunga C, Lim P, Suon S, et al. Spread of artemisinin resistance in *Plasmodium falciparum* malaria. *The New England journal of medicine*. 2014;371(5):411-23.

16. Mandara CI, Kavishe RA, Gesase S, Mghamba J, Ngadaya E, Mmbuji P, et al. High efficacy of artemether-lumefantrine and dihydroartemisinin-piperazine for the treatment of uncomplicated falciparum malaria in Muheza and Kigoma Districts, Tanzania. *Malaria Journal*. 2018;17(1):261.
17. Four Artemisinin-Based Combinations Study G. A head-to-head comparison of four artemisinin-based combinations for treating uncomplicated malaria in African children: a randomized trial. *PLoS Medicine*. 2011;8(11):e1001119.
18. Uwimana A, Penkunas MJ, Nisingizwe MP, Warsame M, Umulisa N, Uyizeye D, et al. Efficacy of artemether-lumefantrine versus dihydroartemisinin-piperazine for the treatment of uncomplicated malaria among children in Rwanda: an open-label, randomized controlled trial. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 2019;113(6):312-9.
19. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Bmj*. 2021;372:n71.
20. WHO. Methods for surveillance of antimalarial drug efficacy. Geneva, World Health Organization, 2009.
21. WHO. Methods for surveillance of antimalarial drug efficacy. World Health Organization, Geneva, Switzerland.
22. Zani B, Gathu M, Donegan S, Olliaro PL, Sinclair D. Dihydroartemisinin-piperazine for treating uncomplicated *Plasmodium falciparum* malaria. *The Cochrane database of systematic reviews*. 2014;2014(1):Cd010927.
23. Sinclair D, Zani B, Donegan S, Olliaro P, Garner P. Artemisinin-based combination therapy for treating uncomplicated malaria. *The Cochrane database of systematic reviews*. 2009;2009(3):Cd007483.
24. COARTEM®(artemether and lumefantrine) tablets fouNPC.
25. Ezzet F, van Vugt M, Nosten F, Looareesuwan S, White NJ. Pharmacokinetics and pharmacodynamics of lumefantrine (benflumetol) in acute falciparum malaria. *Antimicrob Agents Chemother*. 2000;44(3):697-704.
26. Hung TY, Davis TM, Ilett KF, Karunajeewa H, Hewitt S, Denis MB, et al. Population pharmacokinetics of piperazine in adults and children with uncomplicated falciparum or vivax malaria. *British journal of clinical pharmacology*. 2004;57(3):253-62.
27. Price RN, Douglas NM. Artemisinin Combination Therapy for Malaria: Beyond Good Efficacy. *Clinical Infectious Diseases*. 2009;49(11):1638-40.
28. Stepniewska K, White NJ. Pharmacokinetic determinants of the window of selection for antimalarial drug resistance. *Antimicrob Agents Chemother*. 2008;52(5):1589-96.
29. Pongtavornpinyo W, Yeung S, Hastings IM, Dondorp AM, Day NPJ, White NJ. Spread of anti-malarial drug resistance: Mathematical model with implications for ACT drug policies. *Malaria Journal*. 2008;7(1):229.
30. Tavul L, Hetzel MW, Teliki A, Walsh D, Kiniboro B, Rare L, et al. Efficacy of artemether-lumefantrine and dihydroartemisinin-piperazine for the treatment of uncomplicated malaria in Papua New Guinea. *Malaria Journal*. 2018;17(1):350.
31. Saito M, Yotyingaphiram W, Cargill Z, Gilder ME, Min AM, Phyo AP, et al. Electrocardiographic effects of four antimalarials for pregnant women with uncomplicated malaria on the Thailand-Myanmar border: a randomized controlled trial. *Antimicrobial agents and chemotherapy*. 2021.
32. Manning J, Vanachayangkul P, Lon C, Spring M, So M, Sea D, et al. Randomized, double-blind, placebo-controlled clinical trial of a two-day regimen of dihydroartemisinin-piperazine for malaria prevention halted for concern over prolonged corrected QT interval. *Antimicrobial Agents and Chemotherapy*. 2014;58(10):6056-67.
33. Funck-Brentano C, Bacchieri A, Valentini G, Pace S, Tommasini S, Voiriot P, et al. Effects of Dihydroartemisinin-Piperazine Phosphate and Artemether-Lumefantrine on QTc Interval Prolongation. *Scientific reports*. 2019;9(1):777.
34. Oduro AR, Owusu-Agyei S, Gyapong M, Osei I, Adjei A, Yawson A, et al. Post-licensure safety evaluation of dihydroartemisinin-piperazine in the three major ecological zones across Ghana. *PLoS ONE*. 2017;12(3).
35. Kabanyanyi AM, Baiden R, Ali AM, Mahende MK, Ogotu BR, Oduro A, et al. Multi-country evaluation of the safety of dihydroartemisinin/piperazine post-licensure in African public hospitals with electrocardiograms. *PLoS ONE*. 2016;11(10).
36. Mhamilawa LE, Wikström S, Mmbando BP, Ngasala B, Mårtensson A. Electrocardiographic safety evaluation of extended artemether-lumefantrine treatment in patients with uncomplicated *Plasmodium falciparum* malaria in Bagamoyo District, Tanzania. *Malaria Journal*. 2020;19(1).
37. Creek D, Bigira V, Arinaitwe E, Wanzira H, Kakuru A, Tappero J, et al. Increased risk of early vomiting among infants and young children treated with dihydroartemisinin-piperazine compared with artemether-lumefantrine for uncomplicated malaria. *The American Journal of Tropical Medicine and Hygiene*. 2010;83(4):873-5.
38. Sevene E, Banda CG, Mukaka M, Maculuvu S, Macuacua S, Vala A, et al. Efficacy and safety of dihydroartemisinin-piperazine for treatment of *Plasmodium falciparum* uncomplicated malaria in adult patients on antiretroviral therapy in Malawi and Mozambique: an open-label non-randomized interventional trial. *Malaria Journal*. 2019;18(1):277.

# Assessment of Compassionate and Respectful Care Implementation Status in Model Healthcare Facilities: A Cross-Sectional Study

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## ABSTRACT



**Introduction:** Compassionate and respectful care (CRC), as an important component for the health care worker (HCW), fosters a pleasant environment for healthcare professionals, clients, and families. The Ethiopian Ministry of Health (MoH) implemented a compassionate, respectful, and caring strategy for the last five years to improve person-centered care.



**Objective:** This study aimed to assess the prevalence of CRC and associated factors in the 16 health facilities in Ethiopia, 2021.



**Methods:** A facility-based cross-sectional study was employed from February to April 2021. A structured and pre-tested standard self-administered questionnaire that was translated to regional languages (Amharic, Oromifa, and Somali) was used. Four hundred and twenty-nine respondents participated in self-administered. Data entered into Epi-data version 4.32 and analyzed using SPSS version 26. Binary and multivariate logistic regression analysis was employed and significance was determined at the odds ratio with a 95% confidence interval and P-value <0.05



**Results:** The prevalence of compassionate and respectful care among the respondents were 60.4% and 64% respectively. Nurses, midwives, having training on CRC, leaders promoting CRC, having a conducive working environment, and burnout management for HCW were significantly associated with compassionate care practices. Leaders promoting CRC, having a conducive working environment, and burnout management for HCW were associated with respectful care practice.



**Conclusion:** The findings identified distinct issues related to CRC implementation. Addressing HCW skill gaps on CRC, a conducive working environment, and burnout management encouraged continuity of CRC practices. Incorporating CRC in pre-service education, health system strengthening interventions, and motivating HCW are important for CRC strategic implementation.



**Keywords:** Compassionate, Respectful care, Health workforce, Ethiopia

**Introduction:** The compassionate, respectful, and caring (CRC) health workers are more passionate about their profession and enjoy assisting others, being ethical, and being a model for young professionals and students (1, 2). Compassion serves as a foundation for medical ethics, a source of flexibility, useful in forming connections, and critical in today's world for dealing with human rights (3). According to research

conducted in the Tigray region, 44% of healthcare workers (HCWs) had an unfavorable attitude about CRC (2). In addition, a survey conducted in the North Shewa zone of the Oromia region found that 38.8% of HCW had provided good compassionate care and 46.2% had practiced respectful treatment (1). Also, studies conducted in Ethiopia indicated that out of the 60 complaints reviewed by Health Professionals



Ethics Committee, 39 complaints were concerning the patient's death, 15 complaints were about impairment, one-fifth of the complaints were related to breach ethics (4). A similar study found that 57.6% of complaints were connected to mortality, and 21.6% were related to errors involving physical injury, ethical violation, and carelessness (5). One-fourth of physicians were unaware of the code of ethics, and 39% of medical practitioners had an unfavorable attitude about the code (6).

Many professionals in Ethiopia are sympathetic and aware of the attributes that are required for CRC practices. However, HCWs do not provide CRC services to clients or their families (7). To reduce the knowledge of CRC gaps, Ethiopia's government has been implementing the CRC program during Health Sector Transformation Plan (HSTP I) (2016-2020), and efforts were made in the last five years to improve person-centered care. Respect for clients' human rights, autonomy, dignity, sentiments, desires, and choice of friendship wherever feasible must be maintained.

### Objective

The study intended to assess the prevalence of compassionate and respectful health care practices, and associated factors in the 16 CRC model health facilities in Ethiopia, 2021.

### Methods and Materials

This nationwide cross-sectional study was conducted in 16 model health facilities (MHFs) from February to April 2021. The 16 MHFs were previously randomly selected as CRC incubation centers starting from 2015 from the nine regions and two city administrations. The sample size was determined using single population proportion formula with the assumptions of a 95% confidence level, and a 5% precision, taking 50% proportion due to the lack of the previous study. The sample size of 435 was obtained after adding a 13% none response rate for the reason of COVID-19 impact. Proportional allocation was used based on the number of the health workforce per each 16 MHF. Health workforces who have been working for more than six months in 16 MHFs in Ethiopia were included in the study. Data were collected using a standardized and pre-tested questionnaire. The questionnaire contains socio-demographic characteristics, previous

training on CRC, types of health facilities, facilities auditing were employed to observe and check the CRC implementation guideline and practices. The CRC were measured using 12 items for compassionate care and 21 items for respectful care, the mean was used as cut off point. The tool was validated in Amharic language (8). Data were coded, edited, cleaned, and entered into Epi-data version 4.2 and transported to SPSS version 24. The outcome variables were dichotomized based on the cut-off point of the mean for binary logistic regression. Variables with P-value  $\leq 0.2$  in the binary analysis were included in a multivariable logistic regression analysis to control the confounding effect among the variables. Statistical significance was declared if P-value  $< 0.05$ . Ethical clearance was obtained from the Ethiopian Public Health Association. Informed written consent was obtained from each respondent.

### Results

A total of 429 HCW participated with a response rate of 98.6%. A little more than half of the study participants were women (51.7%), 39.9% were aged between 25 to 29 years old. More than three-fifth (61.1%) had a bachelor, nurses' account for 37.5% and 40.1% of them have 5 to 10 years of working experience. Although 87.5% of the facilities have an independent plan on CRC, only 18.8% of the facilities allocated finance for CRC implementation.

The prevalence of compassionate care among HCW in 16 MHFs was 60.4%. More than half (51.5%) of health professionals introduce themselves to their clients, 66% called their clients by their names, and 73.9% engaged themselves in conversation with clients. About 82.5% were actively listening, 80% had love and tolerance, 83.9% understood client needs, and 76.5% understood their clients' emotions. The prevalence of respectful care in 16 MHFs among the HCW was 64%, which 77.6% greet client with respect and 71.8% of HCW were properly addressed clients' concerns by considering their age and social status.

### Factors associated with compassionate and respectful care practice

In multivariable logistic regression analysis, nurse professionals [AOR=4.16; 95% CI=(2.21,9.38)], midwives [AOR=3.31; 85% CI=(1.60,8.62)], having training on CRC [AOR=2.75; 95% CI=(1.67,4.53)], leader promoting CRC

in the health facilities [AOR=2.34; 95% CI=(1.42,3.87)], having conducive working environment in the health care facilities [AOR=1.70; 95% CI=(1.05,2.74)], and burnout management for HCW [AOR=6.92; 95% CI=(3.31,14.44)] were significantly associated with compassionate care among HCW at 16 CRC model health care facilities in Ethiopia (Table 1). Regarding respectful care, leaders who promoting CRC in the health care facilities [AOR=2.55; 95% CI=(1.52,4.29)], having a conducive working environment in health care facilities [AOR=6.94; 95% CI=(2.24,9.38)] and burnout management for HCW [AOR=4.29; 95% CI=(2.18,8.44)] were significantly associated with respectful care (Table 2).

## Discussion

We found that the prevalence of compassionate and respectful care was 60.4% and 63.9%, respectively. This result was higher than the previous study finding in non CRC model health facilities indicated that 38.8% for compassionate care and 46.2% for respectful care practice (1). The discrepancy may be in the 16 MHF, all health workforce have been trained the CRC and high focuses was given. Several studies have found that the CRC is vital for better adherence to medical advice and treatment plans, faster healing processes, better clinical outcome, improve health care system and reduce malpractice (9-11).

The study participants who have in service training on CRC have significantly associated with compassionate care. Various studies confirmed that having training can assist healthcare professionals to increase mental health resilience, improve patient care, and minimize burnout, and CRC training is an important first step toward further updating the caring, patient right, and responsibility of HWF competency (12, 13).

About 60.1% of the study participants indicated that they have leaders in the facility, which promote CRC implementation in the 16 MHFs. This result was similar to a previous study report in non MHFs (1). The components of good care (improved quality, increased productivity, nurtured compassion, ensured effectiveness, stimulated innovation, and maintained patient satisfaction) can only be achieved when leaders are compassionate (14). As strategies to sustainable CRC in the health care facilities, health care system strengthening and developing compassionate and innovative leader are important

to inspire with genuine team collaboration across professional boundaries.

Having a conducive working environment is associated with compassionate and respectful care. The health care facilities must meet the needs of their employees by providing a stimulating working environment to promote efficiency, effectiveness, productivity, luxury, and job dedication (15). Conversely, an inadequate working environment affects the performance of health care professionals, quality of health care delivery, and reduces client-centered and compassionate care practice (16). The Ministry of Health plays a critical role in HCW retention by establishing a conducive healthcare environment, and motivating health care workers that create high-quality care.

Burnout management for HCW is very important that furthermore associated with compassionate and respectful care practice. A study done in Kenya reported similar findings that sufficient career training, job security, supervisor support, and manageable workload, and terminal benefits were identified as motivation and reward of HCW burnout management mechanisms (17). Due to a lack of trained human resource, HCW in Ethiopia often reported taking on additional a responsibility that adds to duties for which they lack the necessary skills and training.

## Conclusion and Recommendations

The assessment identified distinct issues related to CRC implementation in each MHF. Having in-service training on CRC, leaders who have promoted CRC implementation, having a conducive working environment, and burnout management for HCW are important predictors of CRC practices by HCWs. The study revealed that shortage of human resources, health care facilities challenges, and lack of compassionate leaders are challenges of CRC implementation in the health care facilities. Conversely, incorporating in education, advocacy and system strengthening, and motivating HCW are strategies for improved CRC practices. The Ministry of Health should incorporate CRC in pre-service education, health system strengthening and motivating HCW are important for CRC strategic implementation in collaboration with stakeholders, and the Ministry of Education.

## Reference

1. Jemal K, Hailu D, Mekonnen M, Tesfa B, Bekele K, Kinati T. The importance of compassion and respectful care for the health workforce: a mixed-methods study. *Journal of Public Health*. 2021;1-12.
2. Berhe H, Berhe H, Bayray A, Godifay H, Beedemariam G. Status of caring, respectful and compassionate health care practice in Tigray regional state: patients' perspective. *Int J Caring Sci*. 2017;10(3):1119.
3. Mechili E-A, Angelaki A, Petelos E, Sifaki-Pistolla D, Chatzea V-E, Dowrick C, et al. Compassionate care provision: an immense need during the refugee crisis: lessons learned from a European capacity-building project. *Journal of Compassionate Health Care*. 2018;5(1):1-8.
4. Wamisho BL, Abeje M, Feleke Y, Hiruy A, Getachew Y. Analysis of medical malpractice claims and measures proposed by the health professionals ethics federal committee of Ethiopia: review of the three years proceedings. *Ethiop Med J*. 2015;53(Suppl 1):1-6.
5. Wamisho BL, Tiruneh MA, Teklemariam LE. Surgical and medical error claims in Ethiopia: trends observed from 125 decisions made by the Federal Ethics Committee For Health Professionals Ethics Review. *Medicolegal and Bioethics*. 2019;9:23-31.
6. Tiruneh MA, Ayele BT, Beyene KGM. Knowledge of, and attitudes toward, codes of ethics and associated factors among medical doctors in Addis Ababa, Ethiopia. *Medicolegal and Bioethics*. 2019;9:1-10.
7. Shea S, Wynyard R, Lionis C. *Providing compassionate healthcare: challenges in policy and practice*: Routledge; 2014.
8. Zeray M, Mariam DH, Sahile Z, Hailu A. Validity and reliability of the Amharic version of the Schwartz Center Compassionate Care Scale. *PloS one*. 2021;16(3):e0248848.
9. Goodrich J. What makes a compassionate relationship between caregiver and patient? Findings from the 'anniversary' Schwartz Rounds. *Journal of Compassionate Health Care*. 2016;3(1):1-8.
10. Frezza E. *Patient-Centered Healthcare: Transforming the Relationship Between Physicians and Patients*: CRC Press; 2019.
11. Dowell J, Williams B, Snadden D. *Patient-centered prescribing: seeking concordance in practice*: CRC Press; 2018.
12. Scarlet J, Altmeyer N, Knier S, Harpin RE. The effects of Compassion Cultivation Training (CCT) on health care workers. *Clinical Psychologist*. 2017;21(2):116-24.
13. Sinclair S, Torres M-B, Raffin-Bouchal S, Hack TF, McClement S, Hagen NA, et al. Compassion training in healthcare: what are patients' perspectives on training healthcare providers? *BMC Medical Education*. 2016;16(1):1-10.
14. West MA, Eckert R, Steward K, Pasmore WA. *Developing collective leadership for health care*: King's Fund London; 2014.
15. Raziq A, Maulabakhsh R. Impact of working environment on job satisfaction. *Procedia Economics and Finance*. 2015;23:717-25.
16. Oswald A. The effect of working environment on workers performance: The case of reproductive and child health care providers in Tarime District: Muhimbili University of Health and Allied Sciences; 2012.
17. Ojaka D, Olango S, Jarvis J. Factors affecting motivation and retention of primary health care workers in three disparate regions in Kenya. *Human resources for health*. 2014;12(1):1-13.



Table 1:- Factors (crude and adjusted odds ratios, confidence intervals, and p-value) associated with compassionate care among HCW at 16 MHFs in Ethiopia (n=429)

Category	Variables	Compassion		Adjusted OR (95% CI)	p-value
		Yes	No		
Sex	Male	109	98	1	
	Female	150	72	1.49(0.91,2.43)	0.110
Profession	Nurse	119	42	4.16(2.21,9.38)	0.001
	Medical doctor	36	32	2.21(0.68,4.22)	0.190
	Public health officer	20	21	1.98(0.80,4.93)	0.152
	Midwives	30	13	3.31(1.60,8.62)	0.006
	Anesthesia	19	17	2.07(0.80,4.93)	0.109
	Pharmacy	26	26	1.76(0.98,3.38)	0.052
	Others	9	19	1	
Training on CRC	Yes	173	61	2.75(1.67,4.53)	0.001
	No	86	109	1	
Leader promoting CRC	Yes	186	72	2.34(1.42,3.87)	0.001
	No	73	98	1	
Conducive working environment	Yes	165	75	1.70(1.05,2.74)	0.031
	No	94	95	1	
Burnout management for HCW is important	Very important	247	114	6.92(3.31,14.44)	0.001
	Less important	12	56	1	

Table 2:- Factors (crude and adjusted odds ratios, confidence intervals, and p-value) associated with respectful care among HCW at 16 MHFs in Ethiopia (n=429)

Category	Variables	Respectful care		Adjusted OR (95% CI)	p-value
		Yes	No		
Sex	Male	115	92	1	
	Female	159	63	1.33(0.81,2.21)	0.261
Profession	Nurse	119	42	2.19(0.75,6.35)	0.151
	Medical doctor	36	32	0.75(0.23,2.51)	0.644
	Public health officer	26	15	1.41(0.44,3.19)	0.510
	Midwives	31	12	1.96(0.56,5.82)	0.291
	Anesthesia	21	15	1.19(0.37,4.50)	0.687
	Pharmacy	26	26	0.84(0.29,2.03)	0.921
	Others	15	13	1	
Training on CRC	Yes	159	75	0.77(0.45,1.31)	0.332
	No	115	80	1	
Leader promoting CRC	Yes	193	65	2.55(1.52,4.29)	0.001
	No	81	90	1	
Conducive working environment	Yes	199	41	6.94(2.24,9.38)	0.001
	No	75	114	1	
Burnout management for HCW	Very important	255	106	4.29(2.18,8.44)	0.001
	Less important	19	49	1	

# Patient Satisfaction with Health Care Services Provided in Ethiopian Health Institutions: Meta-Analysis



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## ABSTRACT



**Background:** Patient satisfaction is the direct or indirect measure of the quality of services delivered in healthcare institutions. Different primary studies in Ethiopia showed the proportion of satisfied patients towards health services. Patient satisfaction reflects the wide gap between the current experience and the expected services. Inconsistent findings of the proportion of patient satisfaction towards healthcare services in Ethiopia make generalization difficult at the national level.



**Methods:** Studies were accessed through an electronic web-based search strategy from PubMed, Cochrane Library, Google Scholar, Embase, and CINAHL by using a combination of search terms. The quality of each article included in the study was assessed using a modified version of the Newcastle-Ottawa Scale for cross-sectional studies. All statistical analyses were done using STATA version 14 software for windows.



**Results:** Of 188 records screened, 41 studies with 17,176 participants fulfilled the inclusion criteria and were included for proportion estimation. The pooled proportion of satisfied patients was found to be 63.7%. Those patients who were attending health center (AOR = 2.68; 95% CI: 1.79, 2.85), being literate (AOR = 0.46; 95% CI: 0.28–0.64), with an age >34 years, and divorced marital status (AOR = 0.58; 95% CI: 0.38, 0.88) were identified associated factors.



**Conclusion:** The proportion of patient satisfaction in Ethiopia was high based on over 50% satisfaction scale. But it remains low as compared with other countries. The Ministry of Health should give more emphasis to improve hospital health care services to further improve patient satisfaction.



**Keywords:** patient satisfaction, systematic review, meta-analysis

## Background

Patient satisfaction is the level of satisfaction that clients experience after using the service. It reflects the difference between the expected service and the experience of the service from the patient's point of view (Mathew & Beth, 2001). Measuring patient satisfaction becomes an integral part of healthcare services strategies across the world; the quality assurance and accreditation process in most countries consider the satisfaction of patients as a basic criterion in evaluating patient satisfaction (Mathew & Beth, 2001). Patients need to be allowed to explain the services they received since it is a good step in improving the standard of the

health services given (Assefa & Mosse, 2011). Different studies were conducted to assess patient satisfaction. A study conducted in India shows that 73% of the study participants were satisfied with nursing service (Sharma, Kasar, & Sharma, 2014), 51.7% in Serbia (Milutinović, Simin, Brkić, & Brkić, 2012).

In Ethiopia, patient satisfaction reflects the wide gap between the current experience and the expected services that push clients to go to more far health care facilities and even to more expensive private health facilities to find quality healthcare services (Miles & Mezzich, 2011). Inconsistent findings of the proportion of patient satisfaction towards healthcare services in Ethiopia make generalization difficult at the national

level. Therefore, this systemic review and meta-analysis will answer what is the estimated pooled magnitude of patient satisfaction and predictors that affect patient satisfaction. The output of this review and meta-analysis will help the Ministry of Health, regional health offices, and other stakeholders to fill the gap in this regard. Furthermore, it provides evidence to clinicians who have direct contact with patient care.

### **Objective**

The study intended to assess the proportion of patient satisfaction towards healthcare services in Ethiopia and identify factors affecting patient satisfaction towards healthcare services

### **Methods**

The procedure for this systematic review and meta-analysis was designed per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. We searched PubMed, Google Scholar, and web of science database for studies reporting the level of patient satisfaction with health care services from January 2000 to January 20, 2018. End Note version X8 reference management software for Windows was used to download, organize, review, and cite the articles. The following types of studies were included: quantitative studies, studies that reported at least one associated factor of patient satisfaction without any restriction with regards to publication status, study period, and study settings

(studies conducted at a health center, hospital, or institutional level in Ethiopia). Two independent reviewers extracted data using a structured data extraction format prepared in a Microsoft Excel spreadsheet.

### **Results and discussion**

The search strategy retrieved 188 articles. After the removal of duplicated articles, 162 articles remained. About 57 full-text articles were accessed for eligibility, 12 articles excluded because of lack of reporting the outcome of interest, and four due to lack of abstract and full text. Finally, 41 studies were screened for full-text review, prevalence, and/ or associated factors analysis with a total sample of 17,176 patients. The overall proportion of patient satisfaction was 63.7 % (95% CI; 59.48, 67.91;  $I^2 = 99.5\%$ ) (Fig. 1).

The analysis estimation of this study was higher than a study conducted in Mozambique (Newman, Gloyd, Nyangezi, Machobo, & Muiser, 1998). The difference might be attributed to the fact that, in our health care facilities, there is a relatively adequate number of health professionals and better diagnostic facilities.

The subgroup analysis based on the region, service area, and publication year was done. Based on this, the proportion of patient satisfaction was found to be 61.02% in Addis Ababa, 51.129% in the inpatient service, and 55.8% before the 2010 publication year (Table 1).

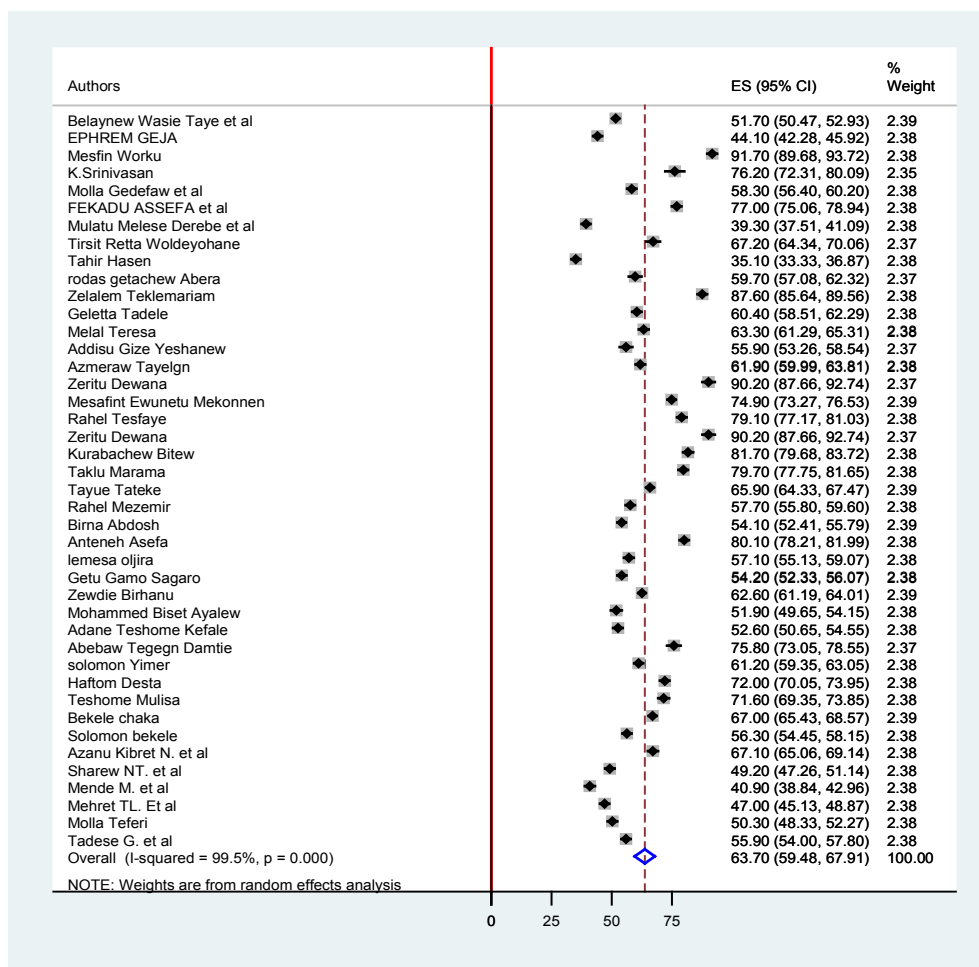


Figure 1, patient satisfaction from articles reviewed.

Table 1, Pooled prevalence of patient satisfaction by region and service areas

Variables	Characteristic	Pooled prevalence (95% CI)	I <sup>2</sup> (p-value)
Study regions	Oromia	59.815% (51.345 -68.285)	99.4% (<0.001)
	Amhara	60.881% (54.026 -67.736)	99.4% (<0.001)
	SNNPR	68.145% (57.146 -79.145)	99.7% (P<0.001)
	Tigray	67.334 % (50.133 -84.535)	99.6% (<0.001)
	Addis Ababa	61.017 % (56.235- 65.800)	96.7% (<0.001)
	Harari	70.846% (38.017 -103.676)	99.8% (<0.001)
Service area	Emergency service	62.493% (37.101-87.885)	99.9% (<0.001)
	General health	62.669 % (44.374 -80.964)	99.7% (<0.001)
	Inpatient service	51.129% (19.672 -82.587)	99.7% (<0.001)
	Laboratory service	65.393% (53.649 - 77.138)	99.3% (<0.001)
	labor and delivery	79.643% (72.795 - 86.491)	98.8% (<0.001)
	Outpatient service	61.672% (55.288 - 68.057)	99.0% (<0.001)
	Pharmacy service	60.072% (46.233- 73.912)	99.1% (<0.001)
	Psychiatry service	66.596% (56.012 - 77.180)	98.4% (<0.001)
	Radiological service	71.600% (69.349- 73.851)	.% (<0.001)
By publication year	Nursing service	54.219% (47.704 - 60.734)	99.0% (<0.001)
	Before 2010	55.779% (53.977 -57.580)	65.6% (0.055)
	After 2010	64.302% (59.783 - 68.820)	99.5% (<0.001)

The proportion of patient satisfaction was high in the labor and delivery service area compared to other service areas. The reason for higher patient satisfaction in labor and delivery service may be due to the governments and private partners' initiative to give priority to mothers, especially for pregnant mothers; most of the services in this ward were free of charge, all types of equipment were well prepared and health care professionals were well trained

Literate individuals were 54% less likely satisfied with the service compared to illiterate individuals (fig 2). This is also in agreement with the study conducted in Kuwait (Al-Doghather, Abdelrhman, Saeed, Al-Kamil, & Majzoub, 2001) in which patients with lower educational levels, illiterate and elementary school level patients showed a high level of satisfaction. According to a study, a study conducted in Rome greater satisfaction was observed in individuals with lower educational status (Renzi et al., 2001). The odds of individuals who attended health centers were nearly three times more than the hospital users. This

study was in line with the study conducted in west Amhara; the overall client satisfaction in the health centers was significantly higher (55%) than that of hospital services (36%) users (Derebe et al., 2017) (fig 2).

### Conclusion and recommendation

The proportion of patient satisfaction was high based on over 50% satisfaction scale. But it remains low as compared with other countries. Attending health centers, educational status, age, and marital status were associated with patient satisfaction with health care service. Therefore, hospital management, policymakers, and other responsible officials are suggested to strengthen the satisfaction by improving the individual's awareness of the importance of attending health care services, give regular education on the importance of having a good family life. Individuals are suggested to improve their awareness of the services given by health care institutions.

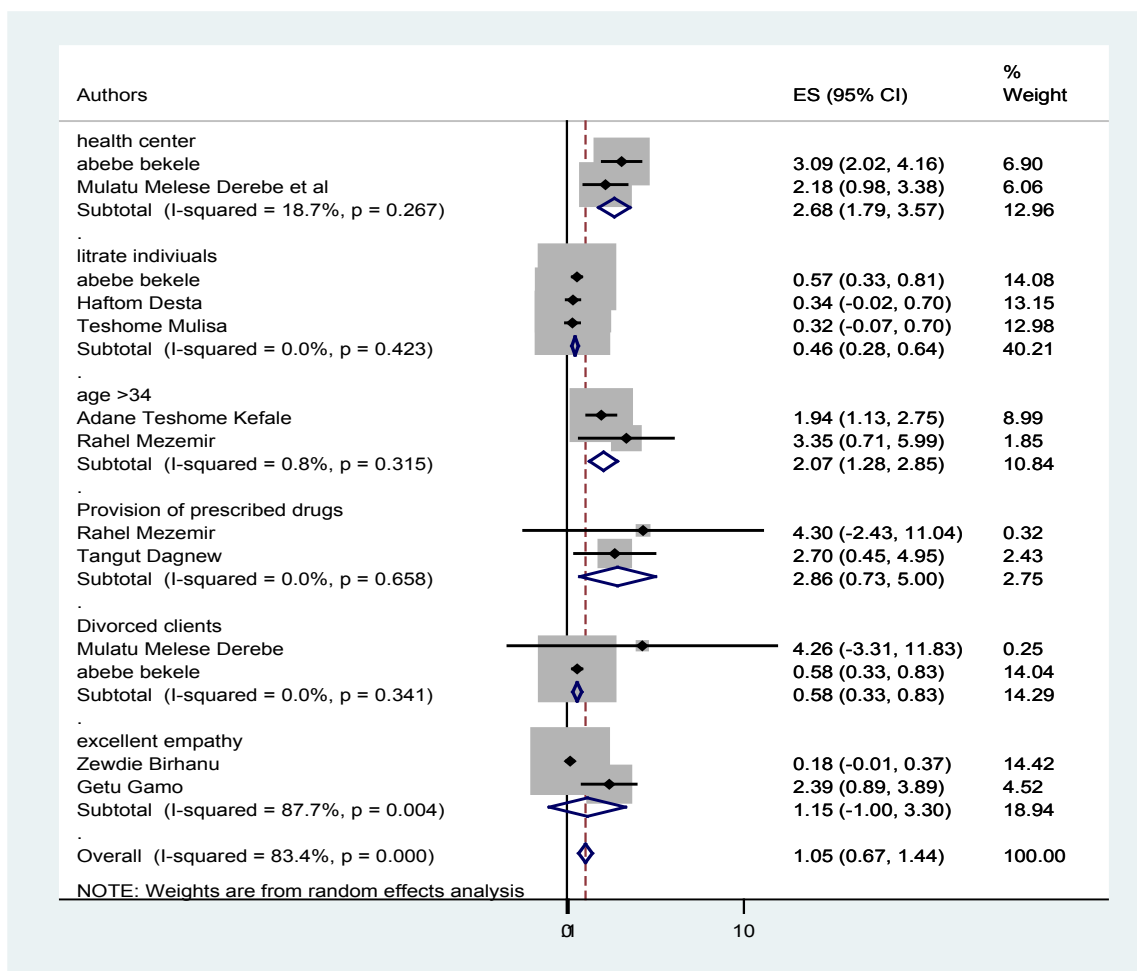


Figure 2, patient satisfaction from articles reviewed by patient characteristics

## References

1. Mathew, S., & Beth, E. (2001). To assessing client satisfaction: Durban, (South Africa). *Health system Trust*.
2. Assefa, F., & Mosse, A. (2011). Assessment of clients' satisfaction with health service deliveries at Jimma University specialized hospital. *Ethiopian journal of health sciences*, 21(2), 101-110.
3. Milutinović, D., Simin, D., Brkić, N., & Brkić, S. (2012). The patient satisfaction with nursing care quality: the psychometric study of the Serbian version of PSNCQ questionnaire. *Scandinavian journal of caring sciences*, 26(3), 598-606.
4. Miles, A., & Mezzich, J. (2011). The care of the patient and the soul of the clinic: person-centered medicine as an emergent model of modern clinical practice. *International Journal of Person-Centered Medicine*, 1(2), 207-222.
5. Sharma, A., Kasar, P. K., & Sharma, R. (2014). Patient satisfaction about hospital services: a study from the outpatient department of tertiary care hospital, jabalpur, madhya pradesh, india. *National J Community Medicine*, 5(2), 199-203.
6. Newman, R. D., Gloyd, S., Nyangezi, J. M., Machobo, F., & Muiser, J. (1998). Satisfaction with outpatient health care services in Manica Province, Mozambique. *Health policy and planning*, 13(2), 174-180.
7. Al-Doghaither, A. H., Abdelrhman, B. M., Saeed, A. A., Al-Kamil, A. A., & Majzoub, M. M. (2001). PATIENTS' SATISFACTION WITH PRIMARY HEALTH CARE CENTERS SERVICES IN KUWAIT CITY, KUWAIT. *Journal of family & community medicine*, 8(3), 59.
8. Derebe, M. M., Shiferaw, M. B., & Ayalew, M. A. (2017). Low satisfaction of clients for the health service provision in West Amhara region, Ethiopia. *PloS one*, 12(6), e0179909

# Effectiveness and Efficiency of Leadership, Management, and Governance Training in Ethiopia: A Cross-Sectional Facility-Based Study



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## ABSTRACT



**Background:** Leadership, management, and governance (LMG) training are implemented to capacitate managers and clinical healthcare providers in several countries. However, there is a shortage of evidence gathered on the effectiveness and efficiency of LMG training in low-income countries. Hence, this study aims to assess the effectiveness and efficiency of basic LMG training implemented in Ethiopia.



**Methods:** This study employed a facility-based cross-sectional survey design. The study was conducted in 24 purposively selected districts of Amhara, Oromia, Southern Nations, Nationalities, and People regions in September 2018. The data was collected through self-administered questionnaires from 293 participants. Secondary data were extracted on the achievements of 136 leadership projects. In addition, financial documents were reviewed from the training database.



**Results:** In the study, 100% of participants have responded. They were recruited from 10 blocks, 8 segmented I and 6 Segmented II implemented basic LMG training approach. The mean pretest score with SD was  $44.9\% \pm 15.50\%$ , and the post-test score was  $78.1\% \pm 14.2\%$ , which showed a significant gain in knowledge at post-test with  $t=-35.9$ ,  $df=292$ ,  $p<0.001$ . After implementing leadership projects for nine months, the average net health service coverage gain by each entity was 16.5% (95% CI: 12.2%, 20.8%). The project invested 19.20 \$, 24.77\$, and 34.60\$ to increase one unit of health service coverage in a block, segmented I and Segmented II training approaches, respectively.



**Conclusions and recommendations:** Both the block and segmented LMG training were each found to be effective in imparting knowledge and skills for staff to lead, manage and govern primary health entities. However, the block LMG training approach was much more effective and efficient than the segmented training approaches with regards to time, communication, and resources utilized during the sessions. Therefore, scaling up of block LMG training to reach more primary health care units is recommended.



**Keywords:** Effectiveness and Efficiency; Leadership, Management, and Governance; Performance Improvement; Training Evaluation; Ethiopia.

## Background

The health system of any country must transform itself to promote health, prevent and control current challenges and be prepared to face emerging global public health concerns. However, the challenges to be addressed are very complex and needs leadership at all levels. Building the LMG competencies of healthcare workers is the most proven solution in creating a resilient health system (1, 2).

Training is the act of enriching the knowledge and skills of employees in a particular job, to improve organizational performance in general and healthcare services effectiveness in particular (3). This leadership, management, and governance training is a result-oriented, participatory leadership development program that enables healthcare professionals who play a hybrid of clinical and management roles to overcome self-identified challenges and achieve



more results (3). Following the training, the trainees are expected to apply all leadership, management, and governance practices through developing and implementing leadership projects for six to nine months [5] [6]. In Ethiopia, USAID Transform: primary health care Project implemented three different LMG training approaches, namely, **(1) block course:** A six-day classroom LMG training and six to nine months long leadership project with coaches for training institutes **(2) Segmented one:** Two workshops of three-day classroom LMG training and six to nine months-long leadership project with coaches assigned from the zone health department and **(3) Segmented two:** Two workshops of three-day classroom LMG training, and six to nine months-long leadership project with coaches assigned from USAID Transform: PHC project field staff.

Effectiveness is focused on the usefulness of training content to the employees' work. Efficiency is the often measurable ability to avoid wasting materials, energy, efforts, money, and time in doing something or producing the desired result (7). Conducting LMG training effectiveness and efficiency evaluation is helpful for policymakers, program managers, and health professionals to maximize the gains of such interventions and improve the training materials and processes.

## Objectives

The objective of this study was to assess the effectiveness and efficiency of LMG training implemented in Ethiopia.

## Methods

**Study area and design:** This study employed a facility-based cross-sectional survey design and was conducted in the Amhara, Oromia, Southern, Nations, Nationalities, and People regions of Ethiopia in September 2018. The regions are the USAID Transform: Primary Health Care project implementation area and were purposively selected based on the information on LMG training and interventions.

**Sample size and sampling procedure:** The sample size was calculated using a single population formula. The assumptions followed were the prevalence of effectiveness of LMG training ( $p$ ) is 50% (where,  $p=0.5$ ,  $q=0.5$ ), allowing 5% for expected margin of error ( $d$ ), 95% confidence level ( $Z_{\alpha/2}=1.96$ ), 25% for non-

response rate, and 555 LMG trained staff of source population. The final sample size was 293.

**Data collection and analysis:** The first tool used in the study consists of 19 items dedicated to capturing the independent variables, namely, time, communication, and resources, and 11 items were focused on the effectiveness and efficiency of LMG training were dependent variables. The tools were developed based on a 5-point Likert scale ranging from strongly disagree to strongly agree. In addition, secondary data were extracted on training investment, pre-test, post-test, and leadership project scores from training records. Sixteen data collectors and four supervisors each with clinical, health management, social science, or public health training were recruited and trained on the ethical principles, and data collection tools. Before the actual data collection started, all tools were piloted and amended accordingly. The data were analyzed using SPSS IBM version 20.

## Operational definitions

**Effectiveness:** was determined using LMG knowledge and competencies scores and average score measurements using a five Likert scale question that estimates the perception of trainees on positive impact, performance improvements, use of tools, and recommendation of similar training for other co-workers

**Efficiency:** was measured using six Likert scale questions that measured trainees' perception of session organization; trainer preparedness; and trainees' ability to understand the materials and complete sessions.

**Time:** trainees were asked to rate the adequacy of time spent on each training topic and activity.

**Communication:** trainees were asked to rate the various levels of communication, including the invitation to participate in the training, the purpose of the training, and post-training communication with trainers and program managers.

**Resources:** trainees were asked to rate the resources including training materials, tools, and any additional materials used to assist trainees during the training sessions



## Result

**Socio-demographic characteristics:** Out of two-hundred ninety-three participants, 35.1% were from SNNP, 28.0% were from Oromia, 26.3% were from Amhara, and 10.6% were from Tigray regions were enrolled. The majority, 75.8% of the participants were male. The mean age of participants with standard deviation (SD) was  $29.9 \pm 6.9$  years. Among LMG trainees, 60.8% had attended the segmented LMG training approach, while the rest, 39.2% had attended the block LMG training approach.

**LMG trainee evaluations:** The figure1 illustrates the results of the LMG trainee evaluations using three independent and two dependent variables. The lowest average score was  $3.8 \pm 0.8$  for time assessment variables. While the highest average score was  $4.3 \pm 0.6$  for effectiveness assessment variables.

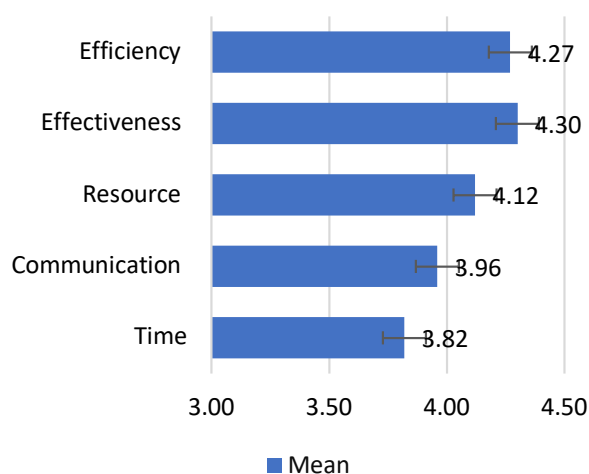


Figure 1. Bar chart showing the average score of both dependent and independent variables, September 2018

## Effectiveness and efficiency of LMG trainings

The mean pretest score with SD was  $44.9\% \pm 15.5\%$ . The post-test score was  $78.1\% \pm 14.2\%$ , which showed a significant gain in knowledge at post-test with  $t = -35.9$ ,  $df = 292$ ,  $p < 0.001$ . In this study, 80.9% (237) of trainees scored greater or equal to 70.0% on post-tests. The majority, 252 (86.0%) of trainees achieved 80.0% or more on their leadership projects. As a result of these projects, 2,290.6 units of health service coverage was gained. The average net gain by each entity was 16.5 (95% CI: 12.2, 20.8) with SD ( $\pm 17.5$ ) units. The result gained, with paired sample t-test  $t = -12.28$ ,  $df = 292$ ,  $p < 0.001$ , was statistically significant. Table 1 presents the beta ( ) coefficient from the general linear models for LMG training effectiveness, unadjusted score with 95% confidence interval (CI) for communication was 0.127(0.048, 0.175), and resources was 0.473 (0.419, 0.527),  $p < 0.05$ . The following (1) & (2) final models of effectiveness and efficiency were developed.

- Effectiveness =  $1.845 + 0.127^*$ , Communication +  $0.473^*$ , Resources (1)
- Efficiency =  $1.507 + 0.351^*$ , Resources +  $0.214^*$ , Communication +  $0.123^*$  Time (2)

## Return on investments

Of the 136 projects implemented, 52 (38.5%) were dedicated to improving skilled delivery services. The projects invested \$52,719.99 to gain an additional 2,290.6 health services coverage. The least investment-per-unit-gained health service coverage was \$19.20 for block LMG training approach; and the highest recorded investment was \$34.60 for a segmented II training approach (Table 2).

Table 1: Linear regression coefficients, September 2018

Model B		Unstandardized coefficients		Standardized coefficients	T	Sig.
		Std. error	Beta			
Effectiveness (1)	(Constant)	1.848	.206		8.982	0.001
	Time	-.003	.040	-.003	-.064	0.949
	Communication	.128	.050	.152	2.554	0.011
	Resources	.474	.056	.497	8.537	0.000
Effectiveness (2)	(Constant)	1.845	.200		9.247	0.000
	Communication	.127	.048	.151	2.652	0.008
	Resources	.473	.054	.496	8.733	0.001
Efficiency (3)	(Constant)	2.010	.193		10.404	0.001
	Resources	.549	.046	.571	11.857	0.001
Efficiency (4)	(Constant)	1.656	.195		8.478	0.001
	Resources	.387	.053	.403	7.297	0.001
	Communication	.258	.047	.302	5.480	0.001
Efficiency (5)	(Constant)	1.507	.198		7.610	0.001
	Resources	.351	.053	.366	6.578	0.001
	Communication	.214	.048	.251	4.417	0.001
	Time	.123	.039	.164	3.173	0.002

Table 2, Return on investment of LMG training, September 20

Ser no.	Theme	Number of projects	Gains in coverages	Total cost in USD	Unit cost /gained coverages (ETB)	Unit cost / gained coverages (USD)
1	Program area					
1.1	Delivery: maternal and neonatal health	53	714.7	23,524.70	905.18	32.92
1.2	Antenatal care: maternal and neonatal health	20	372.6	60,38.37	445.67	16.21
1.3	Postnatal care: maternal and neonatal health	2	24	358.71	411.02	14.95
1.4	Family planning	25	466.6	9,649.89	568.74	20.68
1.5	Health systems	25	355.7	8,856.66	684.73	24.90
1.6	Child health and immunization	5	97	1,486.83	421.52	15.33
1.7	Community-based health insurance	4	178	1,681.87	259.84	9.45
1.8	Other (malaria and tuberculosis prevention/control)	2	82	1,122.96	166.93	13.69
1.9	Overall leadership projects	136	2,290.6	52,719.99	632.93	23.02
2	Regions					
2.1	Amhara	37	607.3	13,480.22	610.42	22.20
2.2	Oromia	34	564.9	17,836.56	868.30	31.57
2.3	SNNP	43	830.0	15,541.05	514.91	18.72
2.4	Tigray	21	288.4	5,862.15	558.98	20.33
3	Training approaches					
3.1	6-day block basic LMG training	58	1,045.3	20,074.00	528.11	19.20
3.2	Segmented I: two 3-day basic LMG trainings	60	1,062.7	26,328.14	681.31	24.77
3.3	Segmented II: two 3-day basic LMG trainings	17	182.6	6,317.85	951.48	34.60

## Discussion

In 2007, the world health organization (WHO) recommended a framework for strengthening health systems and improving health outcomes through synergetic interventions [8]. This study documented the results of 293 LMG trainees who developed and implemented 136 leadership projects in Ethiopia [9]. The evidence generated on the effectiveness and efficiency of the LMG training evaluations enables policymakers, program managers, and health professionals to decide on training approaches and contents based on evidence.

In this study, the effectiveness of the basic LMG training was assessed by measuring the knowledge, skills, and behavioral patterns of trainees within primary healthcare facilities [10]. The trainees have completed the LMG training successfully. This result was also attributed to the implementation of multi-faceted interventions, which ranged from classroom training to leadership-project implementation, and onsite coaching by experts (11). The findings also concur with La Rue et al. (2012), who compared leadership exposed and non-exposed groups and revealed higher and statistically significant differences in health service coverage in the first group (12).

Effectiveness and efficiency were computed against time, communication, and resources dedicated to the training. The results of this study revealed that resources and communication had a statistically significant positive impact on the effectiveness of the LMG training. Moreover, an increase of health services coverage by one unit or percent required an investment of 23.02 USD from the project. This study indicates that block basic LMG training was more effective and efficient than the segmented training approaches.

## The Strength and limitations of the study

The study has demonstrated the need to evaluate training for evidence-based decision-making. In addition, it used various data sources which can help to triangulate generated information. As a cross-sectional study, the study has limitations to claim causal relationships. Since the data collection was made after completing the training and practical exercises on leadership projects, there might be recall bias. The study was conducted only in USAID Transform: Primary Health Care project targeted sites, which signifies the need interpreted based on the context.

## Conclusions and recommendations

Both the block and segmented LMG training were found to be effective in imparting knowledge and skills for staff to lead, manage and govern primary health entities. However, the block LMG training approach was much more effective and efficient than the segmented training approaches regarding time, communication, and resources utilized during the sessions. Therefore, scaling up of block LMG training to reach more health workers and primary health care units is recommended.

## References

1. UN General Assembly, Transforming our world: the 2030 Agenda for Sustainable Development, 21 October 2015, A/RES/70/1
2. Rauscher M, Walkowiak H, Djara MB. Leadership, Management, and Governance Evidence Compendium. Management Sciences for Health, 2018.
3. Armstrong M. Armstrong's handbook of performance management: An evidence-based guide to delivering high performance. Kogan Page Publishers; 2009 Sep 3.
4. Bayou B, Hailu T, Jenberie A, Minalu Y, Tesfamichael T. Transforming primary health care unit service delivery through leadership, management and governance (LMG) training: a field action report from Ethiopia. Ethiopian Journal of Health Development. 2020;34(2).
5. Federal Ministry of Health (FMOH). Leadership, Management and Governance In-Service Training Manual for Health Managers at Hospitals and Health Centers. FMOH: Addis Ababa. 2017.
6. Galer JB, Vriesendorp S, Ellis A. Managers Who Lead: a handbook for improving health services. Cambridge: Management Sciences for Health (Firm); 2005.
7. Kirkpatrick JD, Kirkpatrick WK. Kirkpatrick's four levels of training evaluation. Association for Talent Development; 2016 Oct 1.
8. World Health Organization. Everybody's business--strengthening health systems to improve health outcomes: WHO's framework for action. World Health Organization; 2007.
9. USAID Transform Primary Health Care Project . Theory of Change in Practice 2017. USAID TPHC: Addis Ababa 2017.
10. Tetui M. Participatory approaches to strengthening district health managers' capacity: Ugandan and global experiences (Doctoral dissertation, Umeå universitet); 2018.
11. Desta BF, Abitew A, Beshir IA, Argaw MD, Abdulkader S. Leadership, governance and management for improving district capacity and performance: the case of USAID transform: primary health care. BMC family practice. 2020 Dec;21(1):1-7.
12. La Rue KS, Alegre JC, Murei L, Bragar J, Thatte N, Kibunga P, Cheburet S. Strengthening management and leadership practices to increase health-service delivery in Kenya: an evidence-based approach. Human resources for health. 2012 Dec;10(1):1-7.

# Time to Recovery and Predictors of Survival among Asphyxiated Neonates Admitted in Addis Ababa Public Hospitals, 2021



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## ABSTRACT



**Background:** Globally, perinatal asphyxia (PNA) is a major cause of morbidity and mortality among newborns. It is a major concern in resource-constrained countries like Ethiopia. Thus, researches on survival status and determinants of perinatal asphyxia are critical to tackling the effect of PNA. Therefore, this study is intended to determine survival status and predictors of asphyxia among neonates admitted to public hospitals in Addis Ababa, Ethiopia.



**Methods:** Hospital-based retrospective follow-up study was conducted in four selected public hospitals of Addis Ababa. Kaplan-Meier survival curve, log-rank test, and median time were computed. The cox-proportional hazards regression model was fitted to identify predictors.



**Result:** Four hundred eleven babies admitted asphyxiated babies followed for 3062 neonate-days. Overall incidence rate of survival was 10 (95% CI: 0.08-0.11) per 100 neonate-days with a median recovery time of 8 days (95% CI: 7.527- 8.473). Low-birth weight (AHR: 0.67, 95% CI: 0.47- 0.96), stage II Hypoxic-ischemic encephalopathy (AHR: 0.70, 95% CI: 0.51 - 0.97), stage III Hypoxic-ischemic encephalopathy (AHR: 0.44, 95% CI: 0.27 - 0.71), seizure (AHR: 0.61, 95% CI: 0.38 - 0.97), thrombocytopenia (AHR: 0.44, 95% CI: 0.24 - 0.80) and not administering calcium-gluconate (AHR: 0.75, 95% CI: 0.58 - 0.99) were found independent predictors of recovery time of asphyxiated neonates.



**Conclusion:** In the current findings, the recovery time was prolonged compared to other findings. This implies early prevention, strict monitoring, and taking appropriate measures timely is mandatory before babies are transferred to the highest stage of HIE and managing complications are recommended to hasten recovery time and increase survival of neonates.



**Keywords:** Perinatal-asphyxia, Predictors, Survival-status

## Background

Perinatal Asphyxia occurs during the perinatal period due to a lack of oxygen flow to the fetus or infant, which may lead to ischemia of the brain or other organs (1) APSGN has been extensively studied, and we learned a tremendous amount of information about the pathogenesis of immune complex glomerulonephritis through these studies. In recent decades, after the widespread use of antibiotics, APSGN became

much less common, particularly in developed countries, and became a rare diagnosis in the average nephropathology laboratory. However, APSGN still remains a frequent form of glomerulonephritis in third-world countries, particularly in areas where the disease occurs in epidemics. In this chapter, we review the pathogenesis, clinical presentation, renal biopsy findings, morphologic differential diagnosis, and clinicopathologic correlations of

APSGN.”;author”:[{“dropping-particle”:.”,”family”:.”R. KLIEGMAN, J. ST. GEME, B. stanton”,”given”:.”N. schor (eds. Although global infant mortality has been progressively reducing for the past two decades, progress in Sub-Saharan Africa has been slow. Perinatal asphyxia is a major cause of newborn deaths in the Sub-Saharan Africa region (2). In developing countries, only 23% of asphyxiated babies have a chance of survival (3). However PNA is highly prevalent in Ethiopia, studies on recovery rate and predictors are scant. Therefore, this study aimed to determine survival status and predictors of recovery time of asphyxiated neonates.

## Methods

A hospital-based retrospective follow-up study was conducted in four randomly selected public hospitals of Addis Ababa, Ethiopia. Data were collected from February 15 to March 15, 2021, by reviewing 435 medical charts of asphyxiated neonates who were registered from January 2016 to December 2020. The proportional allocation formula was used to select study participants from each hospital and each year. Epi-data version 4.6 and STATA Version 16 were used for data entry and analysis. Bi-variable and multivariable cox-regression hazards models were fitted to identify predictors of time to recovery.

## Result and discussion

Four hundred thirty-five charts of asphyxiated neonates were reviewed of which; 411(94.48%) were eligible in this study. Out of the total cohort, 411 (60.58%) were males. Most of the newborns (70%) had normal birth weight and 25.6% had low birth weight with a mean weight of  $2.82 \pm 0.65$  kg. Nearly (15.3%) were preterm and 37(9%) were post-term. The most frequently identified additional medical complications at admission among asphyxiated newborns and during their hospital stays were hypothermia (86.13%), followed by respiratory distress (51.82%), MAS (64.96%), hypoglycemia (4.62%), sepsis (36.9%) and seizure disorders (23.1%). The mean WBC count and HCT level were high in censored babies than survived ( $21.74 \pm 1.7$  Vs  $19.37 \pm 0.58$ ) and ( $55 \pm 1.4$  vs  $53.74 \pm 0.6$ ), respectively. On the contrary, the mean platelet count was lower in censored babies ( $171.62 \pm 12$  vs  $196.76 \pm 4.9$ ) than survived babies. The mean serum sodium and calcium level in censored babies were lower than survived but higher in Potassium,

random sugar, AST, ALT, and creatinine level within the first day of postnatal age.

Of the total participants, 305 (74.2%) asphyxiated neonates have recovered or been discharged alive from NICUs and 106 (25.8%) were censored. Among censored neonates, 99 (24.09%) died, 6(1.5%) have left against medical advice and one (0.24%) was lost follow-up. The estimated cumulative probability of survival was 99 %, 96 %, 63 %, 20 %, 6 % and 4 % at 1,3,7,14,21 and 28 days, respectively.

Findings from the multi-variable analysis showed that LBW, HIE stages, thrombocytopenia, seizure, and calcium gluconate were identified predictors for recovery time from asphyxia (table 1). Low birth weight neonates were found 33% less likely to recover faster from asphyxia compared to those with normal birth weight (AHR: 0.67, 95% CI: 0.47- 0.96).

The time of recovery was slower or prolonged when the stage of HIE stages increase. Neonates diagnosed with HIE stage II had 30% decrement and HIE stage III had 56% decrement in survival compared to Stage I HIE babies (AHR: 0.70, 95% CI: 0.51 - 0.97) and (AHR: 0.44, 95% CI: 0.27 - 0.71), respectively. Neonates who developed thrombocytopenia were 56% less likely to recover earlier than those who had normal platelet count (AHR: 0.44, 95% CI: 0.24 - 0.80). Similarly, neonatal seizures that appear within 24 hours of postnatal age were 39% and neonatal seizures that appear after 24 hours of postnatal age were 31% lower probability to recover faster compared to neonates who had not experienced a seizure (AHR: 0.61, 95% CI: 0.38 - 0.97) and (AHR: 0.69, 95% CI: 0.49 - 0.97), respectively. Neonates who received calcium gluconate through the intravenous fluid within 1<sup>st</sup> day of life were hastened recovery time by 25% (AHR: 0.75, 95% CI: 0.58 - 0.99).

Proportional hazard assumption was checked by using Schoenfeld’s residuals global test. The findings indicated that all individual variables included in the model were satisfied PH assumptions (p-value > 0.05) and (Global test for Cox proportional hazard P-Value = 0.393 > 0.05).

Table 1, Bivariate and Multivariate Cox regression analysis results of Asphyxiated babies who were admitted at NICUs of Addis Ababa public hospitals, Ethiopia, 2021 [n=411]

Covariates	CHR (95% CI)	P-value	AHR (95% CI)	P- value
<b>Maternal Age</b>				
20 – 34 years		1		1
<20 years	0.94(0.58 – 1.52)	0.812	1.22(0.73 - 2.04)	0.455
>34 years	1.34(0.92 – 1.94)	0.120	1.28(0.85 - 1.95)	0.241
<b>Place of residency</b>				
Addis Ababa		1		1
Out of Addis Ababa	0.78(0.58 – 1.05)	0.105	0.89(0.64- 1.23)	0.479
<b>Mode of delivery</b>				
SVD		1		1
Assisted delivery	0.92(0.66 – 1.27)	0.621	0.89(0.62 - 1.26)	0.506
C/S delivery	0.81(0.62 – 1.04)	0.107	0.89(0.66 - 1.19)	0.418
<b>Prolonged labor</b>				
No		1		1
Yes	1.26(0.92 – 0.74)	0.142	1.21(0.85 -1.71)	0.292
<b>Birth weight</b>				
Normal		1		1
Big baby	1.16(0.71 – 1.91)	0.554	1.24(0.70 - 2.19)	0.454
Low birth weight	0.63(0.48 - 0.83)	0.001	<b>0.67(0.47 - 0.96)</b>	<b>0.029 *</b>
<b>Gestational Age</b>				
Term		1		1
Post term	0.60(0.42 – 0.85)	0.004	0.96(0.61 - 1.50)	0.841
Preterm	0.87(0.59 -1.29)	0.494	0.93(0.59 - 1.46)	0.753
<b>Age at presentation</b>				
<24 hours		1		1
24 – 72 hours	0.82(0.49 – 1.38)	0.470	0.45(0.16 - 1.23)	0.121
>72 hours	0.45(0.22 - 0.92)	0.031	0.64(0.28 - 1.43)	0.275
<b>Fifth minutes APGAR</b>				
≥7		1		1
<7	0.81(0.64 - 1.03)	0.091	1.03(0.78 - 1.35)	0.838
<b>HIE stage</b>				
Stage 1		1		1
Stage 2	0.51(0.40 -0.66)	0.000	<b>0.70(0.51 - 0.97)</b>	<b>0.033 *</b>
Stage 3	0.27(0.19 - 0.40)	0.000	<b>0.44(0.27 - 0.71)</b>	<b>0.001 *</b>
<b>Altered Consciousness</b>				
No		1		1
Yes	0.59(0.47 - 0.74)	0.000	0.97(0.72 - 1.30)	0.837
<b>Depressed Moro reflex</b>				
No		1		1
Yes	0.49(0.39 - 0.62)	0.000	0.79(0.57 - 1.10)	0.164
<b>Sepsis</b>				
No		1		1
Yes	0.85(0.67 - 1.07)	0.164	0.83(0.64 - 1.07)	0.143



Covariates	CHR (95% CI)	P-value	AHR (95% CI)	P-value
<b>Seizure</b>				
No		1		1
Yes, before 24hours	0.55(0.36 - 0.85)	0.006	<b>0.61(0.38 - 0.97)</b>	<b>0.036 *</b>
Yes, after 24 hours	0.67(0.49 - 0.92)	0.013	<b>0.69(0.49 - 0.97)</b>	<b>0.034 *</b>
<b>Meconium aspiration syndrome</b>				
No		1		1
Yes	0.83(0.65 - 1.05)	0.121	0.89(0.68 - 1.16)	0.386
<b>Hyperbilirubinemia</b>				
No		1		1
Yes	0.76(0.51 - 1.14)	0.191	1.28(0.81 - 2.01)	0.285
<b>Necrotizing Enterocolitis</b>				
No		1		1
Yes	0.46(0.24 - 0.91)	0.025	0.64(0.30 - 1.36)	0.245
<b>Acute kidney injury</b>				
No		1		1
Yes	0.69(0.40 - 1.18)	0.171	0.90 (0.49 - 1.64)	0.726
<b>Thrombocytopenia</b>				
No		1		1
Yes	0.45(0.26 - 0.75)	0.003	<b>0.44(0.24 - 0.80)</b>	<b>0.007 **</b>
<b>Aminophylline</b>				
No		1		1
Yes	0.48(0.26 - 0.89)	0.019	0.80(0.40 - 1.58)	0.515
<b>Oxygenation</b>				
No		1		1
Yes	0.57(0.40 - 0.82)	0.002	0.69(0.45 - 1.07)	0.095
<b>Resuscitation at delivery</b>				
No		1		1
Yes	0.80(0.60 - 1.07)	0.134	1.00(0.71 - 1.41)	0.994
<b>Ca<sup>++</sup> gluconate</b>				
Yes		1		1
No	0.61(0.48 - 0.79)	0.000	<b>0.75(0.58 - 0.99)</b>	<b>0.039 *</b>

## Conclusion and Recommendation

In conclusion, the overall incidence rate of survival was 10 per 100 neonates-day observations with a median recovery time of 8 days. This indicates the recovery time was prolonged. Those neonates who had low birth weight, stages of HIE, occurrence seizure, thrombocytopenia, and taking of calcium gluconate in the first day of life were identified as a predictor for the survival time of asphyxiated newborns. Hence, early prevention, strict monitoring, and taking appropriate measures timely is mandatory before babies are transferred into the highest stage of HIE, and managing complications are recommended

to hasten recovery time and increase survival of neonates.

## Reference

1. R. KLIEGMAN, J. ST. GEME, B. stanton N schor (eds). Nelson textbook of PEDIATRICS. 21th Edition. 2020. 3944–60 p.
2. Usman F, Imam A, Farouk ZL, Dayyabu AL. Newborn mortality in sub-Saharan Africa: Why is perinatal asphyxia still a major cause? Ann Glob Heal. 2019;85(1):2.
3. Halloran DR, McClure E, Chakraborty H, Chomba E, Wright LL, Carlo WA. Birth asphyxia survivors in a developing country. J Perinatol. 2009;29(3):243–9.



# Maternal and Child Health Service Uptake amid COVID-19 in Public Health Facilities and Lessons Learned



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## ABSTRACT



**Background:** Understanding the effect of the COVID-19 pandemic on the maternal, child health services and documenting the lessons learned during the pandemic would have paramount importance in the early preparation of strategies robust to future situations before the services are negatively affected.



**Objective:** To assess the impact of the COVID 19 pandemic on the pattern of reproductive, maternal, child health services and explore lessons learned at the public health facilities of Addis Ababa, Ethiopia



**Methods:** A mixed design, institution-based cross-sectional triangulated with qualitative phenomenological methods, was used. A randomly selected 25 public health facilities from five sub-cities and a purposively selected 9 policymakers, 15 providers, 10 facility directors, and 15 clients were included. RMNCH related performance of selected health facilities pre-COVID 19 periods from March to November 2019 and during Covid-19 from March to November 2020 in Ethiopia was collected by using structured Microsoft excel data extraction forms. The qualitative data were collected by in-depth interview using an interview guide. Open Code 4.03 software was used to code and categorize qualitative data. Quantitative data were entered and analyzed using SPSS version 23.



**Result:** 80% of the studied facilities were health centers and 24 (96%) have COVID-19 isolation units. During the pandemic, Child vaccination like BCG, Polio 0, Penta3 services showed a decline in 31.9%, 4.8%, and 28.2% respectively compared with the same months of the pre-COVID 19 era. Further, vitamin-A and measles doses which were administered at fifteen months were decreased by 11.4% and 3.8% respectively. The qualitative finding prevails the COVID 19 Pandemic has challenged women in seeking MCH services, hindered providers from practicing compassionate care, created service interruptions, challenged the quality of MCH service with scheduling follow-ups for ANC and child vaccination, exacerbated medication and supply problems during the pandemic.



**Conclusion:** COVID-19 had a significant negative impact on reproductive, maternal, and child health service uptake at the nine months during COVID 19 compared with the same months before the pandemic.



**Keywords:** COVID-19, RMNCH, Impact, Ethiopia

## Introduction

Since the onset of the novel coronavirus epidemic in Wuhan, China in late December 2019 it has spread rapidly throughout the world reaching a pandemic state (1). For this reason, the international community is mobilizing to limit the spread of severe acute respiratory syndrome coronavirus 2 and reduce mortality from COVID-19 (2). Minimizing exposure to

SARS-CoV-2 remains the only best strategy to reduce the risk of infection. Despite the implementation of social distancing, emerging evidence indicates that contagion is worse when healthcare is centralized (3,4,5,6).

The COVID-19 pandemic caused significant disruption of essential health services especially in sub-Saharan Africa (7). Already over-stretched health systems of

different countries are likely to be further challenged in the context of COVID-19 preparedness and response, causing risk of disruptions in essential health and nutrition services (8,9). So, simultaneously engaging in strategic planning and coordinated action to maintain essential health service delivery and mitigating the risk of system collapse is necessary (10). Also, given the high burden of maternal and neonatal mortality in sub-Saharan Africa, there is an urgent need for innovative strategies to prevent the deterioration of maternal and child outcomes in already strained health systems (2).

The decline in service uptake may be attributable to restricted access to health facilities arising from city lockdowns and curfews imposed by the government, where pregnant women and their companions fear harassment and arrest. In addition, fear of contracting COVID-19 infection may keep many women from attending reproductive health services (8, 11).

Further, government directives and hospital policies limit the number of family members accompanying expecting women to hospitals and separation of COVID-19-positive women from their newborns, instead of room-in as usual for these mothers and newborns to prevent contagion (12).

Evidence shows that separation disrupts the skin-to-skin care and breastfeeding process and is associated with added physiologic stress to both the mother and infant (13, 14). However, there is limited data regarding the overall impact of COVID-19 on the maternal, newborn, and child health care system at the study area as well as at the national level. Therefore, the current study is aimed to fill the gap by assessing trajectories and lessons learned on reproductive maternal child health services from the COVID-19 pandemic at public health facilities of Addis Ababa, Ethiopia.

## Objective

To assess the impact of the COVID 19 pandemic on the pattern of reproductive, maternal, child health services and explore stakeholders' lessons learned at the public health facilities of Addis Ababa, Ethiopia

## Methods

An institution-based cross-sectional health facility assessment and phenomenological study qualitative

method were employed. The study populations were all the public health facilities that provide RMNCH services in Addis Ababa. In addition, for the qualitative component, purposively selected facility directors, RMNCH service providers, policymakers, RMNCH service recipients/clients of the selected health facilities were available during the study period.

The study considers the months from March to Nov 2019 as a pre-COVID 19 in Ethiopia and the same months of the COVID 19 period after the confirmation of COVID 19 case in Ethiopia March to Nov 2020 to track intuitional RMNCH performance on vaccine coverage, Under 5 OPD cases, PMTCT, ANC1, ANC 4, institutional delivery, Delivery (CS), PNC, Safe abortion, and Post-abortion care and vaccine coverage.

Purposively selected 9 policymakers, 15 providers, 10 facility directors, and 15 clients and randomly selected 25 public health facilities for a quantitative section from five sub-cities of Addis Ababa namely Arada, Nisfasilk, Yeka, Kolfe, and Bole sub-cities were included for the current study. Open-Code 4.03 software was used to code and categorize major findings from the respondents. Quantitative data were entered and analyzed using SPSS version 23.

## Result

80% of the studied facilities were health centers and 52% were established before the 2000 Ethiopian calendar and 24 (96%) have COVID-19 isolation units.

Child vaccination like BCG, Polio 0, Penta3 services showed a decline in the first three months of the pandemic from March to May 2020 compared with the same months of the pre-COVID 19 era in 2019 by 31.9%,4.8%, and 28.2% respectively. In the same fashion the overall nine-month before and during the COVID-19 pandemic the vaccine coverage of the study setting on BCG and polio-0 decreased has by 12.9%, and by 15.4% respectively compared to the same duration of the period before the occurrence of the pandemic. Also, Polio-3 has decreased by 4.3%. Further, vitamin-A and measles doses which are administered at fifteen months were decreased by 11.4% and 3.8% respectively compared with March to November 2019. (Fig 1)

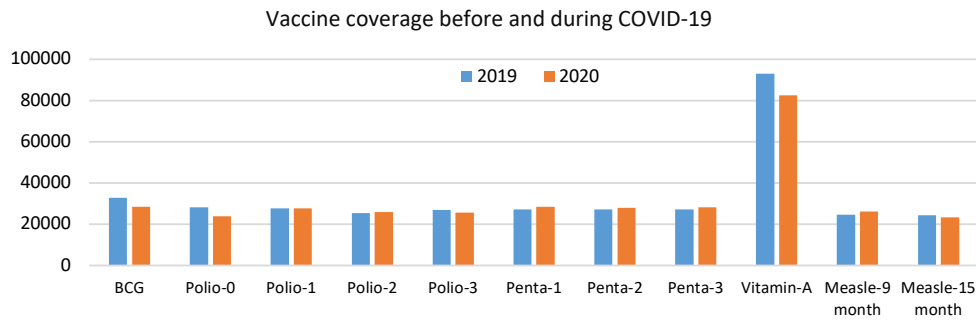


Figure 1, vaccine-related performance of selected health facilities in Addis Ababa, Ethiopia. March to November 2019 and March to November 2020

The study identified a reduction in MCH service uptake as shown below. under-five out-patient service was decreased by half (48.3%) as compared with the nine-month (March to November 2019) before the pandemic. safe abortion and post-abortion care

services were also decreased during the pandemic season by 24.4% and 16.1% respectively. (Fig 2) On the other hand, the maternal, infant, and neonatal death reports were lower than the Pre COVID 19 months.

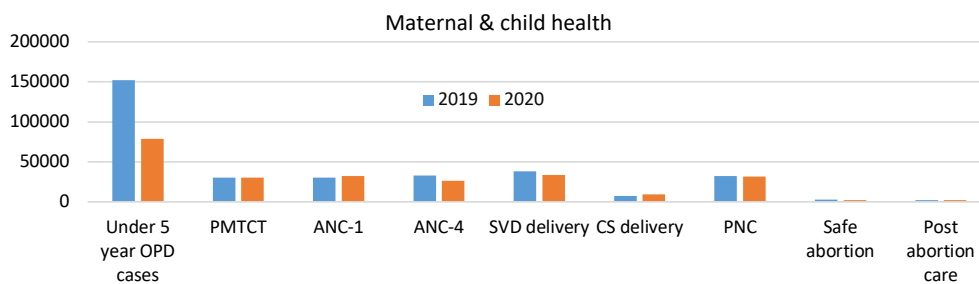


Figure 2: MCH related performance of selected health facilities in Addis Ababa, Ethiopia. March to November 2019 and March to November 2020

The majority of Interviewed respondents who were service recipients, providers, and policymakers had been scared, terrified and so frustrated while they heard about COVID 19 at the early stages of the pandemic. Providers were so curious about their exposure and being prone to the virus because of their nature of work. The actions taken by the government were serious, timely, and put everyone to be alert every time and it was difficult not to think of COVID 19 in daily life.

The qualitative findings reveal main reasons for the decline in RMNCH services uptake included service interruptions, lockdowns, clients’ fear of acquiring the infection, providers as a risk of COVID 19 infection, and the stay-home messages misinterpretation by patients who follow-up at health facilities.

On the other hand, the deaths happening every day in the world which was tracked and reported at every news time was shocking and had made everyone panic.

A Participant expressed the situation as follows

**“the case and death reports on air during the news in all the broadcast was more frustrating than informative; this might be intentional to let people take their measures but it has let us be overstressed.”**

The qualitative finding prevails that the pandemic has impacted the feeling of providers; it has challenged women in seeking MCH services, hindered providers from practicing CRC, created service interruptions, challenged quality of RMNCH service with scheduling

of follow-ups for ANC and child vaccination, exacerbated medication and supply problems. a provider from hospital “ *I remember in the first two weeks; a client appears with respiratory distress. She was managed as a COVID patient. The test result wasn’t known on time. We couldn’t treat her with a mechanical ventilator without her result. She had an obstetric complication. She passed away on waiting for the result. If there wasn’t COVID 19, she would be directed in ICU and not died.*”

On the other hand, the pandemic was an opportunity to obtain lessons and improve practices. Some were but not limited to improving disease prevention, creating a chance to be exposed in epidemic response team, sticking to infection prevention practices, strengthened support to solve infrastructure and supply issues of health facilities like washing and sanitary, support of top managers, community mobilization and efficient use of a resource, technology use for reporting and meetings using social media and virtual methods.

**Conclusion and recommendation:** COVID-19 had a significant negative impact on antepartum and intrapartum care use, vaccine coverage, under-five outpatient service deliveries activities.

The pandemic has brought challenges and opportunities to the health system that needs a robust infrastructure and resources ready to be ahead. Mitigation plans for service continuity and proper communications to address messages by responsible bodies are crucial.

## References

1. Worldometer, COVID-19 Coronavirus pandemic, Last updated: December 18, 2020, 07:26
2. Rachel Wangari Kimani, Rose Maina, Constance Shumba and Sheila Shaibu, Maternal and newborn care during the COVID-19 pandemic in Kenya: recontextualising the community midwifery model, Human Resources for Health (2020) 18:75 <https://doi.org/10.1186/s12960-020-00518-3>
3. MacIntyre CR, Chughtai AA. A rapid systematic review of the efficacy of face masks and respirators against coronaviruses and other respiratory transmissible viruses for the community, healthcare workers and sick patients. *Int J Nurs Stud.* 2020;103629.
4. Nacoti M, Ciocca A, Giupponi A, Brambillasca P, Lussana F, Pisano M, et al. At the epicenter of the Covid-19 pandemic and humanitarian crises in Italy: changing perspectives on preparation and mitigation. *NEJM Catalyst Innov Care Del.* 2020;1(2).
5. Bahl P, Doolan C, de Silva C, Chughtai AA, Bourouiba L, MacIntyre CR. Airborne or droplet precautions for health workers treating coronavirus disease 2019? *J Infect Dis.* 2020. <https://doi.org/10.1093/infdis/jiaa189>.
6. Ministry of Health. Concern over Covid-19 infections within health care facilities Nairobi: Ministry of Health Kenya; 2020. <https://www.health.go.ke/concern-over-covid-19-infections-within-health-care-facilities-nairobisaturday-june-27-2020/>.
7. United Nations Population Fund. Reproductive, maternal, newborn and adolescent health during pandemics. United Nations Population Fund; 2020. [https://reliefweb.int/sites/reliefweb.int/files/resources/en-rmnh-web\\_2.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/en-rmnh-web_2.pdf).
8. Elston, JWT, Cartwright, C, Ndumbi, P, & Wright, J. (2017). The health impact of the 2014–15 Ebola outbreak. *Public Health*, 143, 60-70.
9. Parpia, AS, Ndeffo-Mbah, ML, Wenzel, NS, & Galvani, AP. (2016). Effects of response to 2014–2015 Ebola outbreak on deaths from malaria, HIV/AIDS, and tuberculosis, West Africa. *Emerging infectious diseases*, 22(3), 433.
10. WHO. Covid-19: Operational Guidance for Maintaining Essential Health Services During an Outbreak. [https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/jmo\\_who\\_strategicplanning-operationalguidance\\_web11](https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/jmo_who_strategicplanning-operationalguidance_web11)
11. Delamou A, El Ayadi AM, Sidibe S, Delvaux T, Camara BS, Sandouno SD, et al. Effect of Ebola virus disease on maternal and child health services in Guinea: a retrospective observational cohort study. *Lancet Glob Health.* 2017;5(4):e448–e57.
12. Ministry of Health. A Kenya practical guide for continuity of reproductive, maternal, newborn and family planning care and services in the background of COVID-19 pandemic. 2020. <https://www.health.go.ke/wpcontent/uploads/2020/04/KENYA-COVID19-RMNH>
13. Moore ER, Bergman N, Anderson GC, Medley N. Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Syst Rev.* 2016;11(11):CD003519-CD <https://doi.org/10.1002/14651858.CD003519.pub4>.
14. Widström AM, Brimdyr K, Svensson K, Cadwell K, Nissen E. Skin-to-skin contact the first hour after birth, underlying implications and clinical practice. *Acta paediatrica (Oslo, Norway: 1992).* 2019;108(7):1192-20410.1111/apa.14754.

# Introduction of a Modified WHO Safe Childbirth Checklist in Health Centers of Ethiopia: A Pre-and-Post Introduction Study



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## ABSTRACT



**Background:** Checklists are useful tools to remember steps of complex childbirth processes. The WHO safe childbirth checklist is a tool used to improve the quality of care for women giving birth. The checklist was modified by the Ministry of Health of Ethiopia and was introduced to selected health centers in the country by the USAID Transform: Primary Health Care Activity.



**Methods:** A pre and post-intervention study design with prospective data collection were employed. The availability of essential childbirth supplies and adherence of health care providers to essential birth practices were compared for the pre and post-intervention periods. The pre and post-intervention assessments were conducted in 247 and 187 health centers respectively.



**Results:** A statistically significant improvement from 63.6% pre intervention to 83.5% post intervention was observed in the availability of essential childbirth supplies,  $t(389.7) = -7.1, p=0.000$ . Improvements in adherence of health care providers to essential childbirth practices were observed with the highest being at pause point three (26.2%,  $t(306.3) = -10.6, p=0.000$ ) followed by pause point four (21.1%,  $t(282.5) = -8.0, p=0.000$ ), and pause point two (18.2%,  $t(310.8) = -9.7, p=0.000$ ). The least and statistically non-significant improvement was observed at pause point one (3.3%,  $t(432.0) = -1.5, p=0.131$ ).



**Conclusion:** Improvement in the availability of essential childbirth supplies and adherence of health care providers towards essential childbirth practices was observed after the introduction of a modified WHO safe childbirth checklist. Scale-up of the use of the checklist is recommended.



**Keywords:** Safe Childbirth Checklist, Essential Childbirth Supplies, Essential Childbirth Practices.

## Background

Globally, maternal mortality is unacceptably high with most of the deaths being potentially preventable and occurring in low- and middle-income countries (1). Around 75% of all maternal deaths are due to severe bleeding, infections, high blood pressure during pregnancy, complications from delivery, and unsafe abortions (2).

Childbirth is a complex process, and it is essential to remember to provide everything that is needed to ensure both the mother and newborn receive the safest care possible. Checklists are essential tools

that organize such complex and important processes (3, 4). The World Health Organization (WHO) safe childbirth checklist (SCC) is one of these tools, used to improve the quality of care provided to women during childbirth and in the hours afterward. It is a well-organized list of evidence-based essential birth practices (EBPs) which focus on top causes of maternal deaths, intrapartum-related stillbirths, and early neonatal deaths (5).

In Namibia, the use of the WHO SCC showed an improvement in average EBPs delivered from 68% to 95% (6). In Rajasthan, India, the use of the WHO SCC



increased providers' performance of best practices, reflecting improvements in the quality of facility childbirth care for women and newborns (7). In Uttar Pradesh, India, birth attendants' adherence to EBPs was higher in facilities that used the coaching-based WHO SCC program than in those that did not (8). In Aceh, Indonesia, the use of the WHO SCC improved the quality of maternal care and overall birth experiences (9).

The WHO SCC was modified by the Ministry of Health (MoH) of Ethiopia and the USAID Transform: Primary Health Care Activity has introduced it to its intervention health centers. As it is a new recommendation, this study is carried out to generate local evidence to guide the potential further use of the checklist.

## Objectives

The objective of this study was to assess the pre and post-intervention changes in the availability of essential childbirth supplies and adherence of health care providers to essential childbirth practices.

## Methods

**Setting:** The assessment was conducted in health centers within four regions of the country (Amhara, Oromia, SNPP, and Tigray) where USAID Transform: Primary Health Care Activity has been operating since January 2017.

**Design:** A health facility-based pre and post-intervention study design with prospective data collection was employed.

**Intervention:** One cluster per region was selected purposively as utilization of WHO SCC had not yet started at health centers of the selected clusters. A similar structured assessment tool was used for both pre and post-intervention assessments where data on the availability of essential childbirth supplies and adherence of health care providers to EBPs were collected. In the modified checklist, some items of the original WHO SCC were removed while some were added, (table 1). In September 2017, an orientation on the modified WHO SCC was conducted for data collectors and mentors (one regional officer per region and three to five cluster officers per cluster, who are master of public health degree holders with midwifery, nursing, or public health officer backgrounds) and

print outs of the checklist were distributed to the clusters. The cluster staff then conducted onsite orientations to health care providers, distributed the checklists, and collected pre-intervention assessment data. The pre-intervention data were collected by interviewing one health care provider per facility and directly observing the facility for the presence of essential childbirth supplies. Regular, one-day mentoring visits were carried out every three months. The mentors used orientation materials prepared for the purpose, the WHO SCC implementation guide, and copies of the checklist to practice, discuss and fix technical and supply-related gaps. The post-intervention assessment was conducted a year later using the same assessment tool and the same way of data collection as in the pre-intervention. Adherence to practices was assessed through interviews of providers by asking whether they carried out the EBPs mentioned in the modified WHO SCC or not.

## Results and Discussion

Data were collected from 247 and 187 health centers during the pre and post-intervention periods, respectively. A Welch t-test was run to determine if there were differences in adherence of health care providers to EBPs between pre and post interventions and an independent-samples t-test was run for variables that met the homogeneity assumptions.

A statistically significant improvement from a pre-intervention score of 63.6% to 83.5% post-intervention was observed in the availability of essential childbirth supplies in selected health centers of Ethiopia one year after the introduction of the modified WHO SCC,  $t(389.7) = -7.1, p=0.000$  (table 2). The changes in the availability of essential childbirth supplies observed in this study are similar to the findings of another study conducted in Uttar Pradesh, India which is a comparable setup with where this study was conducted (11, 12).

A statistically significant improvement in the adherence of health care providers to EBPs was observed post-intervention which was one year after the introduction of the modified WHO SCC. The highest level of improvement was observed at pause point three (26.2%,  $t(306.3) = -10.6, p=0.000$ ) followed by pause point four (21.1%,  $t(282.5) = -8.0, p=0.000$ ) and pause point two (18.2%,  $t(310.8) = -9.7, p=0.000$ ). The least and statistically non-significant



improvement was observed at pause point one (3.3%,  $t(432.0) = -1.5, p=0.131$ ) (table 3). The magnitude of increment in adherence of health care providers to EBPs from the pre to post-intervention was found to be similar with findings from studies at other similar settings of the world (13-16).

## Conclusion and Recommendation

Improvements in the availability of essential childbirth supplies at labor, delivery, and postnatal care units and adherence of health care providers towards EBPs were observed a year after the introduction of a modified version of the WHO SCC at health centers of Ethiopia. Scale-up of the use of the modified WHO SCC is recommended.

## References

1. Alkema L, Chou D, Hogan D, et al. Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Maternal Mortality Estimation Inter-Agency Group. *The Lancet*. 2016;387(10017):462-74.
2. Say L, Chou D, Gemmill A, et al. Global causes of maternal death: a WHO systematic analysis. *The Lancet Global Health*. 2014;2(6):e323-e333.
3. Lee SH, Nurmatov UB, Nwaru BI, Mukherjee M, Grant L, Pagliari C. Effectiveness of mHealth interventions for maternal, newborn and child health in low- and middle-income countries: Systematic review and meta-analysis. *Journal of global health*. 2016;6(1).
4. Spector JM, Agrawal P, Kodkany B, et al. Improving quality of care for maternal and newborn health: prospective pilot study of the WHO safe childbirth checklist program. *PloS one*. 2012;7(5).
5. Funk KM, Axelrod S. A Review of: "Gawande, A. (2009). *The Checklist Manifesto—How to Get Things Right*." New York: Metropolitan Books, 209 pp., Taylor & Francis; 2011.
6. Kabongo L, Gass J, Kivondo B, et al. Implementing the WHO Safe Childbirth Checklist: lessons learnt on a quality improvement initiative to improve mother and newborn care at Gobabis District Hospital, Namibia. *BMJ Open Quality* 2017;6: e000145.
7. S. Kumar, V. Yadav, S. Balasubramaniam, et al. Effectiveness of the WHO SCC on improving adherence to essential practices during childbirth, in resource-constrained settings. *BMC Pregnancy and Childbirth* (2016) 16:345.
8. Semrau KE, Hirschhorn LR, Marx Delaney M, et al.; BetterBirth Trial Group. Outcomes of a coaching-based WHO safe childbirth checklist program in India. *N Engl J Med*. 2017 Dec;377(24):231324.
9. Siobhan Doria, Farah Diba, Suryane S. Susanti, Sebastian Vollmer, and Ida G. Monfared. Mothers' experiences of the quality of care and potential benefits of implementing the WHO safe childbirth checklist: a case study of Aceh Indonesia. *BMC Pregnancy and Childbirth* (2019) 19:461.
10. Tuyishime E, Park PH, Rouleau D, Livingston P, Banguti PR, Wong R. Implementing the World Health Organization safe childbirth checklist in a district Hospital in Rwanda: a pre- and post-intervention study. *Maternal health, neonatology, and perinatology*. 2018;4(1):7.
11. G. Galvin, L. R. Hirschhorn, M. Shaikh, et al. Availability of Safe Childbirth Supplies in 284 Facilities in Uttar Pradesh, India *Maternal and Child Health Journal* (2019) 23:240-249.
12. Jenny J. Maisonneuve, Katherine E. A. Semrau, Pinki Maji, et al. Effectiveness of a WHO Safe Childbirth Checklist Coaching-based intervention on the availability of Essential Birth Supplies in Uttar Pradesh, India. *International Journal for Quality in Health Care*, 2018, 30(10), 769-777.
13. H. M. Senanayake, M. Patabendige, R. Ramachandran. Experience with a context-specific modified WHO safe childbirth checklist at two tertiary care settings in Sri Lanka. *BMC Pregnancy and Childbirth* 2018, 18: 411.
14. M. Patabendige, H. Senanayake. Implementation of the WHO safe childbirth checklist program at a tertiary care setting in Sri Lanka: a developing country experience. *BMC Pregnancy and Childbirth* 2015, 15:12.
15. M. M. Delaney, P. Maji, T. Kalita, et al. Improving Adherence to Essential Birth Practices Using the WHO Safe Childbirth Checklist with Peer Coaching: Experience From 60 Public Health Facilities in Uttar Pradesh, India. *Global Health: Science and Practice* 2017;5(2):217-31.
16. S. Albolino, G. Dagliana, D. Illiano, et al. Safety and quality in maternal and neonatal care: the introduction of the modified WHO Safe Childbirth Checklist. *Ergonomics*, 61:1, 185-193.

## Annex

Table 1: List of items removed and added to the original WHO SCC in the development of the modified, Ethiopian version checklist.

Pause points (PP)	Items removed	Items added
PP-1	-----	“Quick check performed?” “Antiretroviral medicine?”
PP-2	-----	“Antiretroviral medicine?”
PP-3	“Is mother bleeding abnormally?” “Does the mother need to start, ✓ Antibiotics? ✓ Magnesium sulfate and antihypertensive?”	Components of essential newborn care. List of both maternal and newborn danger signs.
PP-4	“Confirm stay at the facility for 24 hours after delivery” “Is mother’s blood pressure normal?” “Is baby feeding well?”	“Refer mother to three postnatal visits (6-24 hours, 3 days, 7 days) and an immunization visit at 6 weeks.”

Table 2: Pre and post-modified WHO SCC intervention changes on the availability of essential childbirth supplies at selected health centers of USAID Transform: Primary Health Care Activity, 2017-2018.

	Before			After			95% CI for Mean Difference	t	df	P
	M	SD	n	M	SD	N				
Availability of necessary supplies in labor, delivery, and postnatal rooms	63.6	33.0	247	83.5	22.5	150	-25.4, -14.4	-7.1*	389.7	0.000
Oxytocin	78.5	41.1	247	96.2	9.2	187	-23, -12.3	-6.5*	278.3	0.000
Intravenous fluids	76.1	42.7	247	96.6	6.3	187	-25.9, -15.0	-7.4*	260.2	0.000
Antibiotics	65.6	47.6	247	91.9	11.0	187	-32.5, -20.1	-8.4*	280.2	0.000
Magnesium sulfate	67.6	46.9	247	93.1	9.9	187	-31.6, -19.5	-8.3*	274.4	0.000
Antiretroviral drugs	50.6	50.1	247	80.1	19.4	187	-36.3, -22.6	-8.4*	335.6	0.000
Vitamin K	34.4	47.6	247	85.2	20.9	187	-57.4, -44.1	15.0*	356.2	0.000
Tetracycline eye ointment	59.1	49.3	247	88.9	13.7	187	-36.3, -23.3	-9.1*	295.0	0.000
Bacillus Calmette-Guerin vaccine	57.1	49.6	247	90.2	13.7	187	-39.7, -26.6	10.0*	294.4	0.000
Oral Polio Vaccine	72.5	44.8	247	94.4	8.3	187	-27.7, -16.2	-7.5*	268.4	0.000
Gloves	74.9	43.4	247	95.5	7.2	187	-26.1, -15.0	-7.3*	263.9	0.000
Syringes	77.3	42.0	247	95.7	6.8	187	-23.7, -13.0	-6.8*	263.0	0.000
Soap	63.6	48.2	247	92.3	11.2	187	-35, -22.5	-9.0*	280.6	0.000
Water	58.7	49.3	247	90.9	12.8	187	-38.6, -25.8	-9.8*	288.6	0.000
Alcohol hand rub	54.7	49.9	247	87.6	16.1	187	-39.6, -26.3	-9.7*	310.7	0.000

\* p < .05, M=mean, SD=standard deviation, CI=Confidence interval, df=degree of freedom, n=preintervention sample size, N=postintervention sample size.

Table 3: Pre and post-modified WHO SCC intervention adherence of health care providers to essential birth practices at selected health centers of USAID Transform: Primary Health Care Activity, 2017-2018.

	Before			After			95% CI for Mean Difference	t	df	p
	M	SD	n	M	SD	N				
<b>Pause point 1</b>	<b>70.8</b>	<b>22.8</b>	<b>247</b>	<b>74.1</b>	<b>23.4</b>	<b>187</b>	<b>-7.8, 1.0</b>	<b>-1.5</b>	<b>432.0</b>	<b>0.131</b>
Quick checks for danger signs performed before referral/admission of mothers	75.2	42.8	247	73.3	43.0	187	-6.3, 10	0.4	432.0	0.658
Functional referral linkages and feedback mechanisms for both mother and newborn	39.2	47.8	247	51.2	49.6	187	-21.3, -2.7	-2.5*	392.7	0.012
Partograph being used for all laboring mothers at the facility	81.3	38.1	247	82.5	37.1	187	-8.3, 6.0	-0.3	432.0	0.753
HIV testing and treatment services for the mother and baby both during antenatal care and delivery	87.4	33.2	247	89.6	30.3	187	-8.3, 3.9	-0.7	432.0	0.472
<b>Pause point 2</b>	<b>71.2</b>	<b>27.5</b>	<b>247</b>	<b>89.4</b>	<b>8.9</b>	<b>187</b>	<b>-21.9, -14.5</b>	<b>-9.7*</b>	<b>310.8</b>	<b>0.000</b>
Relatives are encouraged to accompany laboring mothers during labor and delivery	92.5	26.0	247	98.1	12.6	187	-9.3, -1.8	-2.9*	374.8	0.004
Essential supplies for the mother kept at bed side before delivery	63.0	44.9	247	85.9	12.6	187	-28.8, -17.0	-7.6*	295.4	0.000
Essential supplies for the baby kept at bed side before delivery	58.0	40.3	247	84.1	12.6	187	-31.5, -20.8	-9.6*	306.8	0.000
<b>Pause point 3</b>	<b>61.2</b>	<b>36.7</b>	<b>247</b>	<b>87.4</b>	<b>11.4</b>	<b>187</b>	<b>-31.1, -21.3</b>	<b>10.6*</b>	<b>306.3</b>	<b>0.000</b>
Placing baby in skin-to-skin contact	71.1	45.3	247	92.3	9.8	187	-27.1, -15.4	-7.1*	275.7	0.000
Breast feeding initiated within one hour of birth if mother and child are well	71.6	45.1	247	92.7	9.3	187	-26.9, -15.3	-7.2*	273.1	0.000
Vitamin K given 1 mg intramuscular on anterior mid-thigh	43.1	49.5	247	77.8	21.0	187	-41.5, -27.7	-9.9*	350.7	0.000
Tetracycline eye ointment given in both eyes	57.0	49.5	247	87.2	14.9	187	-36.8, -23.6	-9.1*	302.5	0.000
Baby weighted and recorded	67.5	46.8	247	89.8	11.5	187	-28.4, -16.2	-7.2*	284.1	0.000
Bacillus Calmette-Guerin and oral polio vaccines given before discharge	57.0	49.5	247	84.7	15.5	187	-34.4, -21.2	-8.3*	307.3	0.000
<b>Pause point 4</b>	<b>69.9</b>	<b>40.2</b>	<b>247</b>	<b>91.0</b>	<b>9.6</b>	<b>187</b>	<b>-26.3, -15.9</b>	<b>-8.0*</b>	<b>282.5</b>	<b>0.000</b>
Counselled on and offered family planning	71.8	44.9	247	92.3	9.4	187	-26.2, -14.7	-7.0*	273.9	0.000
Exclusive breast feeding for 6 months	75.5	42.9	247	93.2	8.4	187	-23.2, -12.2	-6.3*	270.4	0.000
Immunization	69.4	46.0	247	91.7	10.3	187	-28.3, -16.4	-7.4*	278.1	0.000
Hygiene	66.9	46.9	247	90.3	11.4	187	-29.5, -17.3	-7.5*	283.5	0.000
Danger signs in both mother and newborn	71.0	45.2	247	91.3	9.9	187	-26.2, -14.5	-6.8*	276.9	0.000
Need for postnatal care and follow up arranged	64.5	47.7	247	87.1	13.0	187	-28.9, -16.3	-7.1*	293.1	0.000

\* p < .05, M=mean, SD=standard deviation, CI=Confidence interval, df=degree of freedom, n=preintervention sample size, N=postintervention sample size.

# Contributing Barriers to Lost to Follow-up from Antenatal Care Services around Addis Ababa: A Qualitative Study



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## ABSTRACT



**Background:** Problems during pregnancy, childbirth, and postpartum are the major contributors to maternal and perinatal morbidity and mortality. Focused antenatal care provides basic services for pregnant women to reduce morbidity and mortality. In Ethiopia, there is a significant loss to follow-up from antenatal care services. This study aims to explore contributing barriers to the lost-to-follow-up of pregnant women from antenatal care services around Addis Ababa.



**Methods:** A qualitative method was used where 20 in-depth interviews and three focus group discussions were conducted. A qualitative data analysis software, ATLAS.ti 8, was applied.



**Results:** Inability to deliver essential antenatal care services which occurs primarily due to shortage of the required medical equipment, drugs, and other supplies is a major barrier for sustainable attendance of antenatal care services followed by poor care, respect, and receptiveness of service providers. Lack and cost of transport, as well as partners' approval and support, were also claimed to be part of the major barriers. Community culture and previous maternal experiences as well as maternal socio-demographic factors such as maternal age at the time of pregnancy and educational status of mothers were also reported as barriers to seeking and completing antenatal care services.



**Conclusions:** Both demand and supply-side barriers play a significant role in the loss-to-follow-up from antenatal care services. Availing essential antenatal care services, closer to the community by improving the infrastructure, health workforce, and supply chain system is recommended.



**Keywords:** ANC, lost to follow up from ANC, ANC defaulter, ANC dropout

## Introduction

Globally, every year, 303,000 women die from preventable causes related to pregnancy and childbirth. Additionally, 2.6 million stillbirths and 2.7 million newborn deaths occur annually. Antenatal care (ANC) is crucial for the prevention of maternal and newborn deaths and stillbirths. Currently, in the world, 86% of pregnant women access at least one ANC with skilled providers during pregnancy and 78% deliver with the assistance of skilled birth attendants (1).

The maternal mortality ratio of Ethiopia is 401/100,000 live births with 14,000 annual maternal deaths, almost all of which are preventable (2). The most

common causes of maternal death in the country are hemorrhage, preeclampsia or eclampsia, sepsis, and prolonged or obstructed labor (3). The ANC-1 coverage in the country is 74% and ANC-4+ is 43% showing a huge gap (31%) between first and fourth ANC visits (4).

The standard of services rendered in the country during ANC visits was also found to be low as evidenced by low early ANC initiation (20%) and low coverage of essential ANC services like blood pressure measurement, urine and blood tests (55.8%), and iron supplementation (42%) (1, 5, 6).

The proportion of health facilities in the country that possess blood pressure measurement apparatus is 59%; the capacity for syphilis testing is available in 42% of health facilities, 27% of health facilities provide HIV testing, 20% of health facilities for hemoglobin determination, 33% for blood glucose determination, and 46% for urine testing; iron supplements and tetanus toxoid vaccines are available in 61% and 65% of facilities, respectively (6).

In the Debreworkos town of north-western Ethiopia, the proportion of dropouts from the maternity continuum of care was found to be 32.2%. The major contributing variables associated with the dropouts were having no exposure to media, unplanned pregnancies, and having less than four ANC visits (7).

In the Oromia region including Finfinne special zone, recent administrative reports showed a significant loss to follow-up between ANC-1 to ANC-4 with a paucity of evidence on contributing barriers for the loss to follow-up. Hence, it is worth looking into the major gaps in ANC follow-up to devise possible cost-effective and high-impact interventions that improve the lost-to-follow-up from ANC services.

## Objective

This study aims to explore the potential contributing barriers for loss to follow-up from ANC services and solutions to mitigate those barriers.

## Methods

**Design:** qualitative study design was employed.

**Setting and period:** The study was conducted in villages around Addis Ababa. The study was conducted in July 2020.

**Sample size and sampling method:** The zonal health department, one woreda in the zone, two health centers in the selected woreda, and all health posts within the catchment of those selected two health centers were purposefully selected based on their high rates of loss to follow up from ANC based on administrative reports of the health centers. Twenty IDIs were conducted where the participants were a maternal and child health (MCH) focal person in the zonal health department (ZHD), an MCH coordinator of the woreda health office (WrHO), head/deputy

heads + MCH heads + a midwife per the two health centers, and one HEW from each of the health posts (HP). Three FGDs were conducted consisting of six to eight participants per FGD. The three FGD groups were mothers who gave birth within the past 12 months and had at least four ANC visits during the index pregnancy (eight mothers), mothers who gave birth within the past 12 months and were lost to follow up from ANC during the index pregnancy (six mothers), and community volunteers/HDAs (eight HDAs). The final sample sizes of both IDIs and FGDs were also determined based on the level of saturation of the information required.

**Data collection:** An IDI guide was developed and administered to health managers and service providers. Two different FGD guides were developed, and one was used to facilitate the FGDs of the two categories of women and the other guide to facilitate FGD of the HDAs. Trained data collectors who are Master of Public Health graduates with relevant health backgrounds conducted both the IDIs and FGDs. Two people facilitated each of the IDIs and FGDs. Voice recorders were used during both the IDIs and FGDs and both were conducted using the local language, Afan Oromo. Transcription and translation of the IDIs and FGDs were conducted by a consultant who has ample experience in transcription and translation of IDIs and FGDs and is fluent in the local language used to conduct the IDIs and FGDs.

**Data analysis:** Analysis of the study was conducted using thematic analysis through qualitative data analysis software. ATLAS.ti 8 software was used to code and categorize the transcription. The first transcripts were used to frame the coding structures. Two research team members independently coded all transcripts then met and agreed on the coding structures and discussed the emerging themes. The identified contributing barriers for defaulting from ANC are summarized under two themes, demand and supply-side barriers. Demand-side barriers are individual, household, or community characteristics that influence the demand for ANC services. Supply-side barriers are those characteristics of the health system that exist beyond the control of potential health system users, including but not limited to health facilities, equipment, drugs, finances, and health workers.

**Ethical consideration:** Ethical clearance was granted from the John Snow Incorporated (JSI) institutional review board (IRB), IRB REFERENCE: IRB # 20-16 E, and from Oromia regional health bureau. IDI and FGD participants have read information sheets and signed informed consent. Confidentiality was respected accordingly. We also confirm that all methods were carried out per relevant guidelines and regulations.

## Results and Discussion

The results of this assessment showed that there are demand and supply-side barriers influencing attendance of ANC. Demand-side barriers that affect the utilization of ANC services by pregnant women include socio-demographic and obstetric barriers such as age at which the women get pregnant, intendedness of pregnancies, individual, family, and community-related barriers including workload on women, lack of partners' support, no autonomy for women in decision making, and previous individual and community experiences. Additionally, poor access to health facilities, particularly health centers, due to lack of all-weather roads, lack of transport services, and cost of transport were mentioned as barriers influencing utilization. The results of a systemic review on factors influencing the use of prenatal care also indicated similar findings (8). Another study conducted in Somali region of Ethiopia also indicated that socio-demographic, economic status, cultural beliefs, past experiences, level of awareness, attitude toward the service, challenges in accessing transportation, and shortage of supplies were identified as major barriers for ANC service utilization (9).

We identified supply-side barriers also for loss to follow up from ANC services. Some of these are health workers related barriers in which lack of the required number and type of service providers in health facilities results in an appointment for pregnant mothers for another day. On occasions where there are shortages of midwives in health facilities, the overload of tasks forces them to re-schedule visiting mothers-to-be for another day and this means some of the women may not come back to get an ANC service. Moreover, according to this assessment, health workers' lack of respect and perceptiveness were also among the major barriers for the consistent utilization of ANC services. Additionally, health workers' absenteeism

and turnover were some of the issues raised during the IDIs and FGDs. Lack of adequate numbers of laboratory technicians in health facilities was also raised repeatedly as a barrier to get the required quality ANC service. A qualitative study conducted in the Somali regional state of Eastern Ethiopia and in the North West of Ethiopia reflected similar results (9,10).

The findings of this assessment also indicated that shortage of the required medical equipment, drugs, and other supplies were other key barriers to delivery of ANC services and hence loss to follow up. It was reported that there are shortages of some essential drugs like iron and folic acid in health facilities which leads to the rescheduling of mothers for another day resulting in disappointment of clients and interruption of the service. Additionally, shortages of the required equipment such as blood pressure apparatus and weighing scales were found to be barriers to providing ANC services resulting in disappointment and loss to follow up from ANC services. The bases for the shortages were poor planning on both the parts of managerial and health facility level staff.

This assessment also showed that lack of basic amenities like electricity was a determinant to providing ANC services to clients. It has been claimed by most of the participants that health facilities experience shortages in electricity or have frequent power interruptions which is a key barrier for providing laboratory services leading to a referral or rescheduling of appointments. This leads to dissatisfaction of clients and interruption of service utilization. Additionally, per the national direction, HEWs must refer mothers to health centers to attend the first and the fourth ANC services as some services are missing at the health post level. Despite this, the referral health facilities are sometimes not able to provide the required services which deter clients from attending the facilities and results in the interruption of the services. Clients also complained about the distance of health facilities and lack of access to and cost of transportation to reach the referral health facilities resulting in interruptions of the service. A similar finding was reported in a qualitative study from Afar regional state which showed that the barriers to health facilities included distance, lack of transportation, sociocultural factors, and disrespectful care (11). A mixed-designed study in



Bahir Dar Zuria Woreda also indicated similar findings that the socio-culture of the community, attitudes, experience, and perception of the existing services and service provisions were also determinants of ANC dropout (12).

Efficient management and provision of support are key elements to providing quality health services. Based on this assessment, the support and linkage between facilities and the management were found to be weak, affecting the timely supply of the required essential supplies, and enhancement of knowledge and skills of service providers. A qualitative study conducted in the Jimma zone of South West Ethiopia reflected that the linkage between midwives and HEWs was found to be poor because of resource limitations and poor infrastructure (13).

### **Conclusion and Recommendation**

The demand side barriers are age, educational status, unwanted pregnancy, preference of sex of service providers, perceived problems on the use of technology, the workload on women, lack of partners' support, community culture and traditions, perception of the benefits of ANC service, and availability and cost of transportation.

The supply-side barriers are shortage of medical equipment, drugs, and other supplies; lack of hospitality and receptiveness, timely service provision, absenteeism from work, and lateness; mothers want to receive services from the same provider over the different sessions of ANC visits, lack

of full package of ANC services, lack of interruption of electric power, shortage of rooms, arrangement of rooms, non-favorable working environments, poor linkage and technical support between the different levels of facilities, and poor consultation among service providers.

Based on the findings of the study, it is recommended that a full package of ANC services be availed closer to the community through improving the infrastructure, equipment, supplies, drugs, and staffing of health posts. Intensify capacity enhancement activities with a focus on a motivated, competent, and compassionate (MCC) health workforce and make MCC part of the periodic performance evaluation of service providers and monitoring activities including integrated supportive supervisions. Deploy the required number and type of service providers in health facilities. Strengthen the supply chain system and linkage of facilities with policy level structures so that they identify major gaps and act timely. Demand for ANC is created through informing the community on the benefits of ANC.

## References

1. Catherine Arseneault, Keely Jordan, Dennis Lee, Girmaye Dinsa, Fatuma Manzi, Tanya Marchant et al. Equity in antenatal care quality: an analysis of 91 national household surveys. *Lancet Glob Health* 2018; 6: 1186-95.
2. Trends in maternal mortality 2000 to 2017: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO.
3. Public health emergency management center (PHEM), Ethiopian public health institute (EPHI). August 2020. National maternal and perinatal death surveillance and response (MPDSR) system annual report. Addis Ababa, Ethiopia.
4. Ethiopian demographic and health survey report, 2019. Central Statistical Agency (CSA) [Ethiopia] and ICF. 2019. *Ethiopia Demographic and Health Survey 2019*. Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF.
5. Central Statistical Agency (CSA) [Ethiopia] and ICF. 2016. *Ethiopia Demographic and Health Survey 2016*. Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF.
6. Ethiopian Public Health Institute (EPHI). 2018. Service Availability and Readiness Assessment (SARA) 2018 Final Report. Addis Ababa, Ethiopia.
7. Nakachew Sewnet Amare, Bilen Mekonnen Araya, Mengistu Melkamu Asaye. Dropout from maternity continuum of care and associated factors among women in Debre Markos town, Northwest Ethiopia. *BioRxiv preprint doi: <https://doi.org/10.1101/620120>*
8. Hajizadeh S, Ramezani Tehrani F, Simbar M, Farzadfar F. Factors Influencing the Use of Prenatal Care: A Systematic Review. *Journal of Midwifery and Reproductive Health*. 2016; 4(1): 544-557.
9. Abdurehman Mohammed, Alula Teklu, Senait Beyene, Abdiwahab Hashi, Zerihun Abebe, Wondimagegn Gezahegn et al. Barriers of Antenatal Care Service Utilization in Somali Regional State Using Social Ecological Model Framework, Eastern Ethiopia, Ethiopia: a Qualitative Study. Preprint doi: 10.21203/rs.2.13486/v1. (Under review at *BMC Pregnancy and Childbirth*).
10. Biruhtesfa Bekele Shiferaw and Lebtsi Maud Modiba. Why do women not use skilled birth attendance service? An explorative qualitative study in the north west Ethiopia. *BMC Pregnancy and Childbirth*. 2020; 20: 633.
11. Ruth Jackson and Assefa Hailemariam. The Role of Health Extension Workers in Linking Pregnant Women With Health Facilities for Delivery in Rural and Pastoralist Areas of Ethiopia. *Ethiop J Health Sci*. 2016 Sep; 26(5): 471-278.
12. Yibeltal Alemu Bekele, Tadesse Ejigu Tafere, Amanu Aragaw Emiru, and Henok Biresaw Netsere. Determinants of antenatal care dropout among mothers who gave birth in the last six months in BAHIR Dar ZURIA WOREDA community; mixed designs. *BMC Health Services Research*. 2020; 20:846.
13. Nicole Bergen, Alzahra Hudani, Shifera Asfaw, Abebe Mamo, Getachew Kiros, Jaameeta Kurji et al. Promoting and delivering antenatal care in rural Jimma Zone, Ethiopia: a qualitative analysis of midwives' perceptions. *BMC Health Services Research*. 2019; 19:719.

# Treatment Outcome of Sick Newborns in Primary Hospitals in Ethiopia



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## ABSTRACT



**Background** The global neonatal mortality rate has decreased by 37%, per 1000 live births, compared with a greater than 50% reduction for mortality rates among children aged 1 to 59 months, since 1990. The main causes of mortality were complications of preterm birth 36%, birth asphyxia 23%, and infections 23%. In Ethiopia, neonatal mortality decreased from 39 to 29 between the 2005 and 2016 EDHS but has remained stable since the 2016 EDHS.



**Methodology:** Transform: Primary Health project is supporting maternal health and child survival interventions in 400 woredas in five regions. A descriptive retrospective facility-based cross-sectional study was conducted to evaluate the outcomes of intervention in NICU (Neonatal Intensive Care Unit) October to December 2020 in 92 PHLs found in the four regions.



**Results:** Sick newborns admitted were 3348, and the three main causes of admission were neonatal sepsis, birth asphyxia, and small babies (preterm and low birth weight), comprising 86% of admission (sepsis 44.8%, birth asphyxia 14.5%, Prematurity 15.7%, and LBW 13.7%). Neonatal mortality was 6.5%, the same Problems contributed to 81.7 % of deaths (sepsis, 33.2%, asphyxia 21.7%, preterm 16.6%, LBW 18.4%) respectively.



**Discussion and conclusion:** Neonatal mortality is lower than the results of most studies done in the country. Admission due to sepsis was high. Prevention, early identification with treatment, and timely referral are important for better outcomes.



**Keywords:** Neonatal Mortality, Preterm, Birth Asphyxia.

## Background

The global neonatal mortality rate has decreased by 37%, from 33 to 21 deaths per 1000 live births, compared with a greater than 50% reduction for mortality rates among children aged 1 to 59 months, since 1990. The number of neonatal deaths declined from 5.0 million in 1990 to 2.4 million in 2019, with 99% occurring in low- and middle-income countries. It amounts to 47% of all child deaths under the age of 5-years, one-third dying on the day of birth, and close to three quarters within the first week of life. The main causes of mortality are complications of preterm birth 36%, intrapartum-related complications (birth asphyxia or lack of breathing at birth) 23%, and infections 23%. Estimated 2-6 million babies were stillborn at 28 weeks or more in 2015.

Every newborn action plan outlines a goal, 10 or fewer, newborn deaths per 1000 live births and stillbirths by 2035. There are specific interventions across the continuum of care (preconception, antenatal, intrapartum, immediate postnatal period, and thereafter). Increased coverage and quality in these interventions could avert 71% of neonatal deaths per year. Most (80%) of this effect is attributable to facility-based care. The maximum benefits would be accrued through integrated delivery and scale-up of both community-based and primary care strategies while clinical care in facilities and transport systems are strengthened.

In Ethiopia, the leading causes of neonatal mortality are preterm complication 26%, intrapartum related 30%, sepsis 18%. Universal Health Service Coverage

(UHC), using the coverage index in Ethiopia is 39%, which is way below global coverage of 64%. Several high-impact child survival interventions are implemented focusing on major causes of under-five mortality. Despite all efforts, neonatal mortality decreased from 39 to 29 between the 2005 and 2016 EDHS but has remained stable since the 2016 EDHS.

**Methodology**

Transform: Primary Health project is supporting health and child survival interventions in 400 woredas found in five regions (Amhara, Oromia, SNNP, Sidama, and Tigray, with 113 PHLs, 1837 HCs, and 9153 HPs. Several capacity enhancement activities like Bemock, use of ultrasound, NICU, IMNCI, ICMNCI, and EPI were implemented. The support starts from preconception, continues during pregnancy (ANC), delivery, and postnatal (PNC) in HPs, HCs, and PHLs. Logistic, and financial support includes purchase distribution of ultrasound, construction, with the furnishing of maternity waiting home, skill lab, and sub-grant.

Doctors and Nurses working in NICU were trained on the standard care and treatment of sick newborns in the teaching hospitals in their respective regions. Project drivers repaired and installed nonfunctional materials, some essential equipment was purchased and distributed.

A descriptive retrospective facility-based study was done to evaluate the outcomes of intervention in NICU, from October to December 2020 in 92 PHLs found in four regions (SNNP with Sidama, Amhara Oromia). Data were collected from the newborn registration book of NICU, including admission cure, referrals, and deaths, and analyzed using excel. Diagnosis of neonatal sepsis was made clinically, and some additional laboratory tests like whole blood count and differentials were done.

**Results**

A total of 3348 sick newborns were admitted in 92 PHLs found in the four regions. The major causes of admission were neonatal sepsis, birth asphyxia preterm, and LBW. As result of treatment was 2598 (77.5%) recovered, 217 (6.5%) died, 336 (10.8%) referred, and 182 (5.3%) were still on treatment during data collection (table 1). From the total admissions 1499 (44.8%) were cases of neonatal sepsis, 484 (14%)

birth asphyxia, 524 (14.5%) premature, 383 (13.7%) were LBW, others (congenital anomalies, MAS, jaundice, birth injury, and anemia) 13.7%. (figure 2). The causes of death were sepsis 33%, asphyxia 22%, prematurity 17%, and others 18% (Figure 3).

Table 1. The outcome of NICU treatment in PHLs

Admission problem	Admitted	Recovered	Died	Referred	On treatment
Sepsis	1499	1216	72	131	66
Asphyxia	484	296	47	53	10
Prematurity	524	398	36	48	26
Low birth weight	383	288	22	44	51
Other	458	400	40	60	29
Total	3348	2598	217	336	182
Percentages		77.5%	6.5%	10%	5.4%

Figure 1. The major causes of neonatal admission, percentage

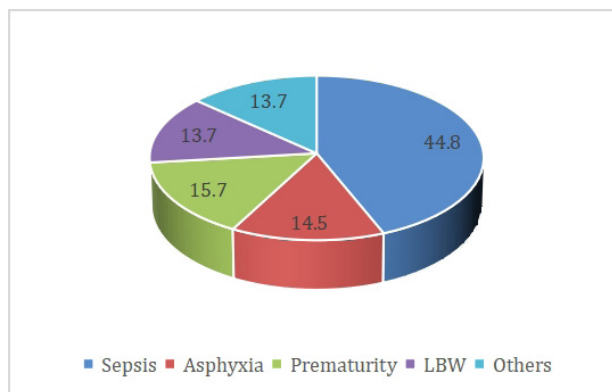
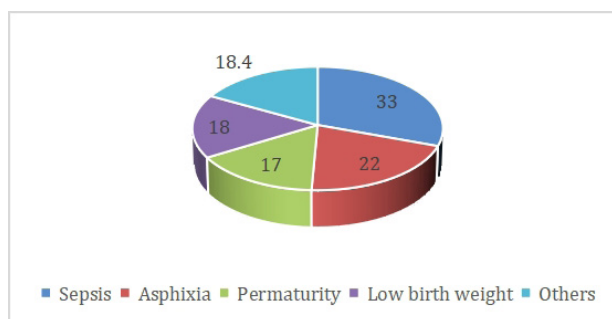


Figure 2. The major causes of neonatal mortality, percentage



**Discussion**

The three main causes of admission were neonatal sepsis, birth asphyxia, and small babies (preterm and LBW), comprising 86% (sepsis 44.8%, birth asphyxia 14.5%, prematurity 15.7%, and LBW 13.7%

respectively). The same problems contribute to 81.7 % of deaths (sepsis, 33.2%, asphyxia 21.7%, preterm 16.6%, LBW 18.4%) respectively. Neonatal mortality (6.5%) is less than most of the studies done in the country, but neonatal sepsis as a problem of admission is higher than in other studies. Neonatal mortality due to sepsis is less than in Dilocho hospital, Dire Dawa (35%), in Misrata, Libya (59%). The complication of preterm as a cause of admission and death is less than the national value and other developing countries. Birth Asphyxia as a cause of admission and death is similar to other findings in the country. According to a study done by Mizantepi university teaching hospital on 1316 NICU admissions, neonatal mortality was 23%, where 31% of them were preterm, 15.3%: LBW, and sepsis: 30%.

The main causes of admission to neonatal care unit in Asmara, Eritrea was sepsis 35.5%, respiratory distress 15.4%, perinatal asphyxia 10%. Major causes of death were respiratory distress syndrome 48%, extremely low birth weight 41%. Neonatal mortality in Misrata, Libya, teaching hospital was 10.9% with major causes being sepsis (59%), congenital malformation (17%), asphyxia (12%), prematurity (29%).

### Limitations

The place of birth of neonates, whether the health facility or home was not captured, and data was collected by our staff, which might create bias.

### Conclusion

Neonatal mortality is lower than most results of most studies done in the country. Admissions and deaths due to sepsis were high. Early identification, treatment, and timely referral are important for better outcomes.

### Recommendation

1. Strengthen infection prevention in the delivery room to decrease morbidity and mortality due to neonatal sepsis. Counsel mothers on home care for newborns.
2. Provide appropriate essential newborn care, during and after delivery
3. Support health workers to fill skill and equipment gaps to quickly resuscitate (first golden minute) neonates with birth asphyxia
4. Expand KMC (Kangaroo Mother Care) for preterm and LBW babies
5. Strengthen ANC (Anti Natal Care), PNC (Post Natal Care) for early treatment and referral

# Effectiveness of Catchment-Based Mentorship Programs on Health Care Providers' Competence: A Mixed-Method Study



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## ABSTRACT



**Background:** In low-income countries, the quality of care and rate of maternal and neonatal mortality is still unacceptable. To improve the quality of care different capacity-building strategies including catchment-based clinical mentorship were designed. However, the effectiveness and experiences of mentorship are poorly known.



**Objectives:** The study aimed to assess the effectiveness of catchment-based mentoring on improving mentees' knowledge and skills and explore the experience of mentorship implementation.



**Methods:** This mixed-method study with a single group pre-post quasi-experimental, and exploratory qualitative study design was conducted from 1 April to 30 May 2021. The knowledge and skills of mentees at three measurement points were compared. Data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 24. The qualitative data were analyzed employing a thematic analysis approach using the ATLAS.ti version 8.4.25 software package.



**Result:** There was a significant improvement in knowledge scores of mentees at pre-mentorship compared with completion of mentorship. The mean difference for knowledge scores in completion of mentorship and pre-mentorship were 25.36 and 25.87 respectively. The mean difference for skill scores in completion of mentorship and pre-mentorship were 26.64 and 27.77, respectively. Similarly, the qualitative data show that the knowledge and skill of mentees were improved after catchment-based mentorship. Shortage of equipment and supplies, unfair payment for the mentor, poor motivation and readiness of the mentees and poor mentor dedication, shortage of infrastructures issues (road, transport access, electric power, water supply), weak and non-functional structural system were some challenges identified.



**Conclusion and recommendation:** The implementation of catchment-based mentorship is an effective strategy in building the capacity of health care providers. Therefore, there is a need to scale up a catchment-based mentorship program in all regions of the country.



**Keywords:** Catchment based mentorship, provider knowledge, skill competence, Ethiopia

## Background

Ethiopia has made remarkable progress in reducing maternal and neonatal morbidities and mortalities in the past two decades; pregnancy-related mortality has decreased from a staggering 871 deaths per 100,000 live births to 412 from 2000 to 2016 and neonatal mortality has also decreased from 49 in 2000 to 30 in

2019. Despite progress, Ethiopia has failed to achieve the HSTP-I maternal mortality target (199/100,000LB); reduce under-five infant and neonatal mortality rates 30, 20, and 10 per 1,000 live births.

Poor quality health care delivery remained a significant challenge, where the competency of health care providers was a central challenge that



resulted in poor satisfaction of service recipients'. To improve the quality of care and significantly reduce mortalities, multiple capacity-building strategies have been implemented in the country so far. Mentorship is among the strategies to build the capacity of health care workers to foster ongoing professional development to yield sustainable clinical care outcomes. Hence, MOH introduced a catchment-based mentorship (CBM) program at the national level to enhance the capacity of health care providers to improve the quality of Reproductive Maternal Neonatal Child Adolescent Youth-Nutrition (RMNCAY-N) service.

Despite the growing evidence that mentoring and coaching interventions can improve the quality of care, little is known about effectively adapting and integrating such interventions into different health system contexts. Therefore, this study aimed at assessing the effectiveness of catchment-based clinical mentorship on health care providers' competence to improve the quality of RMNCAY-N service in Ethiopia.

## Method

A sensitization meeting was held to have a common understanding about Catchment-based mentorship and the mentoring and mentee facilities were selected. Then mentors and mentees are selected according to the mentorship guideline. A baseline assessment was conducted to identify the mentee's knowledge and skill gap and also facility readiness assessment. The mentoring was conducted for five consecutive working days each month for six months. The baseline and mid-term data were collected in October and December 2019 respectively whereas the end line data was collected in March 2020. The mentees' knowledge passing score was 85%, and their skill passing score was 90%.

A mixed-method quantitative study with a single group pre-post, re-test quasi-experimental, and exploratory qualitative study design was conducted from 1 April to 30 May 2021. The knowledge and skills of mentees in the management of basic emergency obstetric and newborn care at three measurement points (before mentorship, after 6 months of mentoring, and at 12 months after completion of CBM) using a self-administered questionnaire and observation checklist. The mentorship intervention

took place in 30 health centers and 70 mentees in four regions. Confidence intervals (CI) and effect size were calculated, and a p-value of  $< 0.05$  was considered as a measure of statistical significance. Data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 24. One way repeated measures ANOVA was used to check the mean score differences in knowledge and skills of mentees

In addition, qualitative data were collected parallel with quantitative data from three mentees and twenty-eight key informants. The data were collected through in-depth interviews and key-informant interviews using a semi-structured interview guide. Mentees who passed through the catchment-based clinical mentorship implementation process were selected purposively, and the key informants were recruited purposefully until the data were theoretically saturated. The selection process of key informants was based on their responsibility in the implementation of CBM. To ensure data quality: credibility, dependability, and transferability were taken into consideration. Data were thematically analyzed using the ATLAS ti version 8.4.25 software package. Ethical clearance was obtained from the Institutional Review Board (IRB) of the Ethiopian Midwives Association with ethical approval number EMwA-IRB-SOP/015/03, and all subsequent ethical procedures were maintained according to IRB guidelines.

## Result and Discussion

Mentees' mean knowledge scores had significantly increased by 25.36 out of 100; [95% CI 21.63 to 29.08] from the baseline compared to the completion of the 6-month mentorship. Moreover, the key Informants attested that there was a dramatic improvement in mentees' knowledge after catchment-based clinical mentorship implementation. A 27-year-old- mentee:

*"At the beginning of CBM, I was in trouble to answer knowledge questions on the management of Postpartum hemorrhage. However, it was straightforward even to narrate the answers."*

This finding is consistent with the studies conducted in Nigeria [15] and South Africa [16].

Catchment-based clinical mentorship has also improved the overall skill of mentees. Mentees' mean skill competency scores had significantly increased

by 26.64 out of 100; [95% CI 22.15 to 31.14) from the baseline compared to the completion of the 6-month mentorship. This finding is supported by a study conducted in Malawi [17]. Moreover, the qualitative study informed that there was a clear improvement in the skill of mentees. A 24-year-old mentee from health center:

*“... I am now competent in vacuum application, management of severe pre-eclampsia and eclampsia, and neonatal resuscitation.”*

In addition, health sector and partner organization leaders at different levels confirmed that catchment-based clinical mentorship had improved the skill of mentees. A health center director said:

*“...Skill gaps of mentees were highly improved, resulting in increased maternal health service utilization and quality of service provision”*

Furthermore, the current assessment shows that skill and knowledge after mentorship (6 months) were maintained after 12 months of mentorship completion. The mean difference in skill competency between completion of mentorship and 12 months after CBCM completion has no statistically significant reduction (1.13 out of 100; [95% CI -0.48, 2.74],  $p=0.269$ ). The finding of the qualitative study confirms this.

*“... job aids and posted protocols, peer mentoring helped us in retaining our skills and knowledge”. (A mentee Midwife)*

The finding of this study is in agreement with a systematic review that reported that mentoring interventions had increased adherence of health care providers to updates, guidelines, standards, and protocols [18].

The mentorship program has been challenged with poor readiness and motivation of the mentees, Lack of Infrastructure, shortage/lack of equipment's and supplies, and poor mentor dedication, lack of accommodation and restaurant around the mentee facility, high turnover of the mentored providers, poor health facility leaders' commitment, structural issues, and lack of budget allocation.

## Conclusions and recommendations

Catchment-based mentorship programs enhance the competency (knowledge and skills) of the mentees. The knowledge and skills of the mentees were significantly improved after the six months mentorship. The knowledge and skill achieved after mentorship was adequately maintained 12 months after completion of mentorship.

The implementation of catchment-based mentorship is an effective strategy in building the capacity of health care providers. Therefore, there is a need to scale up a catchment-based mentorship program in all regions of the country.

## References

1. Central Statistical Agency (CSA) [Ethiopia] and ICF. Ethiopia Demographic and Health Survey Addis Ababa, Ethiopia, and Rockville, Maryland, USA. 2017. 2016 CSA and ICF.
2. Central Statistical Agency (CSA) [Ethiopia] and ICF. Ethiopian Mini Demographic and Health Survey 2019: key indicators Rockville, Maryland, USA 2019
3. Federal Ministry of Health (FMOH). Health Sector Transformation Plan. Addis Ababa, Ethiopia October 2015.
4. Zemedu TG, Teshome A, Tadesse Y, Bekele A, Keyes E, Bailey P, et al. Healthcare workers' clinical knowledge on maternal and newborn care in Ethiopia: findings from 2016 national EmONC assessment. BMC Health Services Research. 2019; 19(1):915.
5. EPHI FA. Emergency Obstetric and Newborn Care (EmONC) Assessment 2016 Final Report. Addis Ababa: Ethiopian Public Health Institute. 2017.
6. Organization WH. Toolkit on monitoring health systems strengthening. WHO 2008b WHO. 2009:17-3.
7. Berhane B, Gebrehiwot H, Weldemariam S, Fisseha B, Kaysay S, Gebremariam A. Quality of basic emergency obstetric and newborn care (BEmONC) services from patients' perspective in Adigrat town, Eastern zone of Tigray, Ethiopia. 2017: a cross sectional study. BMC Pregnancy and Childbirth. 2019; 19(1):190.

8. Kumsa A, Tura G, Nigusse A, Kebede G. Satisfaction with emergency obstetric and new born care services among clients using public health facilities in Jimma Zone, Oromia Regional State, Ethiopia; a cross sectional study. *BMC Pregnancy Childbirth*. 2016; 16:85.
9. African Union. Draft Policy Brief for the International Conference on Maternal, Newborn and Child Health (MNCH) in Africa . Johannesburg, South Africa, 2013.
10. Memirie ST VS, Norheim OF, Levin C, Johansson KA. Inequalities in utilization of maternal and child health services in Ethiopia: the role of primary health care. *BMC health services research*. 2016; 16(1).
11. Federal Ministry of Health (FMOH). National Guideline for RMNCAH catchment-based Mentorship January 2019. Addis Ababa, Ethiopia 2019
12. Sherr K, Cuembelo F, Michel C, Gimbel S, Micek M, Kariaganis M, et al. Strengthening integrated primary health care in Sofala, Mozambique. *BMC Health Services Research*. 2013; 13(S2):S4.
13. Fischer EA, Jayana K, Cunningham T, Washington M, Mony P, and Bradley J, et al. Nurse Mentors to advance quality improvement in primary health centers: lessons from a pilot program in Northern Karnataka, India. *Global Health: Science and Practice*. 2015; 3(4):660-75.
14. Manzi A, Hirschhorn LR, Sherr K, Chirwa C, Baynes C, Awoonor-Williams JK. Mentorship and coaching to support strengthening healthcare systems: lessons learned across the five Population Health Implementation and Training partnership projects in sub-Saharan Africa. *BMC health services research*. 2017; 17(3):831.
15. Evaluating Health Workers' Knowledge Following the Introduction of Clinical Mentoring in Jigawa State, Northern Nigeria
16. National Department of Health. Clinical Mentorship Guideline for Integrated Services. 2011.
17. Tang JH, Kaliti C, Bengtson A, Hayat S, Chimala E, MacLeod R, et al. Improvement and retention of emergency obstetrics and neonatal care knowledge and skills in a hospital mentorship program in Lilongwe, Malawi. *International Journal of Gynecology & Obstetrics*. 2016;132(2):240-3.
18. Feyissa GT, Balabanova D, Woldie M. How effective are mentoring programs for improving health worker competence and institutional performance in africa? A systematic review of quantitative evidence. *Journal of multidisciplinary healthcare*. 2019;12:989.

# Evaluation of the National Safe Surgical Care Strategy and the Saving Lives through Safe Surgery (SaLTS) Program in Ethiopia: A Nation-Wide Evaluation



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## ABSTRACT



**Background:** Ethiopia's safe surgery strategic plan was developed for five-year, 2016-2020, to address the huge unmet need for basic surgical care services. The Saving Lives through Safe Surgery (SaLTS) initiative aims to expand access to safe surgical care in Ethiopia.



**Objective:** To assess the outcomes of Ethiopia's national safe surgical care strategic plan, and lessons learned during implementation of the surgical care plan in public and private health facilities in Ethiopia.



**Methods:** A cross-sectional study design with mixed quantitative and qualitative methods were used. A multi-stage stratified convenient sampling method was used to choose 203 health care facilities both public and private. The evaluation was conducted in the health care facilities starting from December 30, 2020, to June 10, 2021.



**Results:** From the total major surgeries, 40.7% of surgeries were performed in specialized hospitals and 37.6% of minor surgeries performed were from primary hospitals. Low SSI rates detected across all public and private health facilities ranged from 1.15 -18.5 per a thousand surgical cases. The highest SSI rate was reported from specialized hospitals (18.5 per 1000). The longest pre-admission waiting time was in general hospitals (37.6 days) followed by specialized Hospitals (35.9 days) and Primary Hospitals (3.6 days). The highest surgical checklist utilization rate was recorded in specialized and general hospitals (81% and 79%, respectively) whereas in primary hospitals and health center OR blocks was 71% and 59% respectively.



**Conclusions and Recommendation:** Overall, results illustrated inadequate access to surgical services, underutilization of surgical safety checklists, and under-reporting of SSI. On the other hand, health care facilities providing surgical services were poorly staffed and equipped with relevant human resources and equipment/supplies, respectively. Finally, increasing access to surgical services and reducing delays in admission and initiation of surgical procedures will help to increase the utilization of the respective services.



**Keywords:** Emergency and Essential Surgical Care, Access, Safety, Efficiency

## Background

Globally, around 5 billion people lack access to safe, affordable, and timely emergency and essential surgical care (EESC). In 2005, the World Health Organization (WHO) launched an initiative to better access Emergency and Essential Surgical Care (EESC) and published cost-effective surgical care interventions, and released a situational analysis tool to assess the availability of EESC and needed inputs

at the level of health facilities in low- and middle-income countries (LMIC) (1,2).

To achieve this in the low- and middle-income countries (LMIC) countries and improve their capability to deliver emergency and essential surgical care, the Lancet Commission on Global Surgery (LCoGS) has put the following targets to be achieved by 2030. These are 80% coverage of essential surgical and

anesthesia services per country, at least 20 surgical, anesthesia, and obstetric physicians per 100 000 population, 5,000 procedures annually per 100,000 population, and 100% protection against catastrophic expenditure from out-of-pocket payments for surgical and anesthesia care.

The Saving Lives through Safe Surgery (SaLTs) Program: Ethiopia's safe surgery strategic plan was created for five-year, 2016-2020, to address the huge unmet need for basic surgical care services. The proposed strategies are well aligned with the WHO recommendations and Ministry of Health (MOH) health sector transformation plan and quality strategy. The SaLTs initiative with aim of improving the quality and access to safe, essential, and emergency surgical and anesthesia care across the health care systems (3,4).

This strategy has been instrumental to define and standardize the minimum care packages needed to expand emergency and essential surgical and anesthesia care. The eight intervention pillars described in the strategic plan includes (1) Leadership, Management, and Governance; (2) Infrastructure Development; (3) Supplies and Logistics Management; (4) Human Resource Development; (5) Advocacy and partnership; (6) Innovation in problem-solving (7) Quality and Safety across the perioperative continuum of surgical and anesthesia care, and (8) Monitoring and Evaluation (9).

Now, this study is proposed to evaluate the national surgical care strategic plan and its flagship program, the SaLTs program. The evaluation will assess the initiative's design, scope, implementation status, and the outcomes the nation gained. The evidence generated will be used to inform the subsequent five-year strategy and surgical care improvement plans.

### Objective

To assess the outcomes of Ethiopia's national safe surgical care strategic plan, and lessons learned during implementation of the surgical care plan in public and private health facilities in Ethiopia.

### Methods and Materials

**Study design:** A cross-sectional study with both quantitative and qualitative research methods was

conducted to evaluate the national surgical care program which was implemented in public and private health facilities. A pre-tested data collection tool was used to collect data from sample health care facilities of eight regions and two city administrations in Ethiopia

**Study location and period:** This program evaluation was conducted in the health care facilities starting from December 30, 2020, to June 10, 2021. Tigray, Afar, Amhara, Oromia, SNNP, Sidama, Harari, and Somali were regions of Ethiopia included in the evaluation. Addis Ababa and Dire Dawa city administrations were also included.

**Sampling procedure and sample size:** A multi-stage stratified convenient sampling method was used to choose public health care facilities (primary, general, and referral or teaching hospitals) and private health care facilities from all regions and city administrations for the evaluation process. The sample size was estimated using a single population proportion formula ( $n = \frac{z^2pq}{e^2} / 1 + (\frac{z^2pq}{e^2}) * N$ ) for a finite population with a 5% margin of error and 95% level of confidence. Accordingly, the sample size was determined as 163 public hospitals. The sample size for each stratum of primary hospitals ( $n_p$ ), general hospitals ( $n_g$ ), and referral hospitals ( $n_r$ ) was calculated using the proportional allocation method and it was 105, 43, and 15 hospitals, respectively. In addition, to assess the status of surgical care in the private health sector, private health facilities providing safe surgical care services were included. According to the data we obtained from the MOH, 45 private health facilities were providing safe surgical care. Thus, using the formula  $n = \frac{z^2pq}{e^2} / 1 + (\frac{z^2pq}{e^2}) * N$ , the sample size for private hospitals was estimated as 40.

**Data collection procedures and tools:** This evaluation program employed both quantitative and qualitative data collection methods:

**Quantitative method:** The quantitative data were collected using a pretested structured self-administered interview questionnaire, hospital record extraction tools, and checklist uploaded on Research Electronic Data Capture (REDCap). Participants were informed about the aim and process of the self-administered interview. Data collectors got adequate training about the entire process of data collection including quality control measures (such



as completeness, correctness, concordance) and synchronizing and archiving the data with REDCap.

**Qualitative method:** The qualitative study was conducted from February to June 2021. An inductive qualitative approach was used to interpret meaning from the data and making comparisons. Qualitative data were collected through an exit interview, in-depth interviews (IDI), and key informants' interviews (KII) to explore patient satisfaction, the safe surgical care practice, and overall experience in the health facilities.

**Data management and analysis:** The evaluation data were collected, cleaned, and entered in a period of six months, and the data collectors archived cleaned data regularly, every week. The survey team then exported the data into STATA statistical software Version 15 for further statistical analysis. Additional data cleaning and consistency checks were done using STATA statistical software Version 15 to detect outliers and inconsistent variables. Descriptive statistics like mean, median, percent, frequency, visual graphs, and other descriptive measures were calculated.

### Ethical considerations

The MOH of Ethiopia secured an ethical clearance letter from the AHRI ethical review board. A letter of support was obtained from the MOH. Additionally, letters of support and permissions were obtained from the local administrations to conduct evaluations at the selected health facilities. Consent was obtained from each participant who was willing to take part in this evaluation.

### Results

The survey included a total of 172 health facilities (84.7% response rate) and 44.8%, 22.1%, 18.6%, 9.3% and 5.2% of the surveyed health facilities were primary hospitals, general hospitals, private Hospitals and Health centers with OR blocks respectively.

Over six months, the surveyed health care facilities had a total of 125,075 surgical admissions, (surgical, gynecologic, and obstetric admissions), over a third (37.6%) of which was reported at specialized hospitals. In a quarter, 178,785 surgeries were performed at health care facilities, of which 58% were major surgeries. From the total major surgeries performed

in the surveyed facilities, 40.7% of surgeries were performed in specialized hospitals where major and complicated cases are referred to. On the other hand, from the total of minor surgeries performed in the surveyed health facilities, 37.6% of the surgeries performed were from primary Hospitals which may be due to the highest proportion of surveyed primary hospitals in the study or due to their level of care.

The magnitude of SSI detected through chart review was low across all public and private health facilities, in a range of 1.15 -18.5 per a thousand surgical cases. The highest surgical site infection rate was reported from specialized Hospitals (18.5 per 1000) where most of the major and complicated cases were performed with prolonged post operation stay, which showed under-reporting of SSI cases across all health facilities.

The pre-admission waiting time was reported from public general hospital specialized hospitals (37.6 days) followed by specialized Hospitals (35.9 days) and primary hospitals (3.6 days). The longest pre-admission waiting time was reported in a general hospital where low surgical beds and functional OR tables were reported.

The overall average rate of SSC use for major surgeries was found to be higher in public health facilities (72.5%) compared to private health facilities (26%). The highest rate was recorded in specialized and general hospitals (81% and 79%, respectively). The SSC use rate in primary hospitals and health center OR blocks was reported to be 71% and 59%, respectively.

Health facilities, particularly the government hospitals, had a low number of surgeons, i.e., primary (47) and general (123) hospitals. Primary hospitals (16) have a considerably lower number of obstetricians compared to private hospitals (77). Most of (74%) the health care facilities did not monitor patients' re-admission. Full availability of emergency and essential surgical care equipment and supplies ranged from (4%-15%) for specialized hospitals and (1%-9%) for health-centered.



## Conclusions and Recommendations

Overall, the results illustrated inadequate access to surgical services. Moreover, the findings showed underutilization of surgical safety checklists and a high rate of surgical adverse incidents. On the other hand, health care facilities providing surgical services were poorly staffed and equipped with relevant human resources and equipment/supplies, respectively. These results suggest sizable gaps in readiness of health facilities for surgical services, and low access and utilization of surgical services and safety procedures. Therefore, it is highly valuable to strengthen surgical services of the health facilities with relevant human resources and equipment's/supplies. Results also indicated the importance of enhancing the availability and utilization of surgical safety supplies to reduce adverse incidents of surgeries or surgical efficiency at large. Finally, increasing access to surgical services and reducing delays in admission and initiation of surgical procedures will help to increase the utilization of the respective services.

## References

1. World Health Organization (WHO) 2017, pp 33-38: Surgical care systems strengthening: developing national surgical, obstetric and anesthesia plans. ISBN 978-92-4-151224-4.
2. Spiegel DA, Abdullah F, Price RR, Gosselin RA, Bickler SW. World Health Organization Global Initiative for Emergency and Essential Surgical Care: 2011 and Beyond. *World Journal of Surgery*. 2013 Jul; 37(7):1462–9.
3. Ministry of Health of Ethiopia. National Safe Surgery Strategic Plan: Saving Lives Through Safe Surgery (SaLTS) Strategic Plan, 2016-2020. Addis Ababa, 2016.
4. Tadesse H, Sibhatu M, Maina E, Bari S, Reynolds C, Richards K, &Garringer K. (2019). Savings Lives Through Safe Surgery in Ethiopia: Project Implementation Manual. Addis Ababa, Ethiopia.
5. Burssa D, Teshome A, Iverson K, Ahearn O, Ashengo T, Barash D, et al. Safe Surgery for All: Early Lessons from Implementing a National Government-Driven Surgical Plan in Ethiopia. *World Journal of Surgery*. 2017 Dec; 41(12):3038–45

# Ethiopian Health Labor Market Analysis



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## ABSTRACT



**Background:** The achievement of the SDGs and UHC, has been connected to having a responsive and resilient health system supported by an appropriate and well-trained health workforce that is equitably distributed, motivated, and enabled to operate optimally. Despite the implementation of various transformative initiatives towards a functional and fit-for-purpose health workforce, there are remaining health workforce challenges in Ethiopia including workforce shortages, mal-distribution, unemployment, and sub-optimal productivity and performance. Health Labor Market Analysis (HLMA), helps to clearly understand factors affecting the supply of, demand for, and need for health workforce and inform dialogue towards the design of effective policies and strategies to address current and potential labor market imbalances.



**Methods:** Multiple methodological approaches were combined to collect and analyze data on the health workforce situation and health labor market dynamics. These included desk review, stakeholders' discussions, data triangulation, descriptive analysis of existing quantitative data, and supply-demand modeling.



**Results/Conclusion:** Remarkable improvement in health workforce density has been observed in the last 10 years. There is an urgent need to strengthen health workforce (HWF) regulation and improve the quality of training. There is a need-based shortage of HWF to deliver EHSP (SAR: 49 – 68%). Fixed facility staffing norms no longer fit for purpose. Economic capacity is not keeping pace with both supplies and needs: Probability of affording current levels of production: 82-86%; Probability of affording staffing norms: 61-97%, and Probability of affording EHSP is 45 – 62%. Potential unemployment: 9.2 – 20.5% (11% - 20% was estimated from the 2019 cohorts of qualified health workers). About 0.49% of GDP annually or some US\$400 million annual investments in training, job creation, and sustenance of those currently employed.



**Keywords:** Health Labor Market

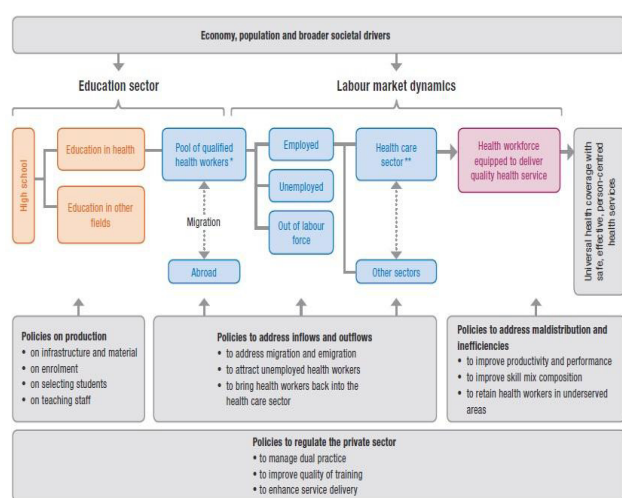
## Background

The attainment of the Sustainable Development Goals (SDGs) including Universal Health Coverage (UHC) is firmly linked with having a responsive and resilient health system underpinned by an adequate and well-trained health workforce who are equitably distributed, motivated, and supported to optimally perform. The health workforce is such a critical health system input as they design it, manages the system, and delivers the services as required for

UHC which is labor-intensive. The contribution of the health and social workforce is not only towards the attainment of better for populations but also a vehicle for accelerating economic prosperity, youth employment, and women's labor participation. To create responsive and reactive policies to optimize access to health services and unlock economic benefits, it is essential to understand the dynamics and challenges that the health labor market faces at the country level.

Despite the implementation of various transformative initiatives towards a functional and fit-for-purpose health workforce, there are remaining health workforce challenges in Ethiopia which including workforce shortages, mal-distribution, unemployment, and sub-optimal productivity and performance. Health Labor Market Analysis (HLMA), helps to clearly understand factors affecting the supply of, demand for, and need for health workforce and inform dialogue towards the design of effective policies and strategies to address current and potential labor market imbalances.

Figure 1: Health Labour Market Framework for UHC



Source: Sousa et al., 2013

## Objective

The main objective of the Ethiopian HLMA is to generate evidence to support policy decisions to improve health workforce availability, distribution, and efficient use to support the government in achieving its health sector and broader development targets as earlier outlined. According to the MOH priorities on HRH, the following specific objectives were outlined:

1. Assess the adequacy of HRH supply capacity, projected needs, and health labor market absorption capacity (in both public and private sectors)
2. Propose short and long-term health workers' projections based on the essential need, demand, and supply.

3. Model and cost the workforce production, deployment, and retention in Ethiopia to inform affordability of wage bill and scale-up plans, including financial sustainability.
4. Update the inventory of current skills, and review the role of the private sector in HRH education

## Methods

Multiple methodological approaches were combined to collect and analyze data on the health workforce situation and health labor market dynamics which included desk review, stakeholders' discussions, triangulation of data sources, descriptive analysis of existing quantitative data, and supply-demand modeling. Relevant policy/strategic documents, academic publications, and datasets were reviewed and triangulated to gain contextual insights. A series of meetings were held to gain wider perspectives and WHO experts in HLMA undertook a scoping mission to Ethiopia and held a half-day workshop with key stakeholders to build consensus on methodological approaches.

Data acquisition was undertaken across departmental efforts in collaboration with the Regional Health Bureaus (RHB). Ministry of Science and Higher Education, Ministry of Finance, Civil Service Commission, Ethiopia Public Health Association, Midwifery Association, and HERQA were contacted and additional data and their perspective were sought. The size, composition, distribution, and trend of the health workforce were analyzed through descriptive statistics. Labor market modeling (need, supply, and economic space) was undertaken guided by established methods and frameworks. Additionally, an exploratory assessment of productivity analysis for regions was undertaken using a previously published methodology<sup>1</sup>. Data was collected using an agreed-upon data collection tool then triangulated from all available sources.

## Result and Discussion

Ethiopia had about 273,054 health workers of various occupational groups as of December 2019. Of this number, about 30,238 (22%) are working in the private and other sectors of the economy of which 32%

<sup>1</sup> Marko Vujcic, Eddie Addai, and Samuel Bosomprah, 'Measuring Health Workforce Productivity: Application of a Simple Methodology in Ghana', 2009 <<https://openknowledge.worldbank.org/handle/10986/13735>> [accessed 5 December 2015].

were found to be administrative and support staff while 68% were the clinical and para-clinical staff. The current stock translates into health workforce density (doctors, nurses, midwives, and health officers) of 10.3 per 10,000 population - about 23.3% of the threshold of 45 per 10,000 population which is deemed necessary for the progressive realization of UHC and the SDGs. The public health sector workers are made up of 53% females and 47% males, which is a 22% increase in the proportion of the female health workforce since 2009. Except for health extension workers (HEW) (95.9%) and midwives with 63%, all other health occupational groups are dominated by males.

Inequitable distribution of the health workforce is often partly underpinned by inequitable distribution of health and social infrastructure. When the share of the health workers in the various regions are compared with their respective share of the population, significant inequity in the regional distribution of the health workforce is observed in which the best-staffed region (Addis Ababa) is about 4 times better off than the worst staffed region (Somali region). Available data between 2007 and 2019 shows that in aggregate, the country has a theoretical capacity to produce at least 24,318 health workers annually.

The MOH in 2018 instituted pre-licensure examination for health professionals upon graduation. Data on the first cohort of the licensing examination revealed that out of a total of 10,480 candidates that sat for the examination, about 6,430 (61.4%) passed at their first attempt. It also shows that a substantial gap exists between the public training institutions and those of the private-for-profit institutions. The average pass rate for public sector training institutions across disciplines was 78% as compared to 33.4% in the private-for-profit institutions.

Ethiopia operates fixed facility staffing norms by its very nature of being a fixed-facility type, has no defined flexibility mechanism to adjust for changing workload. Fixed facility staffing norms no longer fit for purpose.

The average annual income of public sector health workers is about Birr 96,462 (US\$ 3,445) – ranging from Birr 47,208 (US\$1,686) for clerical/support staff to Birr 150,948 (US\$5,391) for specialized doctors. In relative terms, the least paid health workers earn about 39%

of the income of General Practitioners while the highest-earning occupations (Medical Specialists and dentists) earn about 124% of the income of General Practitioners. When the salaries are compared with the country's per capita Gross Domestic Product (GDP), the average health worker earns about 1.7 times that of the GDP per capita.

Out of 20,936 health professional graduates who qualified in 2019, about 80% (n=15,910) were recruited into the public health sector, leaving about 5,026 (~20%) potentially unemployed or underemployed (if not engaged in the private sector). When the private sector absorption rate of 22% is considered, the potential unemployment is reduced to about 10.6%. Thus, the possible unemployment among 2019 cohorts could be between 11% and 20% which is quite similar to the general unemployment rate of 19.1% in Ethiopia.

The government has maintained a constant 8% of its general annual budget dedicated to health where 80% of which sub-vented to the Regions as block grants. Of the regional block grants, Regions are spending an average of 11.1% (range: 5.1% - 15.7%) less than the Abuja target of 15% of their general budget allocation on all health-related expenditure. Out of the health budget regions are spending between 45% and 57% on health workforce remuneration.

The aggregate health workforce productivity analysis revealed that on average, for every 1,000 Birr (US\$36) spent on the salaries and wages of health workers, it yields various service outputs that are equivalent to 9 outpatient consultations. With 95% confidence, if this analysis is repeated severally it may yield between 6 and 12 people receiving various health services per every 1,000 Birr spent on the health workforce remuneration.

Under an optimistic scenario of 2.1% annual attrition, the aggregate health workforce stock in Ethiopia is anticipated to increase by some 73% by the year 2030. Even when future population growth is accounted for, the increases are likely to translate into an increase of 75% in the health worker to population density between 2019 and 2030, translating into almost 18 doctors, health officers, nurses, and midwives per 10,000 population by 2030. In sensitivity analysis, a worst-case attrition scenario of 6.6% was modeled which showed up to 24% lower estimates in the

aggregate future supply of health workers which would have led to a conclusion of higher estimates of shortages.

Concerning the projected need for the health workforce, two scenarios of health workforce needs have been modeled—health facilities (staffing norms) and essential health services package (EHSP) approaches. The health facilities approach (with outdated staffing norms that have been minimally adjusted) projects an overall health workforce requirement of about 368,812 which is expected to reach 479,082 by 2025 and 512,333 by the year 2030. This scenario yields a required density of 17.16 Doctors, Health Officers, Nurses, and Midwives per 10,000 population in 2020 and 21.43 per 10,000 population by 2030 – represents only 48% of the global threshold of 45 physicians, nurses, and midwives per 10,000 population. To effectively deliver the recently finalized EHSP, The country requires at least 580,148 health workers of various occupational groups at baseline (2020) which will increase by 14% to 661,239 by 2025 and 751,787 by the year 2030 (about 30% increase from baseline). These are expected to translate into a workforce density of 23.29 per 10,000 population in 2020 and 30.18 per 10,000 population by the year 2030 - represents some 68% of the global threshold of 44.5 doctors, nurses, and midwives per 10,000 population necessary for the progressive realization of UHC and the health SDGs.

The supply of health workers may be able to meet 72% of the health workforce requirements under the health facilities/staffing norms scenario which is likely to reach 79% by 2025 and 93% by 2030. Many occupational groups under this scenario will tend to be over-produced. In contrast, under the EHSP scenario, the current stock of health workers may only be able to meet 49% of the health workforce required to deliver the EHSP in 2020. Without any intervention, this may progressively improve to 61% by 2025 and 68% by 2030.

The cost of wages for the current stock of health workers in both public and private sectors is conservatively estimated to be about US\$876 million (Birr 24.5 billion). Under the current trends of health workforce production, this is anticipated to increase by 52% to US\$1.33 billion (Birr 37.2 billion) by 2025, this will cost an additional 87% of the current wage

bill. Compared with the projected need for health workers, the employment cost of filling the staffing norms in the public sector is estimated to be US\$1.18 billion (Birr 33.04 billion) which could increase by 26.2% within 5 years and 34.5% by 2030. On the other hand, the cost of wages to meet the staffing needs of the EHSP is estimated to be nearly US\$1.9 billion (Birr 52.8 billion) in 2020 and may increase by some 14% to US\$2.2 billion (Birr 60.2 billion) in 2025 and to US\$2.5 billion (Birr 68.5 billion) by 2030. However, the estimated public sector fiscal space for health workforce employment (including federal and regional level) is roughly US\$652.1 million (Birr 18.3 billion) could reach US\$1.15 billion (Birr 34.1 billion) by 2030 under a linear growth assumption. Taking into account the private sector's contribution to health workforce employment (estimated at 22%), the composite economic capacity (economic demand) for health workforce employment is about US\$795.6 million (Birr 22.3 billion) at baseline (2020) and could expand up to US\$1.4 billion (Birr 39.2 billion) by 2030.

The economic space to absorb all health workers is growing at a smaller pace and it is feasible to absorb between 76% and 85% of the anticipated supply of the health workforce. This leaves a possibility of some 15% unemployment of health workers at baseline (2020) which could increase to 24% by 2025 and then decline gradually to 19% by 2030. These estimates from an economic space perspective are quite similar to and corroborate with an estimated 11 – 20% rate of unemployment amongst the 2019 cohort of health-related graduates. Under prevailing prioritization of health workforce investment, the potential affordability of the staffing level required to deliver the EHSP varies between 45% and 62% whilst the health facilities staffing norms are between 61% and 97%.

Towards a progressive realization of UHC and the SDGs, Ethiopia requires an investment of 62.1 billion Birr (US\$2.2 billion) up to 2030 to train additional health workers of various cadres to fill the need-based shortage estimated to deliver the essential health services package. This represents an increase of 21% over the current health training investments. Also, the additional investments in the form of employment required to meet the need for health workers under the EHSP are estimated at US\$305 million annually. Thus, the total additional HRH investments required in



Ethiopia for both training and job creation (including currently employed health workers) is about US\$ 4 billion over 10 years which represents about 0.49% of GDP annual investments in training, job creation, and sustenance of those currently employed.

### Conclusions and Recommendations

The national HLMA revealed that, while there has been a significant increase in health workforce density over the last ten years, there is still a significant need-based shortage of HWF to deliver EHSP (SAR: 49–68%). The existing fixed facility staffing norm is also no longer fit for purpose and should be replaced by a scalability mechanism that allows adjusting for changing workloads. The potential unemployment from the 2019 cohorts of qualified health workers was estimated between 11% - 20% demanding the development of innovative job creation initiatives and mobilization of resources to increase investments in decent health workforce employment. There is also an urgent need to strengthen health workforce regulation and improve the quality of training. The economic capacity/expenditure prioritization for HWF does not keep up with both supply and need. The probability of being able to afford the current levels of production, staffing norms, and EHSP are 82-86%, 61-97%, and 61-97%, respectively. About 0.49% of GDP annually or around US\$400 million annual investments are required in training, job creation, and sustenance of those currently employed.

Upon the necessary review and validation of this report, the FMOH in collaboration with its stakeholders will guide to finalize policy options and recommendations. This will guide the development of a multi-stakeholder and multi-sectoral action plan with clear milestones and timelines to catalyze the current efforts and facilitate the necessary policy shifts to address the prevailing and anticipated health workforce challenges in Ethiopia. Below are illustrative policy options addressing:

- Harnessing resources to expand investments in decent health workforce employment and job creation towards the progressive realization of Universal Health Coverage
- Re-aligning health workforce production capacity with needs and economic demand
- Strengthen health professions regulatory mechanisms to engender and uphold high standards of quality training and professional practice
- Optimizing health workforce distribution, retention, and utilization for Universal Health Coverage
- Strengthening institutional capacity for health workforce stewardship, planning, management across the federal and sub-national levels.
- Investing in health workforce information, data, and evidence for decision making.



### References

1. Marko Vujcic, Eddie Addai, and Samuel Bosomprah, 'Measuring Health Workforce Productivity: Application of a Simple Methodology in Ghana', 2009 <<https://openknowledge.worldbank.com/handle/10986/13735>> [accessed 5 December 2015].

### Annex 1: Figures

Figure 2: Aggregate Need and Supply Equilibrium Graph: Comparison of EHSP and Staffing Norms Scenario to Anticipated Supply

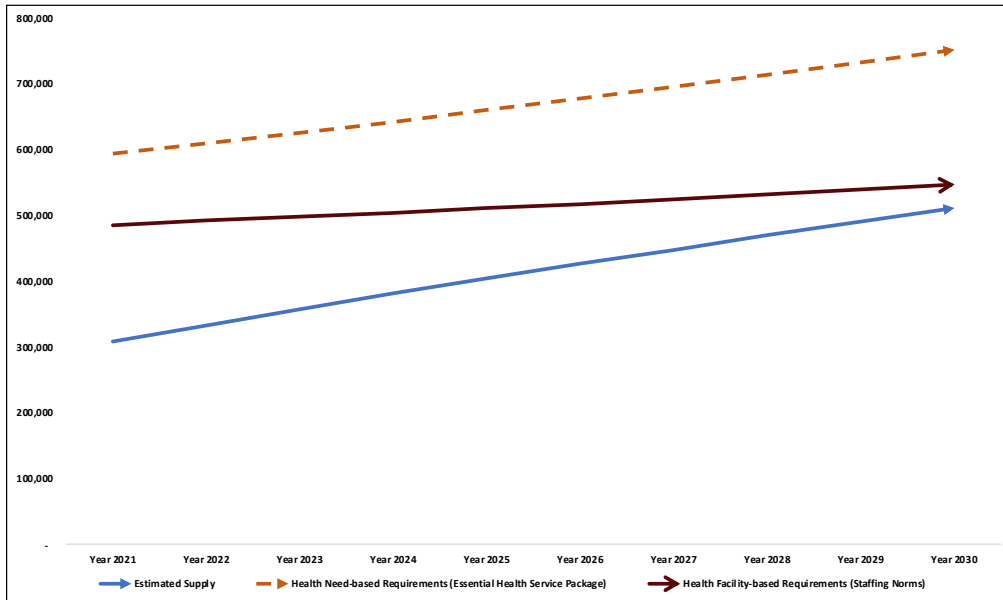
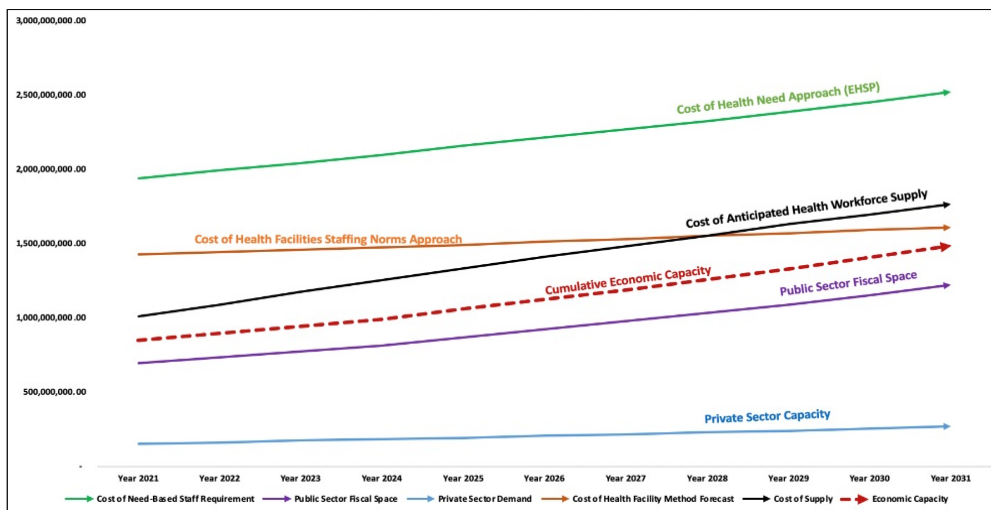


Figure 3: Economic feasibility analysis under different projection scenarios



# Knowledge of Essential Newborn Care among Nurses and Midwives Working in Lideta Sub-city Public Health Centers



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## ABSTRACT



**Background:** Neonatal mortality constitutes a major public health problem. Ethiopia has made great progress on the institutionalization of deliveries where deliveries and neonatal care are mainly facilitated by midwives and nurses. Hence, assessing their knowledge is a priority.



**Objective:** The objective of this study was to assess the knowledge of essential newborn care and the factors associated.



**Methods:** Facility-based cross-sectional study was conducted. Simple random sampling was used to select the estimated 126 participants from those who provide delivery and neonatal care. Self-administered questionnaires were distributed to participants to collect data facilitated by data collectors. Data was entered into SPSS version 21 and analyzed.



**Results:** The mean knowledge score of study participants was 12.66. The study revealed that 55% of the respondents had good knowledge of ENC. The field of the study was found to have a significant association with the knowledge of essential newborn care (AOR = 0.08, 95%CI: 0.03-0.22).



**Conclusions and Recommendation:** The study population had poor knowledge of some components of essential newborn care. The field of the study was found to be an independent predictor of knowledge. Therefore, strengthening and incorporation of all components of essential newborn care in the curriculum was recommended.



**Keywords:** Knowledge; Essential Newborn Care; Midwives; Nurses

## Introduction

The immediate neonatal period is the most crucial period for neonatal survival and subsequent well-being. Identification of high-risk pregnancies and neonates requiring neonatal resuscitation is critical at this stage in delivery rooms, neonatology units, and pediatric intensive care units to safeguard the health and well-being of neonates [1]. The WHO recommends the Essential Newborn Care protocol which is a series of time-bound and chronologically-ordered that a baby receives at birth and it has standardized effective procedural steps [2].

Some non-breathing babies with primary apnea will respond to simple stimulation alone, such as drying and rubbing. As many as two-thirds of neonatal deaths can be saved with ENC. The promotion of ENC is one strategy for improving newborn health outcomes [2, 3]. Knowledge is one of the most important aspects of health systems to adhere to ENC practices.

Ethiopia is one of the ten countries with the highest number of neonatal deaths globally and neonatal mortality has remained stable around 28 deaths per 1000 live births in recent years [4]. Previous studies in Ethiopia show that health workers' mean knowledge score for immediate newborn care was relatively low

[5, 6]. Therefore, the main purpose of this study is to identify whether there is a knowledge gap on essential newborn care among nurses and midwives.

## Methods

Facility-based cross-sectional study was conducted in six health centers. The questionnaire was adapted from published articles and further modification was based on the Ethiopian MOH newborn care training manual and the interest of the study. All qualified diploma and degree nurses and midwives providing delivery and neonatal care services were included. Data were coded and entered to SPSS version 21 and analyzed. Each correct knowledge question was graded as 1 point and dichotomized as good and poor knowledge by taking the median score as the cut-off point. Bivariate and multivariate logistic regression was done to identify independent predictors of knowledge of ENC.

## Results

### Socio-demographic characteristics

From the total 126 estimated samples, six questionnaires were excluded as a result of incompleteness and inconsistencies, making the response rate 95.23%. Of the participants, 51 (42.5%) were Diploma midwives and nurses.

### Knowledge of Attending Delivery

112 (93.3%) of the participants were found knowledgeable about hand washing and the use of sterile gloves while attending delivery and the need to ensure the area for newborn resuscitation is prepared and necessary equipment is clean and ready for every delivery. 78 (65.5%) of the participants responded that during the Golden minute, it is important to help a baby breathe if necessary.

### Knowledge of Immediate Newborn Care

Regarding knowledge of immediate newborn care 70 (58.3%) of the participants were aware that only those newborns who cry and/or breathe well can receive routine care and 104 (86.7) of them know that routine cares involve drying the baby, removing wet clothes and positioning the baby skin-to-skin with the mother. To prevent infection from the dirty umbilical cord, only 22 (17.6%) of the study participants were

aware of cleaning the cord with soap and water and dry with a sterile bandage and no need to cover.

### Knowledge of Newborn Resuscitation

According to the study 64 (53.3%) of the respondents were aware of how to improve the ventilation by repositioning the head, reapply the mask, clearing secretions, open the mouth slightly and squeeze the bag harder, and continuing ventilation and afterward if the HR is > 100, the baby is breathing spontaneously and if there is no chest in-drawing and/or grunting the baby can be put in skin-to-skin contact with the mother. 49 (40.8%) of the participants were aware that suctioning a baby unnecessarily might make the baby stop breathing by blocking the airway.

### Factors associated with knowledge of essential newborn care

The field of the study was significantly associated with participants' knowledge of essential newborn care ( $p < 0.001$ ). Midwives were 8 times more knowledgeable about essential newborn care than nurses [AOR (95%CI) 0.08 (0.03-0.22)].

## Discussion

Knowledge is one of the crucial aspects of health systems to adherence of ENC and lack of knowledge may impede the provision of ENC.

The study revealed that 55% of the respondents had good knowledge of ENC whereas 45% had poor knowledge. Knowledge gaps on the steps of ENC were noted, mainly with the measures to be taken during the 'golden minute' and identification of neonates that can receive routine care where 35% and 41.7% of the participants were found not knowledgeable. Major knowledge gaps were also seen with the steps of cleaning a dirty umbilicus, consequences of unnecessary suctioning, and steps to undertake if a baby fails to respond to initial steps of resuscitation, where 82.5%, 59.2%, and 75.8% of the respondents were found to have less knowledge.

In this study, the average knowledge score of ENC was 63.3%. This is lower compared to the study conducted in Egypt [7] and India [8]. The difference could be due to the lack of in-service training and the educational level of study participants.

## Limitations of the study

1. The sample size used in this study was smaller compared to similar studies.
2. The study focused on knowledge, which is not the only component of competency.

## Conclusion and Recommendations

Lack of knowledge can impede the practice of ENC and increase the risk of neonatal mortality and morbidity. The study participants had a knowledge gap on the measures to be taken during the 'golden minute' and identification of neonates that can receive routine care, precise cord clamping time, and the care given to dirty umbilicus and resuscitation domains including, consequences of unnecessary suctioning and steps to undertake if a baby fails to respond to initial steps of resuscitation, which leads to malpractice and increase the risk of asphyxia and its complications.

Based on the study findings, the following recommendations were forwarded:

1. Strengthen the quality of undergraduate education provided especially regarding delivery and newborn care in the curriculum for both diploma and degree programs.
2. Facilitate in-service training to nurses and midwives on ENC including newborn resuscitation and upgrade their educational level.

## References

6. Nasor Taha FA (2013) Assessment of knowledge, attitude and practices of nurse midwives towards immediate care of the newborn in Khartoum state teaching hospitals 2011. J Am Sci 9: 263-270.
7. Silvestre AM (2014). Early essential newborn care: Clinical practice pocket guide, World Health Organization. Regional Office for the Western Pacific.
8. Worku B, Gessesse M (2012) Newborn care training manual, essential new born care for every baby. Federal Ministry of Health Ethiopia EPS.
9. Federal Democratic Republic of Ethiopian Ministry of Health (2011) Integrated management of newborn and childhood illness, Part 1. Blended learning module for the health extension programed.
10. Central Statistical Agency [Ethiopia] and ICF International (2012). Ethiopia demographic and health survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ICF International.
11. Debelew GT, Afework MF, Yalew AW (2014) Determinants and causes of neonatal mortality in Jimma zone, southwest Ethiopia: A multilevel analysis of prospective follow up study. PLoS One 9: e107184.
12. Fattah E, Zein NA, Dein E (2012) Assessment of quality of nursing care provided immediately after birth at university hospital. Life Sci J 9:2115-2126.
13. Malhotra S, Zodpey SP, Vidyasagan AL, Sharma K, Raj SS, et al. (2014), Assessment of essential newborn care services in secondary-level Facilities from two districts of India. J Health Popul Nutr 32: 130-141.

**Annex 1: Table 1 Association of socio-demographic and some selected variables with participants' level of knowledge on essential newborn care in Lideta Sub-City, Addis Ababa, Ethiopia.**

Variable	Knowledge		COR (95% CI)	P-Value	AOR (95%CI)	P-Value
	Good	Poor				
Level of Education						
Diploma	28(54.9%)	23(45.1%)	1.75 (0.83-3.7)	0.14	0.58(0.24-1.4)	0.23
Degree	47(68.1%)	22 (31.9%)	1		1	
The interest in working in the delivery ward						
Yes	62 (62.6%)	37 (37.4%)	0.97 (0.37-2.56)	0.95	1.3(0.4-3.9)	0.67
No	13 (61.9%)	8 (38.1%)	1		1	
Field of study						
Nursing	31(44.9%)	38(55.1%)	7.7(3.0-19.4)	<0.001	0.08(0.26-0.23)	<0.001
Midwifery	44(86.3%)	7(13.7%)	1		1	

\*Adjusted for all significant variables of  $p < 0.05$

# Status of Histopathology Services in Ethiopia



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## Background

Sub-saharan Africa countries are the poorest nations in the world while experiencing increasing numbers of cancer cases due to the human immunodeficiency virus epidemic, growth and aging of the population, and adoption of westernized life styles. For patients throughout the region with cancer, the scarcity of histopathology services has often been an obstacle to receiving appropriate diagnosis and treatment. The lack of infrastructure along with lack of training for pathologists is a further problem for the delivery of the service in these countries. The availability of pathologists in the region is typically less than one per million populations versus more than 60 per million populations in the United States (1-3).

Ethiopia is one of the sub-Saharan African countries located in East Africa, with a population of about 102,403,196 (2016 estimate) and a geographical area of 1,127,127 km<sup>2</sup>. It is divided into nine federal regions and two city administrations, and the capital is Addis Ababa. In Ethiopia, the incidence of cancer is increasing without an increase in histopathology services. Here, the practice of cytopathology and fine-needle aspiration cytology started after the establishment of the Department of Anatomic Pathology in Tikur Anbesa Hospital in 1965 (4).

A cross-sectional study has been conducted to assess histopathology laboratory facilities in Ethiopia. A checklist was prepared to assess the location of the histopathology service, availability of equipment, number of professionals, and turnaround time in all regions and city administrations of Ethiopia. There are 13 histopathology laboratories in the whole country, nine governmental and four private institutions. Of the 13 histopathology laboratories, seven are located in the capital, Addis Ababa. This indicates 53.8% of all histopathology

laboratories were concentrated in Addis Ababa, which contains an estimated population of 4 million. Six (46.2%) are spread in Tigray (1), Amhara (2), Oromia (2), SNNPR (1). However; in Afar, Somali, Benishangul-Gumuz, Harari, Gambella, and Dire Dawa city administration have no histopathology services where a population of 40,239,100 resides.

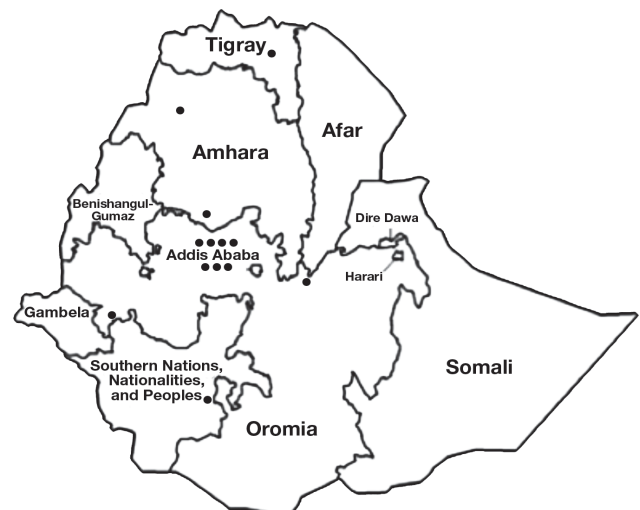


Figure 1: Distribution of current histopathology service centers in Ethiopia (black circles)

All histopathology laboratories possessed at least one functioning rotary microtome. Eleven labs (84.6%) had an automatic tissue processor, six (46%) had automatic staining equipment but only two (15.2%) had automated mounting equipment; seven (53.8%) owned a cryostat. Five laboratories (38.5%) had no archival mechanism for slides and tissue blocks. When it comes to safe tissue grossing, most histopathology laboratories were found lacking; 11 (84.6%) of the laboratories lacked fume hoods for toxic chemicals in grossing.

As turnaround time (TAT) is one of the quality indicators of the laboratory, it was assessed at all visited institutions. As a result, the shortest turnaround time



for biopsy reporting was 7 days while the longest was 30 days. There were 44 Pathologists responsible for the diagnosis of cancer and registered at the institutions assessed. There were also 38 laboratory professionals active in the anatomic pathology laboratory among them there were few (10) Histo-technicians or Histo-technologists with formal training in the profession.

Of the 13 assessed histopathology services, seven (53.8%) are located in the capital, Addis Ababa, whereas 80% of the population resides in rural areas. This finding agrees with the study by Yeshe et al (4) which found that most of the service was delivered in urban areas while most of the population resides in rural areas. The same is true in the Sudan where 78.4% of pathologists were found to reside in Khartoum (1).

The scarce and outmoded equipment, in addition to the lack of expertise for operation and maintenance, has resulted in an inadequate histopathology service in Ethiopia. For instance, in Gambi General Hospital there is only one outmoded microtome and other tasks are done manually. Most of the institutions do not utilize a cryostat due to either installation problems or lack of training, or both. Most of the cryostats are donations and training was not included with the gift. Contributions from donors are gratefully received, but the cryostats may be left idle for many years. Our findings agree with the study in Uganda (5), which described the donation of a tissue processor whose manual was written in a language not understood by the histology technicians. As a result, the machine was left idle for 3 years. Another study from Afghanistan (6) reported that a set of histopathology equipment was left for more than 1 year without installation because no instructions or assistance to set it up had been provided with the equipment (2).

The average turnaround time for surgical pathology samples was 15.9 days in our survey, whereas the UK Royal College of Pathologists recommended that histopathology diagnostic biopsy turnaround time is within 7 days. This is found to be a great problem for patients traveling long distances from rural areas. Patients are forced to wait for the report from the histopathology laboratory, even after they have been discharged from the inpatient ward. This may result in lengthy delays in the therapeutic management of the disease as well as an unnecessary expense for the patient.

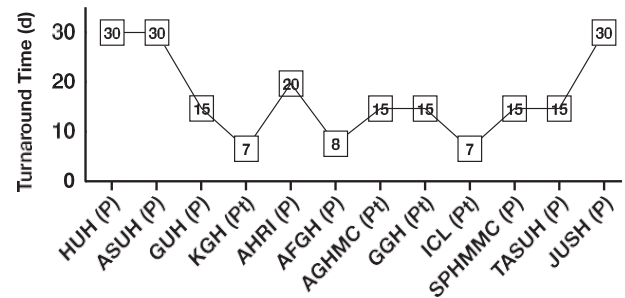


Figure 2: The turnaround time at assessed institutions.

Turnaround time was not assessed at the Ethiopian Public Health Institute because it is a research center. AFGH, Ethiopian Armed Forces General Hospital; AGHMC, Adama General Hospital, and Medical College; AHRI, Armauer Hansen Research Institute, Armed Forces General Hospital; ASUH, Ayder Specialized University Hospital; GGH, Gambi General Hospital; GUH, Gondar University Hospital; HUH, Hawassa University Hospital; ICL, International Clinical Laboratories; JUSH, Jimma University Specialized Hospital; KGH, Kadisco General Hospital; P, Public; Pt, Private; SPHMMC, St Paul Hospital Millennium Medical College; TASUH, Tikur Anbessa Specialized University Hospital.

## References

1. Awadelkarim K, Mohamedani AA, Barberis M. Role of pathology in Sub-Saharan Africa: an example from Sudan. *Pathol Lab Med Int.* 2010;2:49-57.
2. Okesina AB. Pathology in West Africa: problems of training and practice. *Bull Royal Coll Pathol.* 2009;148:306-308.
3. Gopal S, Krysiak R, Liomba NG, et al. Early experience after developing a pathology laboratory in Malawi, with emphasis on cancer diagnoses. *PloS One.* 2013;8:e70361.
4. Yeshe MM, Tambouret RH, Brachtel EF. Fine-needle aspiration cytology in Ethiopia. *Arch Pathol Lab Med.* 2013;137:791-797.
5. Benediktsson H, Whitelaw J, Roy I. Pathology services in developing countries: a challenge. *Arch Path Lab Med.* 2007;131:1636-1639.
6. Deck JH. The face of pathology in Afghanistan in 2006-2007. *Arch Pathol Lab Med.* 2011;135:179-182.

**Keywords:** Histopathology; Cancer; Turnaround time



# Evaluation of the Effectiveness of Competency-based Training of Women Development Army Leaders in Improving the Uptake of Health Care Services in Ethiopia

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## ABSTRACT



**Introduction:** The Ministry of Health uses a network of women volunteers, known as the Women's Development Army, to promote community engagement and ownership in the health sector. To build the capacity of women development army leaders, the Ministry of Health and regional health bureaus, and their partners implemented the Competency-Based Training program. The program involves training women development army leaders based on Health Extension Program packages and communication skills.



**Objective:** This evaluation assessed the effectiveness of competency-based training and explored the barriers and facilitators of competency-based training implementation.



**Methods:** The evaluation used mixed methods based on Kirkpatrick's model of training evaluation and it was conducted in three regions (Amhara, Oromia and Southern Nations, and Nationalities and Peoples). Data were collected from a total of 2,937 respondents for quantitative study (187 trained women development army leaders with 911 network members and 374 non-trained women development army leaders with 1,465 network members) and 24 key informants for an in-depth interview.



**Results:** Competency-based training was found to be effective in improving the knowledge and practices of women development army leaders and their network members concerning water, sanitation and hygiene, disease prevention and control, and maternal and child health. The effect of competency-based training was, however, not uniform across all targeted behaviors of women development army leaders and their network members.



**Conclusion:** Addressing the multi-level determinants of competency-based training needs engaging all relevant stakeholders and considering other viable approaches of capacity building.



**Key words:** competency-based training, women development army, community capacity-building, training effectiveness, training evaluation



## Introduction

In 2011, the Ministry of Health (MoH) introduced the Women's Development Army (WDA) structure to promote community engagement and ownership in the health sector. However, efforts to build their capacity have been limited. To fill this gap, the MoH and its partners started the Competency-Based Training (CBT) program in collaboration with the Federal Technical and Vocational Education Training Institute, regional health bureaus, non-governmental implementing partners, and funding agencies. The program involves training WDA leaders based on Health Extension Program (HEP) packages and communication skills. However, evidence generated using a well-designed study on the effectiveness of CBT is not yet available.

## Objective

To evaluate the effectiveness of CBT in improving the knowledge and practices of WDA leaders and their network members, and to identify barriers and facilitators of implementing CBT.

## Methods

We evaluated the effectiveness of CBT using a mixed-methods design based on Kirkpatrick's model of training evaluation that classifies outcomes of training programs into four levels: reaction, learning, behavior, and results. We randomly sampled trained and non-trained WDA leaders with their network members from Amhara, Oromia, and the Southern Nations, Nationalities, and Peoples Regions. We also investigated barriers and facilitators of CBT implementation by conducting in-depth interviews with key informants including CBT trainees, trainers, and training coordinators, at woreda and kebele levels. We compared the intervention group (CBT-trained WDA leaders and their network members) with the comparison group (nontrained WDA leaders and their network members). We used a doubly robust estimation method to obtain the average treatment effect of the CBT.

## Results and discussion

**Coverage and sociodemographic characteristics of participants:** We interviewed 187 CBT-trained WDA leaders with 911 network members, and 374 nontrained WDA leaders with 1,825 network members. The two groups were comparable in their sociodemographic and economic characteristics except in educational status, membership in community-based health insurance (CBHI), and marital status. Compared to their counterparts, trained WDA leaders were more likely to have formal education (65% vs. 45.7%;  $p < 0.001$ ), to be members of community-based health insurance (CBHI) (73.3% vs. 61.8%;  $p=0.007$ ) and their network members were more likely to be married (83.5 % vs. 79.5%;  $p = 0.012$ ), CBHI members (58.1 % vs. 50.6 %;  $p < 0.001$ ), and attended school (45.0 % vs. 38.9%;  $p < 0.002$ ).

**Satisfaction of WDA leaders with CBT:** About two-thirds of trained WDA leaders (66.6%) were satisfied with the training, and most of them gave a high rating for the training content, mode of delivery, and trainers. However, the timing and the training materials were reported as being inadequate.

**Knowledge and practices of WDA leaders:** Awareness of WDA leaders concerning water, sanitation, and hygiene (WASH); disease prevention and control; and family health issues was relatively high. However, in-depth knowledge about each topic and practice was generally low and variable. Specific knowledge of toilet use ranged from 48.7% to 88.2% among trained WDA leaders, and 40.9% to 83.7% among non-trained WDA leaders.

There are important gaps in knowledge required for taking appropriate preventative actions. For instance, 89.9% of trained and 83.1% of nontrained WDA leaders knew that TB can be cured. Knowledge of condom use to reduce the chance of getting HIV was 84.9% among trained and 74.7% among nontrained WDA leaders.

The current use of modern contraceptives was 39.3% among trained and 44.1% among nontrained WDA leaders in the reproductive age group. Coverage of four or more visits for antenatal care (ANC) and health facility delivery was 72% and 55%, respectively, among trained WDA leaders and 58% and 43.3%, respectively, among nontrained WDA leaders. Of trained WDA leaders, 71% reported seeking treatment for a sick child during the last two weeks, while 43% of nontrained WDA leaders reported doing so.

**Knowledge and practices of WDA network members:** Among WDA network members with trained leaders, knowledge of specific benefits of using a toilet ranged from 35.6% to 77.6%, criteria for a healthy home ranged from 18.6% to 65.5%, and methods of preventing insect and rodent infestation ranged from 10.4% to 60.3%. For WDA members with nontrained leaders, knowledge of specific benefits of using a toilet ranged from 33.4% to 72.7%, criteria for a healthy home ranged from 18.8% to 60.5%, and methods of preventing insect and rodent infestation ranged from 8.5% to 63.9%.

Compared with network members of non-trained WDA leaders, network members with trained WDA leaders are in a better condition in terms of practicing open defecation (20.3% versus 30.5%;  $p < 0.001$ ), having water for handwashing in their compound (27.4% versus 24.7%;  $p = 0.001$ ) and having access to an improved source of drinking water (88.4% versus 82.5%;  $p < 0.001$ )

Awareness about communicable diseases, including TB and HIV, was higher among network members with trained than nontrained leaders. However, knowledge of network members on detailed issues with implications for prevention was suboptimal: 83.7% of WDA network members with trained and 84.0% with nontrained leaders believed that HIV can be transmitted by sharing food with HIV-infected persons. Awareness of the use of ARVs for the prevention of mother-to-child transmission of HIV was 70.2% among WDA network members with trained leaders and 60.5% among members with nontrained leaders.

Compared with network members of non-trained WDA leaders, network members of trained WDA leaders were more likely to deliver in health facilities (53.3% versus 44.5%;  $p < 0.001$ ) and seek treatment for sick children (54.5% versus 49.8%;  $p = 0.016$ ).

**Effect of CBT on HEP-related knowledge and behaviors of WDA leaders and their network members:**

Among 30 assessed indicators, CBT was positively and significantly associated with 13 (43.3%) for WDA leaders and 19 (63.3%) for WDA members. CBT delivered for WDA leaders were significantly associated with better knowledge about FP, health facility delivery, household treatment of drinking water, covering food and protecting it from flies, improved sources of drinking water, participation in WASH campaigns, knowledge about HIV/AIDS, awareness of NCDs, and awareness of cervical cancer, both among WDA leaders and their network members. For both WDA leaders and their network members, there was no significant association between CBT and the use of long-acting reversible contraception (LARC), postnatal care coverage (PNC), washing hands at critical times, separate kitchen, separate sleeping room, separate room for animals, and improved sanitation facilities.

Compare with non-trained WDA leaders, those who received CBT knew significantly more FP methods (mean difference = 2.408, 95% CI: 1.97, 2.841). Similarly, the number of FP methods known by WDA members with trained leaders was higher than among WDA members with nontrained leaders (mean difference = 1.255, 95% CI: 1.03, 1.48). CBT was not significantly associated with the use of modern contraceptives among WDA leaders (mean difference = -0.023, 95% CI: -0.103, 0.056]), while there was a weak yet statistically significant association with that of WDA members. Network members of trained WDA leaders had a higher modern contraceptive prevalence rate (mCPR) than those of nontrained WDA leaders (mean difference = 0.0482, 95% CI: 0.012, 0.084).

**Effect of CBT on the functionality of WDA structure:** Trained WDA leaders conducted a higher number of meetings as compared to nontrained WDA leaders. The WDA functionality index of WDA networks led by CBT-trained leaders was also significantly higher as compared to those led by nontrained ones. In the adjusting model, WDA networks led by trained leaders have a higher mean of functionality index than their comparison group (mean difference = 2.255, 95% CI: 1.898, 2.612).

**Facilitators and barriers of CBT implementation:** Trainers' motivation, trainees' level of understanding or literacy level, trainer–trainee relationships, community acceptance, distance from the training place, availability of resources (e.g. teaching materials, incentives, and coordination) emerged as important determinants of the implementation of CBT.

### Conclusions and recommendations

Although not uniform across all targeted behaviors, CBT was effective in improving the knowledge and practices of WDA leaders and their network members concerning WASH, disease prevention and control, and maternal and child health.

The implementation of CBT was facilitated and hindered by factors operating at individual, community, and health-system levels. The between and within regional variability in the implementation of CBT and satisfaction of trainees calls for re-examining the WDA selection criteria, teaching methods, training materials, and refreshments modalities during training and addressing context-specific barriers of the training. The variability in the effectiveness of CBT in achieving its objectives calls for more stringent monitoring of implementation fidelity and the design of mechanisms to address additional social determinants of health behavior.

**Acknowledgment:** This evaluation was conducted under the auspices of JSI – L10K; we would like to extend our gratitude to JSI – L10K for supporting us both financially and technically. Technical inputs from investigators, co-investigators, and reviewers from the International Institute for Primary Healthcare in Ethiopia, the Ministry of Health, and other stakeholders were critical in ensuring the relevance and utility of the evaluation. We would also like to extend our heartfelt thanks to the data collectors, supervisors, and study participants for their participation.

# SECTION TWO



**NEW INITIATIVES**

# Clean and Timely Care in Hospital for Institutional Transformation (Catch-It) Project



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## Introduction

Ethiopian Hospitals Alliance for Quality (EHAQ) is a national platform and mechanism for systematic collaboration and learning among hospitals to promote the sharing of best practices as hospitals implement different reforms. The EHAQ was designed as a vehicle to improve the quality of care by identifying locally developed best practices and encouraging the sharing and implementation of strategies for successful performance improvement. After successful completion of two cycles that focused on improving patient satisfaction and Maternal, newborn health and CASH, the third cycle EHAQ collaboration focused on the implementation of Clean and Timely Care in Hospital for Institutional Transformation (CATCH-IT) Initiative. The initiative is designed to improve the quality of clean care, Timely access to basic services, and revitalization of Hospital reform initiatives for Institutional transformation.

CATCH-IT Initiative came to existence to systematically answer for the national call to address the existing major challenges for better healthcare delivery, by improving timeliness and cleanness of care, through the implementation of different change package and re-vitalizations of previous hospital initiatives.

## Objective

To transform the quality of services in hospitals through clean and timely care improvement. The specific objectives are:

- To strengthen clean care practice in hospital services.
- To reduce waiting time in hospital services.
- To revitalize the existing hospital service transformation initiatives.
- To identify best practices and scale up through collaborative learning.

## Methods

Each EHAQ cycle begins after the closing and recognition ceremony of the focus areas of the previous cycle. The EHAQ third cycle initiative was identified through expert consultations, desk review, and MoH management recommendation. The project was implemented in three phases:

**Phase One: As** the preparatory phase included: finalization of all relevant documents, including EHAQ guideline, CATCH-IT Project document, CATCH-IT change package, and Monitoring and evaluation tool, identification of relevant stakeholders, and mapping of potential resources. Advocating for CATCH-IT Project among stakeholders to gain a common understanding was also undertaken at phase.

**Phase Two:** As the implementation phase was commenced by the national launching of the CATCH-IT Project and re-arrangement of Hospitals in EHAQ Clusters categorizing hospitals as LEADS, Members as well as assigning teaching hospitals as co-LEADS followed by the Regional level launching of the CATCH-IT Project at each region during which the Hospitals introduced key interventions and change packages to be implemented. The implementation of the change packages was initiated following baseline assessment of each cluster. During phase continuous regular integrated supportive supervisions, onsite mentorships, and regional performance review meetings were conducted in all regions.

## **Phase Three: Evaluation, Recognition, and Closing**

Upon successful completion of the EHAQ cycle, an independent validation team conducted validation assessment on the best performing hospitals identified by each Regional Health Bureau and the independent audit team audited the score of each hospital validated by the validation team.



## CATCH-IT Key Interventions

### 1. Cleanliness interventions

- Monthly cleaning Day
- Regular recognition scheme for clean wards
- Implement kaizen 5S
- The hospital should make sure the outsourcing contracts stipulate the required housekeeping training.
- Conduct standardized regular internal and external cleaning audit
- Assign ward master to sustain cleaning practice

### 2. Timeliness interventions

- Digitalize management of liaison office.
- Central/Regional management of surgical backlogs.
- Introduction of the expected date of discharge during patient admission.
- Introduce a queue management system (Manual or automated) at medical record rooms.
- Early initiation of clinics and late working of clinics.
- Shift Morning sessions into lunch sessions and seminars into weekends.

### 3. Transformation of the institution Intervention:

- Implementation of Pain-free Hospital Initiative
- Ethiopian Hospital Service Transformational Guidelines (EHSTG) implementation
- HSTQ standards implementation
- CRC initiative implementation
- DHIS 2 implementation and data use
- SaLTS implementation

## Result

The CATCH-IT initiative was implemented in all public hospitals in all regional states categorized into 61 clusters. Respective Regional Health Bureaus identified 44 hospitals for National champions of champion's competitions. Through the independent validation and audit conducted at the regional identified champion hospitals, the average CATCH-IT score of the hospitals is 85% with a range of 99.83% to 33.36%. Compared to the baseline assessment, surgical waiting time was reduced from 52 days to 33 days, the OPD waiting time was improved by 50%, the EHSTG score was increased from 59% to 75.5%, and the overall CATCH-IT score raised by 35% from 50% to 85%. With the minimum Cut-off score of 76.92%, 25 hospitals were awarded 2 Million Birr, Crystal Cup, and Certificate of second rank Performers and 10 hospitals were awarded 3 Million Birr, crystal cup and Certificate for first rank achievers while the remaining 9 hospitals were recognized by certification for their participation. The recognition and closing ceremony for the CATCH-IT and the introduction of the next cycle EHAQ focus area was held in August in the presence of relevant stakeholders and the leadership.

## Conclusion and way forward

As EHAQ is a learning platform that builds on the sustainability of prior cycle initiatives, the cumulative reform implementation capacity built at each EHAQ enrolled hospital and the best experiences identified during the implementation periods of three cycles will be a stepping stone for the Ministry and its key stakeholders to launch the fourth cycle of EHAQ initiative which will focus on Evidence-based Care. As a way forward continues technical support, mentorship and supportive supervision, national-level review meeting and facilitation of best experience scale-up have to be continued to make this platform sustainable.

# The National Health Promotion Strategic Plan: The Development Process and its Objectives



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## Background

Health and development today face unprecedented threats. The financial crisis threatens the viability of national economies in general and health systems in particular. Health promotion has the potential to bring a huge impact on health, yet it is given low priority [1]. However, health promotion is more relevant today than ever in addressing public health problems globally. In the 21<sup>st</sup> century with ever-increasing public health threats and challenges, the health scenario is positioned at unique crossroads as the world is facing a ‘triple burden of disease’<sup>2</sup> constituted by the unfinished agenda of communicable diseases, newly emerging and re-emerging diseases, emergence, and rise of antimicrobial resistance as well as the unprecedented rise of non-communicable chronic diseases and injuries (NCDIs).

Health promotion has a significant role to play in reducing the burden of disease to the health system, by addressing the key social, behavioral, and structural determinants of health. Therefore, investing in health promotion is a promising prospect in realizing Universal Health Coverage (UHC). Universal health coverage will be financially feasible only when Ethiopia implements strong evidence-based health promotion programs. However, challenges are many and careful consideration and analysis to redeemed time is required. As the traditional individualistic information provision and behavioral interventions are no longer enough in preventing and controlling major public health problems effectively and efficiently, an innovative health promotion approach is imperative. There is adequate evidence that justifies shifts in strategic approaches to health promotion. For example, the HEP assessment conducted in 2019 strongly suggested revision of the current social and behavior change theories and strategies in a way

that considers the variability in the needs of specific behavioral outcomes and cultural contexts [2]. The ministry of health is currently revising its community engagement platforms such as the women’s development group (WDG).

Furthermore, emerging global pandemics and frequent public health emergencies such as COVID-19, malaria resurgence, zoonotic diseases (Brucellosis, Scabies, Anthrax, avian flu), and overburdening of the NCDIs both in the urban and rural areas require a more specific, robust, and coordinated preparedness and response strategies, which may need to be highlighted in the national health promotion strategic plan.

The Strategy was designed to respond to the National Health Policy; its aim is health promotion and disease prevention [3] and to the sustainable development goal (SDG) agenda 2030; to ensure healthy lives and promote well-being for all at all ages (SDG 3) [4]. The policy documents that have informed the need to revise the existing National Health Promotion and Communication Strategy (NHPCS 2016-2020) are The Second Health Sector Transformation Plan (HSTP II, 2021–2025), The Health Extension Program (HEP) Optimization Roadmap(2020-2035) and the introduction of Community Engagement Implementation Guideline, which emphasize the need to recognize, prioritize and scale up health promotion interventions in the implementation of the essential health package to address health problems and to effectively utilize technologies in conveying the key message to the end-users.

The HSTP II (2021-2025) emphasized innovative Health Promotion and community engagement interventions fitting to the changing needs and contexts at community and facility levels. Two out of 14 strategic directions of the HSTP II are directly

<sup>2</sup> Disease burden from communicable and non-communicable diseases as well as related to injuries.

linked to the health promotion case team; to mention: ensure community engagement and ownership and enhance health in all policies and strategies [5].

The National Health Promotion Strategic Plan (2021/22-2025/6) encompasses the following strategic directions as set out in the Ottawa Charter for health promotion: capacity building, health in all policies (HiAP), create supportive environments, community engagement, and develop personal skills (improve health literacy) [6]. Therefore, considering shifts and concurrent contexts in the health sector, a new national health promotion strategy needed to be developed to guide meaningful and efficient implementation of health promotion interventions.

### Objective

The general objective of the National Health Promotion Strategic Plan is to enable individuals, families, and communities to adopt healthy behaviors and lifestyles. It intends to enable individuals, families & communities to take ownership and control of their health; promote health in all policies and strategies and reduce their health consequences; implement health-promoting school initiatives and advocate for greater mass media involvement and use of technologies to enhance health transformation initiatives.

### Method

The National Health Promotion Strategic Plan (2021-2025) was developed through a participatory process involving partners both within the Ministry of Health Ethiopia (MOH), Regional Health Bureaus (RHBs), Universities, and partners who are implementing health promotion activities on the ground; to identify health promotion priorities in the country.

In the process of National Health Promotion Strategic Plan development, the technical working group conducts a SWOT analysis of the previous national health promotion and communication strategy, validation workshops to get stockholders' feedback, and alignment of prioritized activities with other directorates' health program strategy activities.

### Results

The expected outcome and impact of the implementation of the National Health Promotion

Strategic Plan will include sustainable skills on health promotion planning, implementation, and M&E, health infrastructure or service development, program maintenance and sustainability, building problem-solving capability, organizational structures, resources, and commitment to health improvement in health and other sectors. Outcomes at the individual level will include the improved level of knowledge, personal skills, and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions.

More specifically, the expected outcome of the successful implementation of the strategy will include a supportive environment, increased access to health services and information, increased utilization of health services, improved health behavior and lifestyle, increased health literacy, increased health system literacy, and increased compliance to public health laws, with the resultant impact of the improved health status of the society.

### Conclusion and way forward

The National Health Promotion Strategic Plan has a significant role to play in reducing the burden of disease to the health system and improve health stats, by addressing key social, behavioral, and structural determinants of health. Hence, we urge strong coordination and collaboration across stakeholders for its realization.

### References

1. Coe G, de Beyer J. The imperative for health promotion in universal health coverage. *Global Health, Science and Practice*. 2014 Feb;2(1):10-22. DOI: 10.9745/ghsp-d-13-00164. PMID: 25276559; PMCID: PMC4168610.
2. Teklu AM, Alemayehu YK, Medhin G, et al. National assessment of the Ethiopian Health Extension Program. Addis Ababa, Ethiopia:2020.
3. FDRE draft Health Policy, 2019
4. United Nations (2015) Resolution adopted by the General Assembly on 25 September 2015, Transforming our world: the 2030 Agenda for Sustainable Development
5. HSTP II (2021-2025)
6. Ottawa Charter for Health Promotion. First International Conference on Health Promotion, Ottawa, Canada, 17–21 November 1986. Geneva: World Health Organization; 1986

# Employees' Performance Appraisal Problems and Lessons Learned at Ministry of Health



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## Background

The objective of the second Health Sector Transformation Plan (HSTP-II) entails strengthening the health system to ensure people live longer healthier lives through reducing disease conditions, unhealthy lifestyles, and accidents. To realize this strategic plan, the Ministry of Health (MoH) is organized by a Minister Office having three state ministers, 25 directorates, 88 teams, and a total of 1213 employees. For decades, the Ministry has been undertaking employees' performance appraisals with a weak monitoring and evaluation. This has made the health sector have less experience in employees' performance appraisal. In 2020-21 fiscal year the revised performance appraisal guideline was approved and implemented. During the implementation of the guideline, some pertinent problems were observed that require an efficient and effective performance management system that has the capacity of improving performance and overall quality of the organization (1). It is also believed that without proper research being performed on the identified problems, organizations that are implementing a performance management system will be confronted with the same problems repeatedly, resulting in inefficiency (2).

As a result, more research into this specific topic is required to heighten the chance of a successful performance management system.

## Objectives

This research aimed to explore problems faced, lessons learned in the process of employees' performance appraisal, and to recommend possible solutions.

## Methods

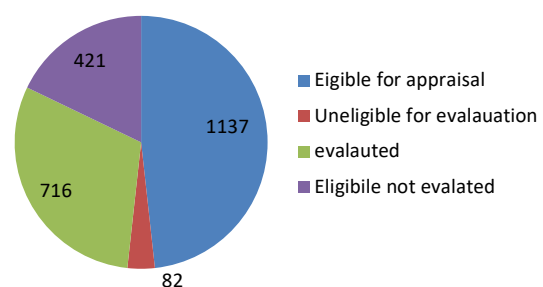
This study employed a mixed approach of quantitative and qualitative research methods for a better understanding of the contextual variables and their

effect on the employees' performance appraisal. To fulfill the purpose of this study, secondary data such as admin reports and raw data were used for analysis. The quantitative data were triangulated and validated with the qualitative data which was collected through group discussions and experts' opinions. Finally, a descriptive survey method was employed for the data explanation. The target population of the study was all eligible employees for the performance appraisal which accounts for 966 out of 1137 employees working at the Ministry. Finally analyzed data were presented in charts and text format depending on the data type and content; phrases, sentences, paragraphs, and ideas.

## Results and Discussion

The performance appraisal guideline states that all eligible employees during the appraisal period must be evaluated. Accordingly, performance appraisal formats which consist of two sets of items with planned activities and behavioral appraisals were expected to be filled and collected from eligible 1137 employees; out of these, 716 (63%) were evaluated and the rest 421 (37%) were not. From this we can understand that abundant number of eligible employees was not evaluated. This indicates that, though attending the appraisal session was obligatory for every eligible employees of the Ministry, huge number of the employees' lack readiness for performance appraisals (see Fig. 1).

Figure 1: General status of employees at MoH, 2020/21 Fiscal Year



The finding further illustrates that 14% (98) of the employee's performance appraisal results ranked very outstanding (95% and above) and 79.3% (568) of employees ranked outstanding (80% to 94.99%) (See Fig. 2).

According to the guideline, employees' performance appraisal result has to follow normal distribution curve which means 5% of the total eligible employees should be ranked very outstanding, 15% of the total eligible employees should be ranked outstanding, 60% of the total eligible employees should be ranked average, 15% of the total eligible employees should be ranked low and 5% of total eligible employees should be ranked very low.

Based on this principle, from total eligible employees for appraisal, it was expected that 36 (5%), 107 (15%), 430 (60%) employees could have been ranked very outstanding, outstanding, and average respectively. The remaining 107 (15%) and 36 (5%) from total eligible employees could have been scored low and very low-performance appraisal results respectively, during the study time.

On the contrary to what was expected, the number of employees whose performance appraisal results scored low and the very low range was nil. During the appraisal, participants were not following the procedures set in the guideline. This was one of the reasons why the employee's performance appraisal result is not as such consumable. This was also confirmed by the ad-hoc committee which was organized for monitoring and follow-up of the performance appraisal. The committee explained that most employees and their supervisors were not ready to follow the guideline or they lack the skill to evaluate the employees. The committee also witnessed various problems such as incomplete individual plan which misses baseline and target, inequality of weights given to main activities vis-a-vis the strategic direction achievement. Lack of willingness to attend appraisal sessions and late submission of the performance appraisal results were also amongst the challenges. As the appraisal is not associated with any kind of rewards or punishment, most of the employees tend to ignore the performance appraisal.

As it can be seen from figure 3 (Annex 1), most of the directorates performance appraisal result fall in the range of blue which is above the average. This result

is also epitomizes individual employees' performance appraisal result.

### Conclusion/Lessons Learned

- The new guideline states that the weight given for strategic direction should be equal to main activities. However, this was not seen to be the actual practice.
- The Ministry performance appraisal guidelines also clearly set that achievement has to be evaluated against the target plan, but this was not turn out to be true for many of the employees' appraisal report.
- Lack of willingness to attend the orientation on revised performance appraisal guidelines resulted to failure to follow the steps during appraisal which resulted in poor employees' appraisal report which made the recognition process so complicated.
- Contrary to the obligatory explanation of the guideline, performance appraisal results of most of the employees lay down in outstanding range though significant number of employees lacks readiness to be evaluated.

### Recommendations

- Though the ministry has developed and implemented a revised system for performance appraisal, it didn't get due attention. Therefore, employees' performance appraisal should be conducted every six months understanding that appraisal will contribute paramount share for the success of the organization.
- To ease the performance appraisal process, agreed and approved employees' individual plan which is cascaded from the directorates' plan should send to the HRA Directorate in time and every employee's performance should be monitored according to the readymade formats.
- A strong motivation and recognition package should be in place to attract the employees' and leaders' attention towards the performance appraisal.
- Additional studies and pilot projects should be applied to build on the existing knowledge and experience in the area.

**References**

1. Counet, L. I. (2009). Lessons learned from performance management systems implementations.
2. De Waal, A. (2002). Quest for Balance, The Human Element in Performance Management Systems.

**Annex 1: Figures**

Fig 2. Employees performance appraisal result at Ministry of Health, 2020/21 Fiscal Year

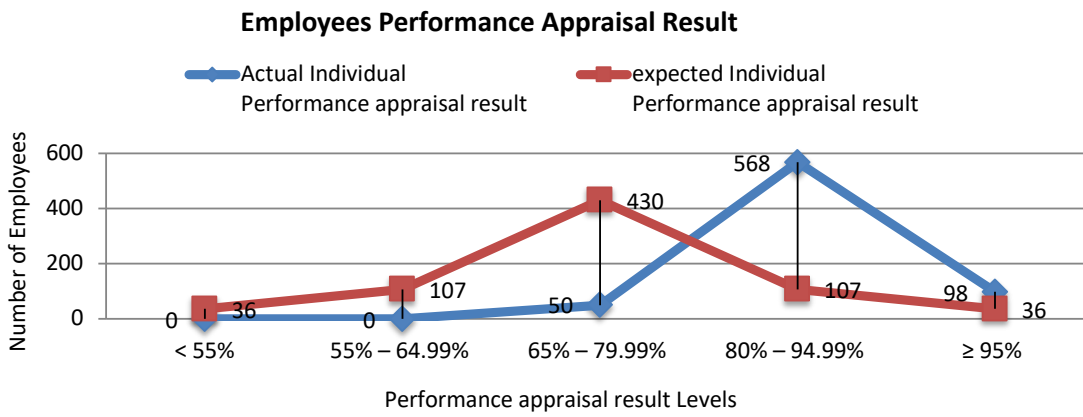
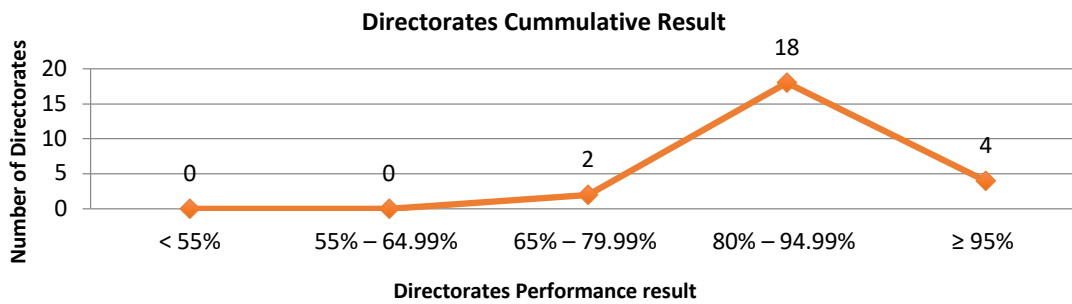


Figure 3: Performance evaluation result of directorates





# Leadership in Action: How Ethiopia Embraced the Nurturing Care Agenda

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## Background

Clear and consistent government leadership at all levels, starting with executive leadership at the highest level, facilitates implementation of the nurturing care (NC) agenda. Ethiopia's vision for an inclusive and prosperous nation has encouraged all ministries and sectors to play their part and created an enabling environment for new ways of working: this opened the door for greater attention to ensuring that all children in Ethiopia aged under 5 years receive NC (1). Since 1990, Ethiopia has made steady progress in improving child survival, with under-5 mortality dropping from 205 per 1,000 live births in 1990 to 59 per 1,000 live births in 2019 (2). While more and more children are surviving, the Ministry of Health (MOH) is cognizant that not all can reach their full developmental potential. The new enabling environment made it possible for the MOH, to expand its focus beyond surviving to include thriving and transforming children's lives. It also served to reinforce collaborations with development partners and stakeholder ministries including MOH, Ministry of Education (MoE), Ministry of Women, Children, and Youth (MoWCY). This case study sets out the process followed in developing a shared vision, and implementation initiatives by different sectors and stakeholders.

## Objective

The objective of this case study was to describe how the MOH has been collaborating with other ministries to elevate attention to and investment in early childhood development (ECD) and leading a multisectoral effort to operationalize the NC agenda.

## Method

Desk review of published articles, grey literature, and documents was conducted to understand the status of the ECD initiative in Ethiopia. In addition, KII was conducted with ECD focal persons and program experts from the stakeholder ministries (MoH, MoE & MoWCY) and development partners (PATH, WHO, USAID, UNICEF, Children's believe) using semi-structured questioners, National, and international experts were engaged in developing the case study. Program managers and the ECD Technical Working Group (TWG) members reviewed and validated the case study report.

## Result

### **Advocacy and leadership actions**

Within three years, the MOH, together with other key ministries and partners, has created a vibrant environment that enabled multiple sectors and diverse stakeholders to work together at different levels to promote NC. This section captures the five key building blocks of Ethiopia's collective dedication and commitment to advancing NC.

#### **i. Learning about NC and the power of investing in ECD**

The Lancet's ECD series (3) (2016) and the NC Framework (2018) provided the global foundation for the promotion of NC generally, and particularly responsive caregiving and early learning through routine services. Throughout 2018, representatives from the MOH, together with other ministries and development partners including PATH, USAID, the World Bank, the World Health Organization, and UNICEF, participated in multiple learning events that provided the essential underpinnings for the

design of Ethiopia's NC roadmap. These included: a presentation on The Lancet's ECD series for partners in Ethiopia; a learning visit to China to see ECD programs and multisectoral collaboration in action; and a visit to see how responsive caregiving and early learning were being integrated into health services in Mozambique. A large Ethiopian delegation attended a regional consultation in Nairobi, Kenya (4) to discuss the operationalization of the NC Framework within the health sector, resulting in the development of a national action plan. In 2019, additional learning visits to Brazil and Denmark were organized for the Minister of Health and delegates from the Prime Minister's Office and the Addis Ababa City Administration

#### ii. **Establishing a multisectoral ECD Technical Working Group (TWG) led by the MOH**

In May 2018, the MOH facilitated the establishment of the ECD TWG, which ensured representation from a range of ministries and stakeholders.

#### iii. **Organizing a national sensitization workshop on NC**

A national sensitization workshop on NC for ECD convened in late 2018 was the first high-level forum. The workshop brought together over 200 participants representing national and regional representatives from four ministries (MoH, MoE, MoLSA, and MoWCY), UNICEF, WHO, the World Bank, PATH, USAID, DFID, CCF, academia, regional bureaus representing the sectors and the media. The workshop raised awareness and fostered a common understanding of ECD, the importance of investing in ECD, the contribution that each sector could make, and the value of multisectoral coordination.

#### iv. **Gathering and using evidence to inform planning**

In 2019, a Research Advisory Council thematic group for ECD was established by the MOH to gather, analyze, and translate evidence to ensure evidence-based program implementation. Following this, the MOH, financially supported by UNICEF, conducted a situational analysis of the extent to which existing health services were promoting NC. The analysis revealed that responsive caregiving and early learning were not promoted through the health sector: a critical gap and missed opportunity because the

health sector is often the only way to reach young children and their caregivers consistently during the early years. It also discovered limited multisectoral coordination, insufficient public financing, and a lack of national evidence around best practices. A subsequent policy brief and strategy produced by the ECD Research Advisory Council identified promising models of service delivery approaches and played an instrumental role in shaping the MOH's vision of promoting NC.

#### V. **Building capacity to seize NC within existing health platforms**

In early 2019, the MOH conducted a ToT on the Care for Child Development package (5) to develop a pool of master trainers who in turn technically supported the development of Contextualized Care for Child Development training package and the cascading of training for health workers.

#### **Achievements**

Together, these advocacy and leadership actions created conditions in which Ethiopia was able to rapidly translate the NC Framework into well-conceived and coordinated action which is already beginning to bear fruit through the development of enhanced policies, strategies, and programs for young children and their families.

#### **Enabling a multisectoral policy environment**

The national sensitization workshop revitalized commitment to multisectoral collaboration at national and regional levels and positioned the NC agenda as a collective responsibility. Coordinated efforts by ministries and development partners led to the revision of the Early Child Care and Education policy framework. The newly named Early Childhood Development and Education (ECDE) framework, adopted in 2019, emphasizes the importance of responsive caregiving and recognizes the need to leverage all touch-points. Most importantly, it specifies the roles and responsibilities of each sector in advancing the NC agenda.

### **A clearly defined way forward for the MOH**

The enabling national environment, and lessons learned from the various workshops and country exchange visits, enabled the MOH to reinforce support for NC in influential guiding documents. Examples include the National Mental Health Strategy (2020–2025) (6), the Health Sector Transformation Plan (2020–2030) (7), and the National Health Strategic Plan (NHSP) for ECD (2021–2025) (8). The NHSP is aligned with the revised ECDE policy framework and the NC Framework and is complemented by a monitoring and evaluation framework developed by the ECD Research Advisory Council.

### **Integration of early learning & responsive caregiving into MNCH training packages**

Following extensive consultation, the Care for Child Development package was contextualized and adapted to include developmental monitoring counseling, and play box session contents, and was made more conducive to participatory adult learning. Content on responsive caregiving and early learning was integrated into various tools such as the Integrated Refresher Training for Health Extension Workers (HEWs), the IMNCI training packages, and COVID-19 guidelines. In addition, key messages were introduced into the existing mHealth platform for awareness creation and promotion.

### **Financing at national and regional levels to promote NC within health services**

The MOH leveraged financing from the USAID-funded Transform Primary Health Care Project to reinforce counseling on NC in routine health services in four woredas of four regions. The Addis Ababa City Administration, Big Win Philanthropies, and the Bernard van Leer Foundation are co-financing a multisectoral initiative to promote NC in Addis Ababa. With a grant from Banium Family Foundation PATH provides technical assistance to MOH and the Addis Ababa ECD initiative to support integrating the promotion of the NC in health facilities and at the community level.

### **Success factors**

*Cultivating champions at the highest level of government and across key ministries.*

NC in Ethiopia has benefited from consistent leadership and a harmonized vision at all levels of government. The Prime Minister's encouragement to ministries to expand their mandate to ensure the all-round development of Ethiopians has opened the door for individual ministries to promote the NC agenda. Focal persons have been appointed in each ministry and empowered to work on this agenda. Within the MOH, the Minister, and MCH Director frequently check on progress and motivate ECD TWG members. The dedication and passion of the ECD Focal Person have been critical for the MOH's embracing of the NC agenda, for collaboration with other sectors and partners.

*Opportunities for learning and exchange at all levels.*

The multiple learning opportunities and effective dissemination approaches were instrumental in garnering and maintaining enthusiasm. For example, the global experts meeting in Geneva (9), visits to Brazil and Denmark by the Deputy Mayor of Addis Ababa, which influenced his decision to establish and co-finance the demonstration project in Addis Ababa.

### **Collaborative engagement from the outset**

The composition of the ECD TWG and the various learning events were deliberately structured to include representation from multiple institutions and sectors. This approach recognized and appreciated the contributions of each sector, with dialogue and collaboration forming the basis of joint action plans. For example, the national sensitization workshop on NC brought together a range of stakeholders from multiple sectors, making it easier for all actors to own the revision of the ECDE policy framework. These deliberate multisectoral actions, driven not by external partners or funders but by champions within government, facilitated the contextualization of the NC agenda and ensured its alignment with national priorities.

## Harnessing partnerships to drive the agenda

Strong collaboration between the key ministries, coupled with commitments by several UN and non-governmental partners to help the government advance its vision and priorities, helped to catalyze and sustain momentum for the NC agenda. Financial contributions and technical assistance from UNICEF, WHO, Transform Primary Health Care, the World Bank, and PATH helped the government to achieve key activities and.

## Barriers

Initially, when the MOH was ready to explore what it would mean to advance NC through the health sector alongside other sectors, there were no global resources to guide the implementation of the NC Framework. Moreover at first, while MOH technical leads and ECD TWG members were enthusiastic about the NC agenda, they did not know how to go about strengthening health services to promote NC. This resulted in a lack of confidence and clarity on where to start and what to do. Participation in the national training on the Care for Child Development package and the regional stakeholder consultation in Nairobi, Kenya provided much-needed clarity and gave the MOH the confidence it needed to own and drive the agenda.

## Conclusion and the way forward

Ethiopia has shown that the NC agenda can be contextualized and rapidly scaled up when the following conditions are in place: government commitment; strong and participatory coordination and collaborative structures; dedicated focal experts in key ministries and departments; openness to learn from each other, as well as from experiences both inside and outside the country; and national and international partners' support to realize the vision. Within three years, Ethiopia's MOH established a solid foundation for promoting NC in the health sector and collaboration with other sectors. The focus has now shifted to sustaining, scale-up and building on this progress. The MOH will continue its work with partners to reinforce missing NC elements and to integrate them into key policies, strategies, guidelines, and tools. It will also maximize opportunities to integrate responsive caregiving and early stimulation into essential service delivery

platforms at community and health facility levels. Efforts to build capacity and ownership at multiple levels of the stakeholders and communities will be enhanced to help that all children survive, thrive, and reach their full developmental potential. While there is currently a high level of interest in and commitment to the NC agenda across all key ministries, it cannot be assumed that this will always be the case. Historically, emergencies or changing priorities at the highest levels of government have tended to divert attention and resources as is being observed during the ongoing COVID-19 pandemic. During such crises, the focus reverts to child survival, leaving aside interventions that support the new thrive agenda, and even risking reversal of recent achievements. Ongoing advocacy efforts are therefore needed at all levels to ensure that decision-makers see NC as a priority, even during times of crisis.

## REFERENCE

1. MoH, MoE, MoWCY & MoLSA. ECDE policy framework 2021
2. EPHI and ICF. 2021, Ethiopia Mini Demographic and Health Survey 2019: Final Report, Rockville, Maryland, USA: EPHI and ICF
3. Black MM, Walker SP, Fernald LCH et al. Early childhood development coming of age: science through the life course. *Lancet*. 2017, 389(10064):77–90.
4. Participating countries: Ethiopia, Kenya, Malawi, Mozambique, Tanzania, Zambia, Zimbabwe. For the meeting report: <https://nurturing-care.org/events/stakeholders-consultation-meeting/>.
5. Care for Child Development is a toolkit that equips front-line workers, such as health and social workers, with the knowledge and skills to counsel and empower caregivers to communicate and play with their children. See: [https://www.who.int/maternal\\_child\\_adolescent/documents/care\\_child\\_development/en/](https://www.who.int/maternal_child_adolescent/documents/care_child_development/en/).
6. MOH Ethiopia. (2021, July). National Mental Health Strategic Plan for 2020-2025.
7. MOH Ethiopia. The Health Sector Transformation Plan II 2020/21–2024/25
8. MOH Ethiopia. (2020, October). National Health Sector Strategic Plan for ECD 2020/21–2024/25
9. Global technical meeting: Strengthening programming for NC. [https://nurturing-care.org/innovating\\_for\\_ecd-2/](https://nurturing-care.org/innovating_for_ecd-2/).

# SECTION THREE



**BEST PRACTICES OR LESSONS FROM  
PROGRAM IMPLEMENTATIONS**



# Bridging the Gulf between the Academia and Social Sector; the Case of Capacity Building and Mentorship Program of the MOH of Ethiopia



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## Background

In this time of globalization with a dynamic and competitive economic ecosystem, the sustainable socio-economic development of a country largely depends on its capacity to generate knowledge and produce skilled labor capable of generating and applying knowledge and cutting-edge innovations. Universities have long been the source of essential knowledge and centers to cultivate skilled human resources that are critical to charting the socio-economic trajectory of a country. Nowadays, their role in driving socio-economic development has become more evident than ever [1, 2]. As such, universities are supposed to play a leading role in advancing scientific innovations poised to address contemporary challenges and meeting arising needs of the public through human resource development, research, and innovations [3]. In Ethiopia, the role of universities has been recognized as one of the key pillars to the country's economic and social transformation processes as described in the first and second growth and transformation plans that aspire to realize the country's vision of being a middle-income country by 2020-2025. However, the link between the academia and social sectors and industries in Ethiopia has been limited or non-existent [1].

The first Health Sector Transformation Plan (HSTP I) of the health sector prioritized information revolution as one of the four transformation agendas.<sup>3</sup> The connected woreda program was designed to be the pathway to realize the information revolution agenda focusing on improving data quality, data use culture, and digitization of health information systems [4]. The ministry of health (MOH) solicited increasing the capacity of health institutions through providing mentorship support as the main intervention to

hasten the digitization of information systems and foster a culture of data use and thereby realize the agenda. As such, the MOH considered engaging universities to support health facilities to implement the connected woreda program.

Due to the lack of prior experience of working with universities, the decision to engaging universities was a daunting prospect for the ministry due to several reasons. Universities in Ethiopia were mainly focused on basic researches and were distant from supporting the actual implementation of interventions at the ground level. There was fear of failing to meaningfully engage universities and efficiently utilize allocated resources. Despite all odds, the ministry took an audacious decision to “give it a try” and start bridging the gulf between the health sector and universities. To this end, the capacity building and mentorship program (CBMP) was designed to engage academic institutions in supporting the health sector and enhance their contributions in informing health programming and the health system's performance improvement through the generation of scientific evidence. The goal of the program was to strengthen the health information system through implementing the information revolution agenda of HSTP [5-7].

The Doris Duke Charitable Foundation (DDCF) through the African Health Initiative (AHI), which intends to support the development of government-led health learning platforms including implementation researches, became interested in investing in the CBMP platform. Under AHI, DDCF has committed to making a five million dollar investment in the Ethiopia Data Use Partnership (DUP) that aims to improve the collection and use of high-quality routine information in the health sector in Ethiopia, contributing to improved quality, efficiency, and availability of

<sup>3</sup> A transformation agenda is coined to galvanize momentum and provide a platform to synergize multifaceted efforts of a sector to alleviate the most critical interrelated systemic barriers constraining attainment of the sector's goal and targets.



primary health services at all levels. So far, DDCF has invested close to 80 million birrs to support the program through the MOH.

The program was designed to be a collaborative partnership between local universities, health science colleges, DUP, regional health bureaus (RHB)<sup>4</sup>, and the MOH. The universities have been supporting selected woredas<sup>5</sup> since 2018 to implement components of the connected woreda program to realize information revolution within their district health system through improvements in data quality and use of health information for decision making at administrative unit and health service levels by integrating capacity-building elements and digital tools. The connected woreda program enables woredas and primary health care units<sup>6</sup> to realize these objectives while targeting health care facilities and health workers. Besides, the support of universities revolves around supports to create information revolution model woredas, provide pre and in-service training and documentation, and dissemination of best practices.

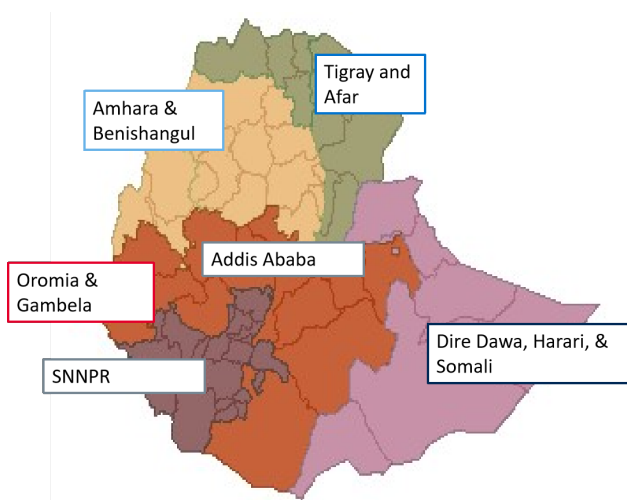


Figure 1, implementation areas of CBMP

## Methods

Implementation of the program involved three approaches, namely competitive selection process, co-creation, and joint implementation and monitoring of the program.

**1. Competitive Selection process:** The ministry in collaboration with the DDCF made a call for application for local universities to apply with proposals showing how they would engage in supporting the information revolution agenda of the MOH through implementing the connected woreda program. About six universities, namely Addis Ababa, Hawassa, Haramaya, Mekelle, and Jimma universities, were selected through a competitive process. Universities with a better experience in implementing HIS-related interventions, those with demographic surveillance sites, and with the more innovative proposals were selected. The six universities selected their consortia universities and colleges in their implementation areas. Along with the RHB, the six universities have been assigned to support the implementation of the connected woreda program in about 36 woredas selected from the six implementation areas. Addis Ababa university supports Addis Ababa City, Gondar University supports Amhara and Benishangul Gumuz regions; Jimma University supports Oromia and Gambella regions; Haramaya University supports Diredawa, Hararia nd Somali regions; Hawassa University supports Sidama and SNNP regions; Mekelle university supports Tigray and Afar regions (fig 1).

<sup>4</sup> RHB are administrative bodies that oversee the health system with the regional states. Ethiopia is a federal republic of 10 regional states and 2 city administrations.

<sup>5</sup> A woreda or district is the lowest governance structure with an average of 100,000 populations and 20 kebeles or communities. Kebeles are the smallest administrative units with an average of 5000 populations. A woreda health system is the functional unit of Ethiopia's health system and is composed of a primary hospital, four health enters, and 20 health posts. The woreda health office manages health facilities, coordinates stakeholders, and regulates health service provisions in the woreda.

<sup>6</sup> Primary health care unit is composed of one health center and five satellite health posts.

**2. Co-creation process:** After selecting the universities, the interventions and implementation approaches were designed through the collaboration of the MOH, selected universities, RHB, and the DUP. Collaboration with RHB and creating consortia with local academic institutions were identified as major strategies for the program. The interventions include;

- Create a center of excellence in the information revolution
- Support implementation of HIS in the university hospitals
- Document and produce publications in the areas of health information systems
- providing training and mentorship on data analytics and evidence generation to health workers at health facilities of selected woredas
- Support demographic surveillance sites
- Development of new and revision of curriculums for disciplines related to health information systems and training
- Supervising masters and Ph.D. students doing researches on topics related to HIS.

**3. Joint implementation and monitoring:** the universities collaborated with RHB and consortium academic institutions to leverage local capacities to implement the interventions. The MOH organized regular coordination meetings to jointly monitor performances and facilitate cross-fertilization of learnings among implementation areas. To address the arising challenges and build on the gains, policy, plan, monitoring, and evaluation directorate of the MOH has staged multiple forums to bring stakeholders together and get their reflections and made adjustments accordingly. In addition, stakeholders have been collaborating to provide supportive supervision and conduct verification of performance of woredas.

## Result

The implementation of the programs has advanced the engagement of universities with the health sector while strengthening the health information systems in the selected woredas. The academicians have become more familiar and capable of supporting health information systems through pre-service and in-service training, generation of evidence, 44 publications of 27 of them were published, and development of implementation guidelines tailored to local contexts. The universities played key roles in the revision of curriculum for health information technicians (HITs), and the development of generic curriculum for degree level HITs. The program has also been instrumental in generating a pool of academicians that are capable to supervise postgraduate students (57 MSc. And eight Ph.D) doing researches related to health information systems. The program has also laid the foundation for conducting various implementation researches and documentation of best experiences and it has been effective in knowledge transfer between the academicians and implementers. Besides, through the platform, five verified model woredas verified by external team were created, that would be learning centers for woredas in their respective areas.

In addition, CBMP has been the platform to mobilize resources and technical expertise from various stakeholders. The USAID-Digital Health Activity (DHA) has invested through the platform to support creation of center of excellences (CoE) including CoE for electronic community health information system (eCHIS) with Jimma university, and CoE for EMR with Mekelle University. Universities have pledged to allocate resources for implementation of HIS activities at their teaching hospitals. In addition, universities have dedicated offices, cars and other supplies for HIS related activities.

## Lessons Learnt

Through implementing the program, the ministry has become cognizant that the program has been a great platform for advancing sustainability and ownership of health information system interventions through creating local capacity and functional linkages between universities and various administrative levels of the health sector and health facilities. It also became evident that the platform has become an additional avenue for resource mobilization and an extra arm to the MOH and RHB to support the health information system. In addition, the program has been pivotal in evidence generation and documentation through leveraging the capacities of universities in research and write-up capabilities. Most of all, the program has showcased the academia and other sector relationship and linkage is a possibility and workable. The major challenges faced were delayed in the creation of model woredas and centers of excellence in the information revolution, which were largely ascribed by the limited engagement of RHB and consortium academic institutions. The engagement of all partners in all steps of the process starting from selection, proposal development, and pro-active engagement of them in implementation of the interventions could enhance the role of all partners.

## References

1. Mulu, N.K., *The Links between Academic Research and Economic Development in Ethiopia: The Case of Addis Ababa University*. European Journal of STEM Education, 2017. **2**(2): p. 5.
2. Etzkowitz, H. and L. Leydesdorff, *The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university-industry-government relations*. Research policy, 2000. 29(2): p. 109-123.
3. Lee, Y.S., *Technology transfer and the research university: a search for the boundaries of university-industry collaboration*. Research policy, 1996. 25(6): p. 843-863.
4. MOH, *The Connected Woreda Strategy Implementation Manual (draft)*. Policy Document, 2016.
5. FMOH, *Health Sector Transformation Plan I*. Policy document, 2015.
6. FMOH, *Information revolution roadmap*. Policy document, 2016.
7. FMOH, *Health Sector Transformation Plan II*. Policy document, 2021.

# Implementation of Medical Devices Installation and Maintenance Campaign in Public Hospitals



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## Introduction

Ethiopia has made great progress in improving the health status of the community through coordinated, rigorous efforts and extensive investments in medical devices over a couple of decades. Ethiopian expenditure in medical devices and pharmaceuticals was estimated to value between \$800 and \$900 million with a growth of up to 25% over the last 10 years and predicted to reach \$3.6 billion by 2030 with an annual growth rate of 15%. Moreover, the Ministry of Health in partnership with stakeholders established 24 maintenance workshops, provided capacity-building training to over 300 biomedical professionals, developed training manuals, operational guidelines, and strategic documents on medical devices management. These interventions augmented and improved the supply and availability of medical devices over the years which increased the accessibility, equity, and coverage of healthcare services in health facilities. Despite the high investment and efforts done during the implementation of HSTP I, there are still several gaps in availability, maintenance system, proper management, and optimized utilization of medical devices which are indicated as areas of intervention in HSTP II.

Irrational use, unavailability of spare parts, lack of skilled manpower, poor regular maintenance, and delayed installation practices are the major reasons for frequent failure and mal-functionality of medical devices in Ethiopia. The national survey conducted by the pharmaceutical and medical equipment directorate (PMED) in 82 public hospitals in November 2019 indicated that 26% of medical devices were non-functional while only 58.13% of the medical devices were installed within six months of delivery. These problems resulted in unnecessary referrals, increased service costs, wastage of resources, reduced trust of

beneficiaries, compromised quality and efficiency of healthcare services. Previous interventions and efforts implemented to ensure the availability of functional medical devices in health facilities were insufficient. Hence, it was important to initiate new problem-solving interventions to functionalize medical devices and enhance healthcare delivery in public hospitals.

## Objectives

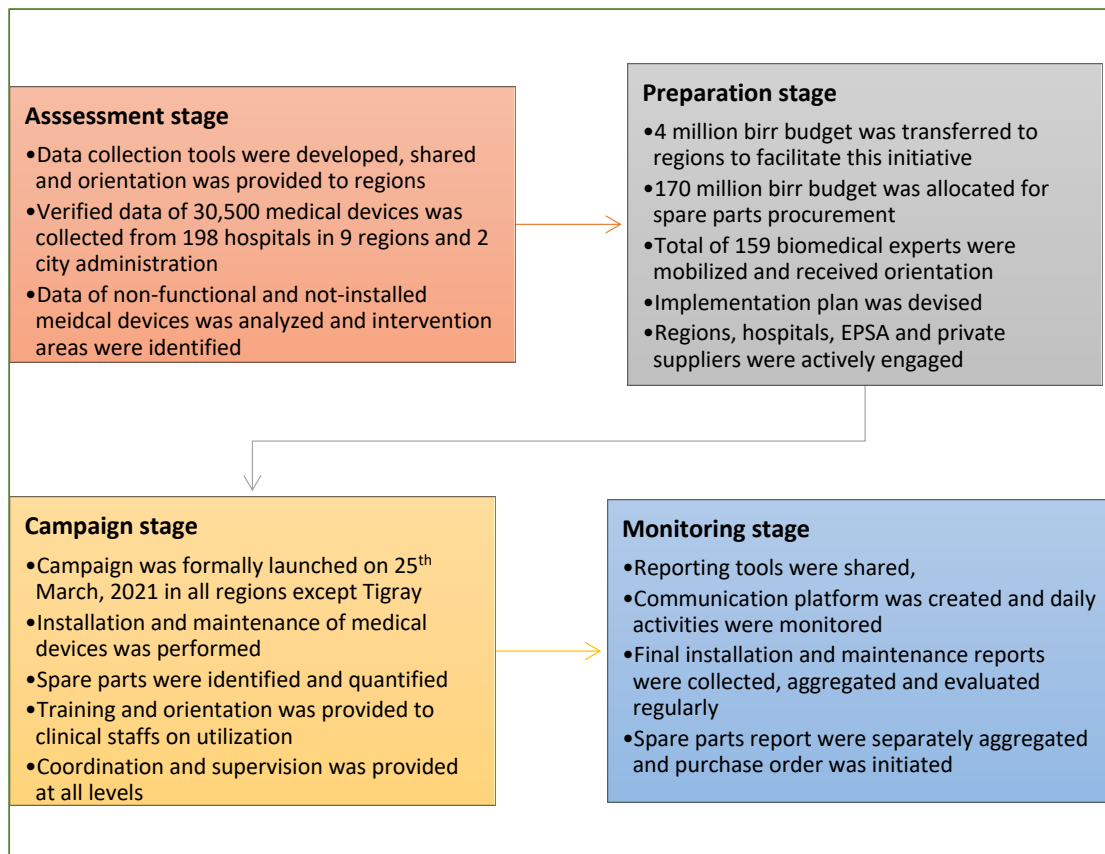
### General objective

The general objective of this initiative was to generate evidence to inform planning for improving increased functionality, accessibility, availability, improved life span, and optimized utilization of medical devices in public hospitals. The study specifically intended to investigate the extent of and factors for not-installed and non-functional medical devices; inform efforts to functionalize un-installed and non-functional medical devices; increase the availability of spare parts needed for maintenance; and improve the skill of biomedical and clinical staffs on proper operation and maintenance

## Methods

This installation and maintenance campaign was targeted for implementation in public hospitals at the national level with active engagement of high-level management bodies throughout the execution of the initiative. The multi-level approach was used for the implementation of this nationally initiated campaign as shown in figure 1.

Figure 1: Approaches and stages followed during medical devices maintenance and installation campaign



**Results**

**Status of medical devices installation and functionality**

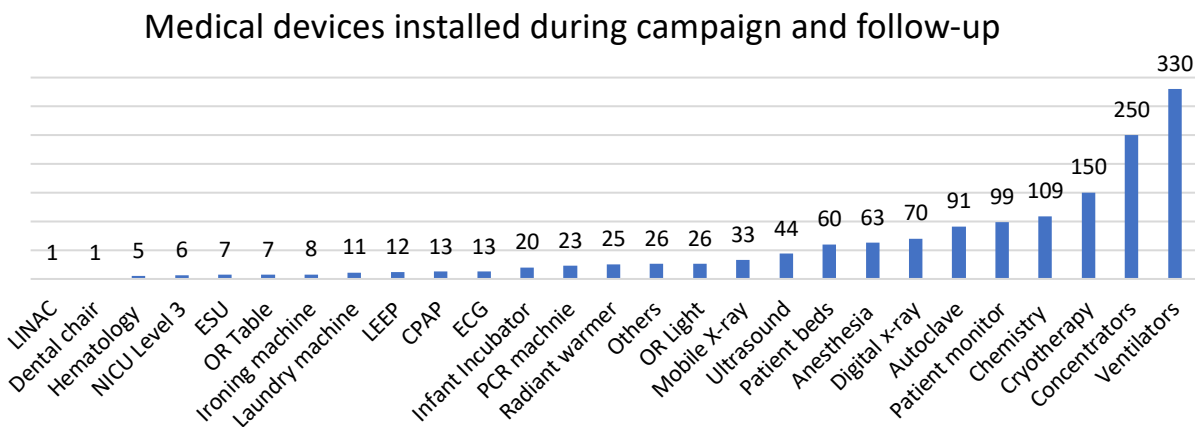
The assessment report collected from 198 public hospitals in November 2020 revealed that there were 5,471 non-installed medical devices. Besides, the report indicated 3,255 non-functional medical devices out of 22,490 devices obtained from inventory. Among the reported not-installed medical devices 29.57% (1,618) were found not requiring installation, 47.35% (2,590) require minor installation by biomedical professionals in the target hospitals whereas 23.08% (1,263) were capital equipment that needed an intervention. Major problems for not-installed devices were the placement of devices as a reserve; suppliers associated problems, lack of accessories, and lack of site readiness. Non-functional devices reported were due to the absence of necessary spare parts, software corrupts and repeated company-level password updates, poor calibration, and preventive maintenance practices, and the presence of obsolete

technologies in hospitals. The intervention was focused to install capital medical equipment and functionalize failed medical devices.

**Medical Devices Installation**

The COVID-19 diagnostic and therapeutic devices were prioritized during the installation which included X-rays, mechanical ventilators, oxygen concentrators, PCR machines, patient monitors, and anesthesia machines. Installing, inspecting, performing acceptance testing, provision of user training on proper operation and handling, and initiation of essential medical services were the major activities done during the installation campaign. A total of 733 capital medical devices were installed during the campaign intervention which saved an estimated cost of over 24 million Ethiopian birr (ETB). Simultaneously, PMED coordinated and supported medical devices suppliers in the installation of 769 capital medical equipment that is delivered to hospitals. The specific capital medical devices installed during the campaign and follow-up are illustrated in figure 2.

Figure 2: Number of medical devices installed during the campaign and follow up



**Medical Devices Maintenance**

The maintenance activities during the campaign initiative included inspection, troubleshooting, and repair, training of equipment users, and experience sharing among biomedical experts. During the maintenance, spare parts identification and quantification were also performed. A total of 1056 (32.44% of 3,255) non-functional medical devices were repaired and made ready to provide essential healthcare services in hospitals. The medical devices maintained include essential COVID-19 medical devices such as mechanical ventilators, oxygen concentrators, patient monitors; OR, and MCH medical devices. The details of maintained medical devices are depicted in figure 3. This campaign enabled hospitals to save an estimated cost of 44 million ETB. Moreover, the procurement of 2,560 spare parts costing 71 million ETB was initiated and being processed.

These spare parts are forecasted to maintain and functionalize more than 800 non-functional medical devices.

**Conclusion and Way Forward**

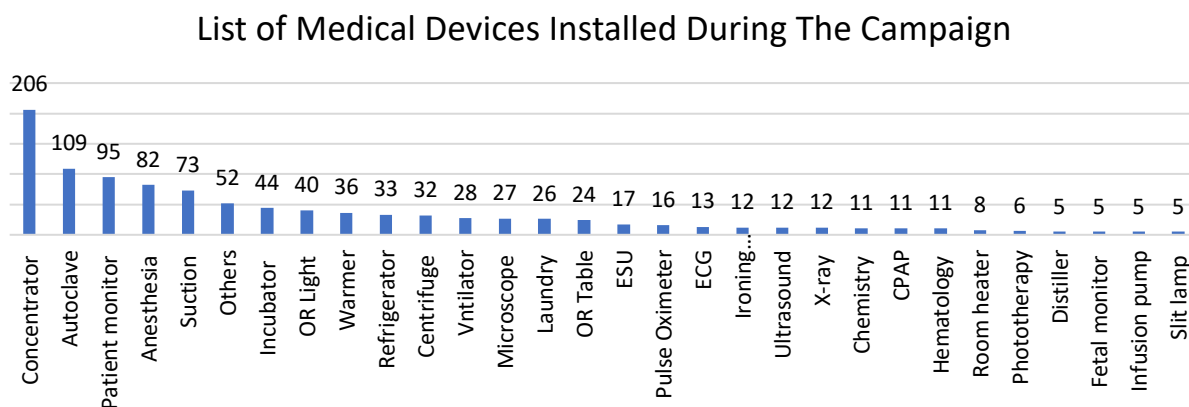
A total of 2558 medical devices were made functional and ready for service by the campaign initiative. This increased accessibility, availability, improved

life span, and proper use of medical devices play a major role in the provision of improved essential healthcare services in hospitals. This first national initiative brought new opportunities for hospitals, regions, and healthcare professionals to enhance hospital services, build capacity, share experiences and build coordination in improving the quality and effectiveness of medical services. The integrated work between regional health bureaus, hospital management, biomedical experts, and coordination and supervision of the PMED played a significant role in the successful implementation of this initiative.

The campaign continues towards the completion of installing and maintaining the remaining medical devices available in hospitals. For the sustainable improvement of medical devices’ functionality and utilization, strengthening maintenance workshops, deployment of adequate biomedical experts and building their skills, and creating strong systems for uninterrupted access to essential spare parts are vital domains that need emphasis. To reduce resource wastage, improve and re-engineer disposal of medical devices, establishing a national level medical devices refurbishment center is essential.



Figure 3: Quantities of medical devices maintained during the campaign implementation



# Networking Patients with Health Extension Workers for Improved Care



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## Background

Bona general hospital (BGH) is one of 18 public hospitals in Sidama Regional State. It is located 386 km southwest of Addis Ababa and 112km from southwest of Hawassa in Bona Zuria woreda. The hospital provides service for about 1.6 million people including the southern part of Oromia regional state and 12 woredas from Sidama Regional State. The hospital provides service predominantly for the rural population where there is no essential infrastructure like electric service, network/internet, and transportation. Its yearly OPD patient flow is about 67,000 of which 587 chronic follow-up patients.

Patients who are having chronic diseases like diabetes mellitus (DM), hypertension, chronic heart failure (CHF), asthma, epilepsy, and others need to be followed regularly to monitor their health conditions. However, our patients are from remote areas with no services for transportation, mobile networks, and electric supply which makes it very difficult to have a regular follow-up in BGH. Therefore, it creates a barrier in providing better follow-up and quality care. On a clinical audit which was done on NCDs, we identified patients that have not been notified/ recalled on their appointment day, losses to follow up and no effort to return them to service from the providers, gaps in closely following responses of a drug, drug adverse reactions, and complications. Patients have no basic knowledge on prescribed drug usage and adherence, poor treatment response monitoring, side effect, and early complications.

With this problem in mind, networking patients with health extension workers (HEWs) was designed mainly to build a better appointment system and provide quality of care and to decrease patients from losing follow-up and return patients to service in case they lose their follow-up. It also aims to make home-

to-home follow-up on prescribed drug adherence and lifestyle modifications and look on their drug usage, storage, treatment response, and notify complications and adverse effects early.

## Methodology

1. Tracing chronic patients' addresses and full information from the registry. Collect chronic follow-up patients' MRN, full names, Phone numbers if there is and address from liaison registry and prepare another registry specific to the project including patient identification and contact.
2. Contact each health center authority in each woreda. The project shall have its bases in health centers so that patients will be checked their vital signs like BP, blood glucose levels, etc in the nearby health centers.
3. Collect HEWs contacts from respective health centers. Tracing HEW contacts from all health centers in the selected woreda under the health center and matching the patients' addresses with the health extension workers in each kebele.
4. Orientation to the health center authorities and HEWs on the project. Orientations emphasized the objective of the project, mechanisms to give quality of care and better appointment system, and on patients' confidentiality and privacy. After the orientation, the HEWs are expected to be familiar with the checklist on how to fill monthly and the way of submission.
5. Implementation of the project after signing MoU with health center authorities. During the implementation phase, HEWs are expected to do their home-to-home service and are obliged to report the checklist monthly.

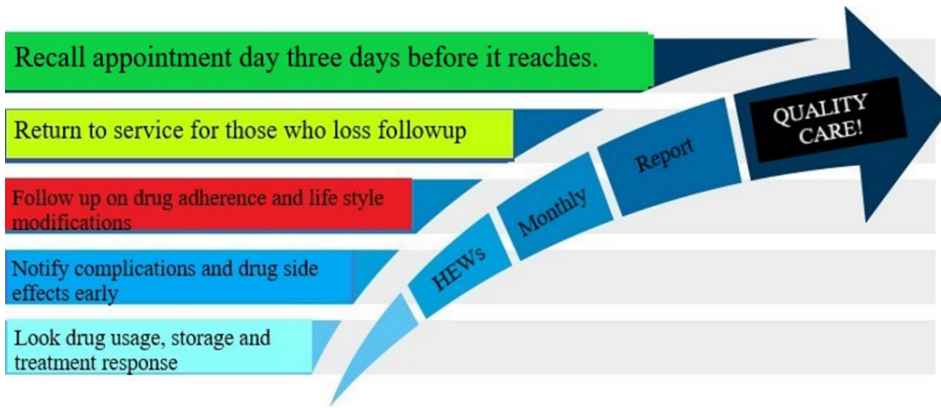


Fig. 1 Framework of the project in which the HEW has to do in her catchment.

## Results

A baseline study conducted at BGH indicated that only 8.3% of chronic follow-up patients got the chance to receive phone call reminders from the hospital mainly due to connection problems, lack of electricity, and access to mobile phones. After the implementation of the project, the phone call reminder for chronic follow-up increased to 80% and it had a strong positive effect on improving the appointment system and quality of

care. In addition to the reminder, the HEWs notify the treating physician in the chronic follow-up clinic via liaison whenever there are acute complications.

Knowledge gaps on side effects and complications from a prescribed drug, drug usage and adherence, drug storage were also improved significantly to 78%, 87%, and 83% respectively (Fig 2).

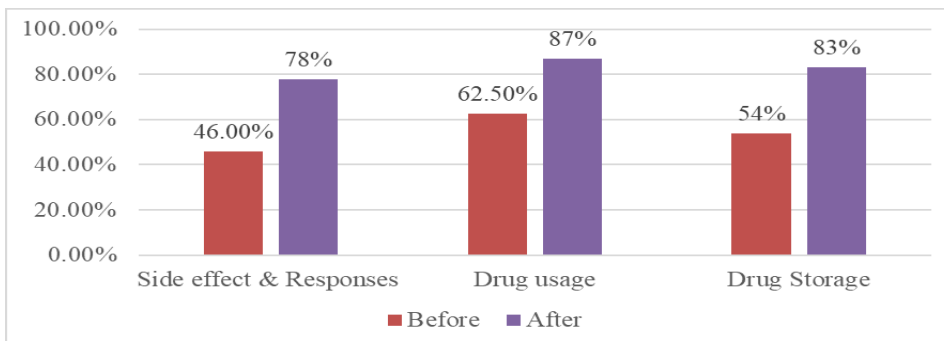


Fig 2. Level of Basic knowledge before and after implementation of the project

On the other hand, patients with consecutive well-controlled blood glucose levels were increased from the baseline of 33% to 71% at the BGH chronic follow-up clinic (Fig. 3).

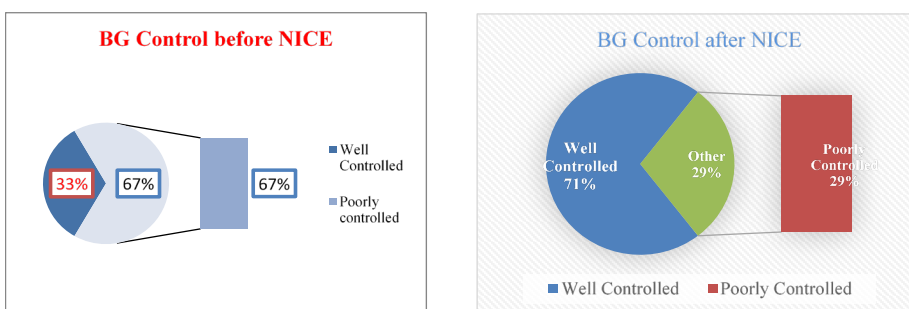


Fig 3. The proportion of controlled blood glucose levels before and after the implementation of the project

The proportion of loss to follow-up was also dropped significantly from 48 % to 12.3% after the implementation of the project. On the other hand, there was no effort to bring loss to follow-ups back to service prior to the implementation of the project and the proportion of patients who returned to service has increased to 57% after the implementation of the project (Fig 4).

Loss to follow up was also dropped significantly from 48 % to 12.3% after the implementation. On the other hand, 57% of patients who lose follow-up have got chance to be advised and returned to service. Knowledge gaps like prescribed drug usage and adherence, drug storage, side effects, and complications were also improved significantly. The final target to get consecutive well-controlled blood glucose levels were also achieved.

Therefore, networking patients with health extension workers has brought us a new way of providing a better follow-up system and highly contributed to the quality of care. As it has proven to be effective in the case of BGH, it can be disseminated to other hospitals so that they can adopt the practice in their catchment areas to improve their follow-up system and quality of care.

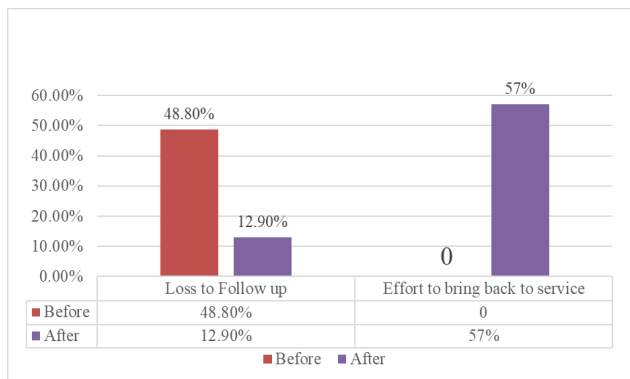


Fig. 4 Comparison of proportion of patients lost to follow-ups and proportion of patients after the effort to bring back them to service.

### Conclusions

After the implementation of the project in Phase I, the phone call reminder could reach up to 80% of the patients for the chronic follow-ups, which was encouraging to continue to improve the quality of care to chronic follow-up clinics in collaboration with the health extension workers.

# Impact of the Innovation Phase of the Seqota Declaration: Promising Evidence for Expansion Across the Country



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## Introduction

The Seqota Declaration is the government of Ethiopia's commitment to end stunting among children under two years by 2030. This declaration is led by H.E the Deputy Prime Minister of Ethiopia where nine sector ministries work together to achieve the goal of the declaration. Accordingly, the government has committed to preventing about 7,852,216 children from stunting in 15 years period divided into three phases each spanning five years. The innovation phase (2016-2020) focused on the implementation of priority intervention packages that were being monitored and evaluated to generate learnings and evidence to inform the design and implementation of the expansion phase (2021-2025). The Expansion phase will reach more vulnerable woredas across the country before a national scale-up phase (2026-2030). The National scale-up will involve full-blown implementation of evidence-based, innovative, and sustainable multi-sectoral interventions.

During the Innovation Phase, multi-sectoral nutrition-specific, nutrition-sensitive, and infrastructure interventions were implemented in 40 woredas in Amhara and Tigray regional states covering over 4.7 million people. In the past three years, nine government sector ministries at the federal and regional level jointly with development partners have been implementing the Innovation Phase Investment Plan which comprises ten strategic objectives and 50 strategic initiatives. Moreover, six innovations were tested to draw key learnings in program management, data revolution, community labs, agriculture, and water technologies, cost woreda-based multi-sectoral planning, and the first 1000 days plus public movement for social and behavior change. Lessons and insights from this phase will allow the government to outline and develop a program to address child stunting in the country during the Expansion Phase.

## Objective

The purpose of this report is to share the impact of the Seqota Declaration investment during the Innovation Phase.

## Methods and approaches

LiST Methodology is used to estimate the impact of the Innovation Phase of the Seqota Declaration in terms of changes made on the neonatal mortality rate (NNMR), Under-5 mortality rate (U5MR), Stunting rate, additional lives saved, and stunting cases averted. The model considered multi-sectoral interventions coverage from baseline using data from the Ethiopia HMIS and the Seqota Declaration Program Performance Scorecard from March 2018 to February 2020.

The Seqota Declaration (SD), is operationalized through a multi-sectoral program involving nine different sector ministries including Ministries of Health; Agriculture; Education; Water, Irrigation and Energy; Women, Children and Youth, Transport and Finance, MOLSA, and Culture and Tourism. The Seqota Declaration objectives use nutrition-specific, sensitive, and infrastructure pathways to end stunting. These objectives will enable us to address the immediate, underlying, and root causes of malnutrition as indicated in the Seqota Declaration theory of change which is developed with the global frameworks for malnutrition and nutrition security.

Seqota Declaration works with all the sectors to ensure the health and nutrition of pregnant and lactating mothers and children under the age of five; strengthen access to nutritious foods for pregnant and lactating mothers and infants under five years of age; improving and benefiting the public's access to safe drinking water; benefiting pregnant and lactating others and children under five who are at risk for

malnutrition; construction of roads connecting kebeles and woredas for the benefit women, children and adolescents in the prevention of malnutrition and harmful tradition practices; women capacity building and economic empowerment activities.

The Seqota Declaration innovation phase was implemented through One Goal, One Plan, and One Monitoring and Reporting framework that facilitated all the Seqota Declaration implementing sectors at federal, regional, and woreda levels and development partners to contribute towards one goal and coordinate their investments for the ending stunting goal of the Seqota Declaration. The Community ownership and participation were also high in the project design and implementation during the innovative phase.

## Results

In Amhara Region Stunting prevalence decreased from 51.01% to 43.06% (7.9% absolute reduction of 15.5% relative reduction) and in Tigray Region from 39.7% to 32.3% (6.7% absolute reduction of 18.5% relative reduction). In terms of mortality: the Innovation Phase interventions prevented almost 1,031 child deaths in both regions and averted over 109,831 stunting cases of under 5 years old children. Increased complementary feeding was the primary driver of stunting reductions, accounting for over 90% of the stunting cases averted. Agricultural, nutrition, SBCC, WASH, and improvements in the treatment of sick children accounted for the greatest reductions in mortality and stunting aversion.

		2018	2019	2020	2021
<b>Tigray</b>					
NNMR	Seqota implementation	20.82	20.54	20.46	20.42
	Reference (no intervention)	20.82	20.81	20.81	20.81
U5MR	Seqota	41.56	39.27	38.58	38.24
	Reference	41.56	41.21	40.98	40.93
Stunting Rate	Seqota	39.71	36.73	34.66	32.31
	Reference	39.71	39.79	39.91	39.97
<b>Amhara</b>					
NNMR	Seqota	25.11	24.73	24.69	24.61
	Reference	25.11	25.1	25.1	25.1
U5MR	Seqota	46.88	44.22	43.53	43.1
	Reference	46.88	46.5	46.27	46.21
Stunting Rate	Seqota	51.05	47.68	45.56	43.06
	Reference	51.05	51.26	51.5	51.64

Table 1: Seqota Declaration: Innovation Phase Impact Assessment (JHU: June 2021)

## Lessons learned

Implementation of the Innovation Phase of the Seqota Declaration succeeded in increasing coverage of interventions to reduce stunting and child mortality. The success factors during the innovative phase were

1. There was high Federal and Regional Government commitment and ownership: in terms of planning, approval, and leadership during the implementation of the interventions at all levels; Rigorous Financial allocations from the treasury and regional governments for example the federal government allocated more than 450 million birrs from the treasury in 2012, 2013 and 2014 EFY for each year. Its commitment also reflected with the deployment of PDU staff at federal, regional, and woreda levels;
2. Collaboration and effective networking with development partners were also strong: Joint financing for innovations and implementing innovations; Deployment of technical partners and assistances to support the innovations;
3. The six tested Innovations also contributed a lot towards Innovation Phase outcomes;
4. The planning was Gender-responsive.



The main benefit of the project is to end the high prevalence of stunting in the woreda by addressing its underlying and root causes. These are households residing in chronically food-insecure woredas, high wasting prevalence, low gender equity and economic opportunity, lower social service coverage: low infrastructure to facilitate the provision of basic services, and inadequate government and development partner's investment.

Implementation of the Innovation Phase of the Seqota Declaration succeeded in increasing coverage of interventions to reduce stunting and child mortality. The program focused on interventions to reduce stunting, including agricultural, nutrition, SBCC, and WASH interventions and improvements in the treatment of nutrition-related conditions. Agricultural interventions had the greatest impact on stunting. Based on program performance records, over 75% of households in the target population were reached with at least one agricultural intervention.

Improved agriculture translates to reduced household food insecurity and better nutrition for pregnant women and young children. Improvements in infant and young child nutrition, achieved through complementary feeding and reduced household food insecurity, accounted for 90% of the stunting cases averted. Reductions in stunting and child undernutrition also resulted in fewer child deaths from infectious diseases. Again, improved child nutrition was a driving force in preventing child deaths via reductions in both stunting and wasting. SBCC targeting improved nutrition practices also contributed to reductions in child mortality. Approximately a third of pregnant and lactating women were reached

through the nutrition BCC intervention, resulting in improvements in breastfeeding practices. Increases in vitamin A supplementation also reduced child deaths by reducing diarrhea-related mortality. During the program period, vitamin A supplementation increased by 27.5% in the program area. The contribution of WASH interventions was more limited, due to the limited number of households reached by efforts to improve water and sanitation infrastructure and improve hygienic behaviors.

The best practices and lessons learned during the innovations phase and ready for Expansion phase are descry

During the Innovation Phase, six innovations were tested. These innovations were tested to inform how they could solve the problem of multi-sectoral coordination and governance, performance management, and evidence-based decision making, empower the community to identify and solve its problems, address issues of water access and efficient utilization in water-stressed settings, improve the various social and behavior change related issues as well as how to build the capacity of local government for effective resource mobilization, partnership management, and evidence-based decision making.

The following table summarizes the achievements and lessons learned of the Seqota Declaration Innovations tested during the Innovation Phase and recommendations



**Keywords:** Innovation phase, List Analysis, impact.

Innovation Tested	Multi-sectoral challenges to be resolved	Status of the innovations
Program Delivery Unit	Inadequate government leadership Poor coordination among sectors	The establishment of the PDU enabled the government of Ethiopia to ensure high-level government ownership and leadership and effective coordination among sectors at all levels. The PDU implementation guideline has been documented and adopted for use for the establishment of Food and Nutrition Offices in other regions.
Community Lab	Lack of community participation to solve their own problems	The Community Lab process enabled the community to identify their own problems and come up with local solutions. A community Lab manual was developed and tested. Solutions driven by through the community lab process are being implemented in xx woredas.
Data Revolution	Lack of timeliness, quality of data	A multisectoral Unified Nutrition Information System for Ethiopia is developed and tested in 9 SD and other woredas. This tool has been able to support the data transfer using a web-based platform.
1000 days plus public movement for SBCC	High social and behavior related factors affecting children and women	The PDUs has developed a 1000 plus public movement strategy using an ecological model and implemented at all levels. This enabled to create wide range of public movement for SBCC. In addition to SBCC mainstreaming guideline was developed to support sectors in their planning.
Costed woreda based planning (CWBP)	Lack of ownership, accountability and resource allocation	The costed woreda based planning process enabled the woreda cabinet to own the multi-sectorial plan; mobilize local resources (government, community and partners) and utilize the plan for performance management in all the 40 Innovation Phase woredas

# Community Lab: Seqota Declaration Innovation to Empower Communities to Identify Local Solutions for Local Problems



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## Introduction

Seqota declaration is a government commitment declared to end stunting by 2030. Currently the government is implementing the first phase of the declaration called Innovation Phase where six innovative areas were given due attention to be tested and scale-up during the expansion and scale-up phases. Among the six innovations, Community Lab is one innovation that aims to bring multi-sectoral stakeholders to combat nutritional problems through the identification of local solutions for grass root level nutritional problems that the actors could plan and implement.

Community Lab uses a three-step model called Learn-Reflect-Innovate/Implement LRI which is a community diagnosis and response methodology that bring stakeholders together, ensures that there is multi-sectoral coordination and collaboration to deliver agreed-upon community-based solutions innovated or adopted to address the community priority problems.

Community Labs are set at woreda and kebele levels and members are from a government institution, religious leaders, influential peoples, women developments groups, kebele level frontline workers, partners, etc. These stakeholders identify their local problems and propose and prioritize solutions together. They also mobilize resources, meet regularly to review the implementation and make the necessary corrective measures.

This lesson learned will focus on how the Community Lab members come up with solutions for one of the problems that they identified during the IRL process.



## Objective

To share the community lab experience of local communities in identification, testing, and scale-up

of new solutions towards local problems in Debark woreda, Kino kebele of the Amhara national regional state so that the model can be scaled up into other non-seqota declaration areas as a tool to solve local problems through active participation and ownership of communities.



## Method and Approach

The source of data for the community lab experience in Debrak woreda is collected by the Amhara Region Seqota declaration Program Delivery Unit through routine performance reports sent by the woreda administration. At the regional level, there is a community lab advisor who is responsible for capacity building, technical support, and compiling CL performance reports.

Accordingly, the Community Lab stakeholders utilized the LRI approach to diagnose one of the critical problems that the community in Derbark woreda Kino 01 kebele is facing: poor dietary diversity among children under two and pregnant and lactating mothers. To address this challenge stakeholders used the LRI method to diagnose the community problem and come up with solutions that are doable at the community level:

**Learn:** The first step in the methodology was to learn, surveying the landscape of challenges and needs – starting from the grassroots level. Accordingly, CL members conducted a visit to households, discussed with the pregnant and lactating mothers, visited institutions and agricultural activities.

**Reflect:** Reflecting is about understanding how to best use insights that were gathered through **learning**. During reflection, it was found that several problems make pregnant women, lactating mothers, and children vulnerable to malnutrition. One of the problems found during the reflection was most household reside in Debark woreda of Kino 01 kebele did not access or consume vegetables throughout

the year and vegetable was found to be one of the food ingredients that are missing from pregnant women, lactating mothers and children under two diets. This was mainly due to a lack of knowledge and appropriate agricultural technologies and techniques. A review of the growth monitoring and reporting data also showed children under two years are mostly underweight.

**Innovate:** To improve access to vegetables at the household level the stakeholders come up with an innovative approach called Keyhole Gardening to promote vegetable production at the household level. This technology is water-saving and could provide access to vegetables for the households throughout the year. It is also cost-effective that the community could afford to implement. To test the innovation the first Keyhole garden was tried at the kebele administrator backyard before it is scaled up to other target groups. To ensure appropriate introduction, the kebele administrator was provided with technical support and follow by the woreda agriculture office, kebele level agricultural extension workers, and regional Program Delivery Unit Agricultural Manager and Community Lab Advisor. Following the success of the innovation at the Kebele Administrator garden, the Program Delivery Unit organized experience-sharing visits and the open day before taking the technology at scale to other pregnant and lactating mothers and community gardens in the kebele.

### Result

Through an open day, it was possible to scale up the experience within the kebele and to other vicinities. An Open Day provides an opportunity for Communities to reconnect with Community Lab members to review progress, celebrate successes, and capture learning. Currently, 938 pregnant and lactating women are using Keyhole gardening technologies in Debarq woreda by growing different vegetables and feed under-two children. The technology was scaled to 155 households living in the surrounding 18 kebeles of Debarq woreda and to other Seqota Declaration woredas too. The experience was also transferred to other farmers through experience sharing events for model farmers, religious leaders, and influential people from other kebele. The first 1000 plus days plus public movement strategy for social and behavior change communication was utilized to educate communities about the preparation of vegetable foods as well as

to promote the consumption of nutrient-dense foods. Currently, most of the target groups in Debarq woreda consume vegetables grown in the backyard. The kebele level frontline workers, health and agriculture extension workers conduct close follow-up of the pregnant women and lactating mothers starting from registering the target beneficiaries to the provision of technical support.

### Conclusion and the Way forward

Community Lab LRI methodology is a community empowering tool that enabled communities to come up with practical solutions for the problems that they face in their community. Effective mobilization and providing technical support will enable communities to give attention to combat a problem they can think they cannot do anything about it.



Figure 01:- A mother with her Keyhole Garden

In the case of Debarq 01 kebele, it was possible to create access to vegetables in their backyard all year round with this simple and water-saving technology and feed their child at home, which the community did not imagine before. Scaling up such intervention to all target groups needs a gradual process and ensuring local ownership and understanding among the stakeholders. Allowing the community to employ LRI methodology gives an insight for communities and professionals to innovate many solutions for the nutrition-related problems that the community especially children, pregnant and lactating women face on a day-to-day basis. Community Lab also allowed the community-level stakeholders to have strong multi-sectoral coordination platforms to address other nutrition challenges that they identify in their community.

# Implementation of Electronic Medical Record Project and Improvements in Service Quality at Yekatit 12 Hospital Medical College



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## Introduction

Yekatit 12 Hospital Health Medical College (Y12 HMC) undertook situational analysis to understand major challenges to improve the quality of service it's providing. This analysis showed among others that the number of clients not seen on the same day of the visit was very significant due to mainly poor medical record management. Manual tracer cards and Master Patient Index (MPI) were used to track patient medical records. However, missed cards, misplaced cards, lost cards, and duplicate cards were common problems. In addition, lab requests and results were prone to be misplaced and missed which has contributed to client dissatisfaction. Patients' waiting time was long to receive their result and take it to the attending physician.

To improve this situation, the hospital initiated the implementation of Electronic Medical Recording (EMR) QI project aiming at easing the flow of information among health care providers working at different hospital departments such as reception, triage, emergency, OPD, diagnostic units, pharmacies, and inpatient departments and improving service quality including client satisfaction. Implementation of the EMR project at Yekatit 12 Medical College was started on January 14, 2020, and implementation is ongoing in four phases

## Objectives

The objective of this assessment was to describe the experience of the hospital in implementing EMR to improve the quality of care and convenience of the service delivery for both providers and patients. It also aimed to showcase the efforts to improve care coordination among a team of health care providers, to achieve efficiencies in clinical practice, and minimize the cost of service delivery.

## Method/ Approach

A phase-based approach in four phases was employed as follows.

**Phase I:** EMR Implementation was started on January 13, 2020, and included automating at the Reception, Triage, Billing, and Registration.

**Phase II:** Implementation was started on September 14, 2020, and included modules of Emergency, OPD, Diagnostic, and Pharmacy.

**Phase III:** Implementation was started on January 5, 2021, and included Inpatient, OR, ICU, and Procedural OPDs

**Phase IV:** Implementation includes dashboard development, Reporting ART, and Machine Integration.

## Result

Within six weeks of EMR implementation, patients not seen on the same day of visit significantly reduced from 140 to 0. The implementation of EMR has made possible an automatic triaging and color-coding of each patient. The patients' Triage Early Warning Score calculates and assigns the patients' score and color code. EMR has also enabled the application of Scope-Based Practice as each patient is assigned only to a physician with the appropriate level of professional scope of practice.

Implementation of EMR has also improved completeness of inpatient medical records from 79.8% to 98.8 % in a year time based on daily record completeness audits. This was achieved by making important components of a patient's history and physical examination a mandatory requirement.



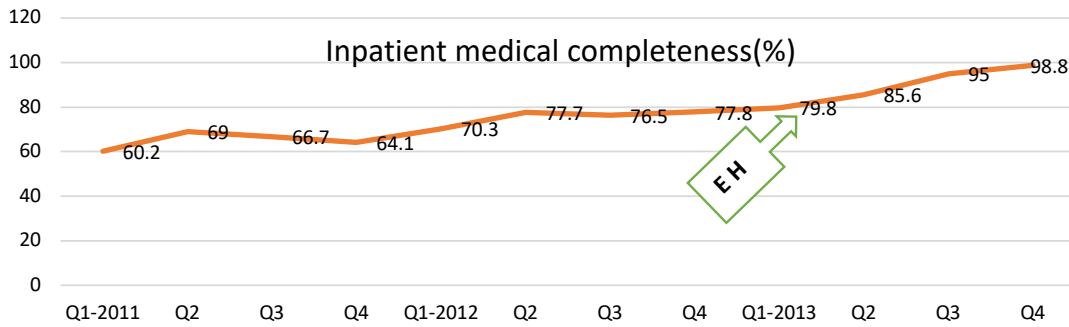


Fig 1: Inpatient medical record completeness

Laboratory test results are sent directly to the physician and there is no need for patients to go back to the laboratory to collect their results. This in turn has decreased unnecessary patient stay in the hospital. The automation has also helped the physicians to know which tests are available or not. The Pharmacy module tracks each drug and supply from storage to dispensing and automatically generates a report for each item. It has allowed a strict follow-up system for each drug and supply. Automation also allowed the electronic transfer of prescriptions from one pharmacy to the other (For instance, If the drug is not available at the emergency pharmacy, but if it is available at OPD pharmacy), so that patients can get the service within the hospital.

The inpatient module provides a single page for physicians, nurses, and clinical pharmacists. The same

concept of ‘mandatory filling of required information’ also applies here and obliges physicians to take a full history and physical examination before ordering any medication or investigation. As soon as the physician finishes their initial evaluation, the ‘Order and investigation page’ will be active and they can inscribe accordingly. Each order given by the physician will be automatically displayed on the nurses’ page so that they can treat the patient as ordered. The inpatient nurse page has tabs for Nursing Evaluation, nursing progress, and follow-up care.

After the implementation of the EMR, cancellation of the elective surgery has decreased from 44 to 22 in the past six months.

Safe Surgery Checklist (SSC) has been integrated with the system and the utilization of the safety checklist has risen from 75% to 98.1%.

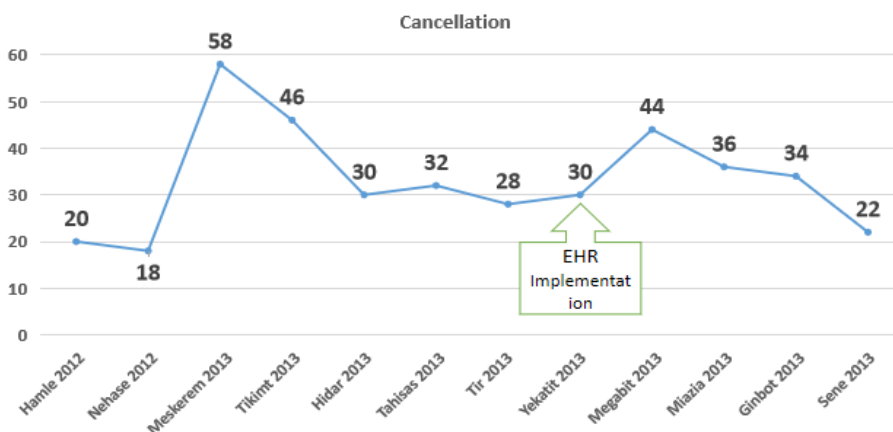


Figure 2: Cancellation at Y12HMC in the year 2013 EFY



Implementation of the EMR improved the efficiency of clinical care practice through advancing communication among the care provider and saved around nine million birrs per year required for currency to print and procurement of patient charts. The automation of these services areas has made major components of patient information mandatory requirement before it is transferred to any next service area. These in turn have made it possible to capture all necessary clinical data and socio-demographic information of patients completely. The system automatically generates and assigns Medical Record Number (MRN) for each individual, and in case of patients lost their service cards or do not remember their assigned MRNs, tracing and retrieval can be done easily by searching their name or phone number.

### Lessons Learned

The commitment of the leadership to improve the situation, resource mobilization, and flexibility were identified to be important elements of a successful implementation.

Obtaining buy-in and acceptance from managers and professionals at different levels early in the process was critical.

Meticulous planning on how to approach the rollout as well as how and when to train users can also ease the transition and allow providers to return to a normal practice schedule more quickly.

Users then benefit from the knowledge that opportunities will be available to optimize their use of the EMR once they have had some time to work with the system itself.

Furthermore, a process as complex as EMR implementation requires considerable flexibility and learning not only on the part of end-users but also on the part of the information technology team. This flexibility has been witnessed by our experience of implementing the admission order process.

Key components of the EMR that represent new ways of using information secure messaging, in-baskets, referral correspondence, documentation tools, and patient portals, can add to the efficiency of electronic records but will require new skill sets to ensure appropriate use.

### Conclusion

The EMR is a user-friendly system that supports effective, efficient, timely, and patient-centered care for the betterment of patient clinical outcomes. The implementation of EMR at Yekatit 12 Hospital Medical College has established an integrated system that enabled the hospital to serve patients efficiently.

The EMR has benefited patients by reducing chart loss, enhancing confidentiality of information, retrieving past medical information easily which saves time.

The EMR has enabled the care providers (clinicians) to manage the patients well and provide standardize clinical service. It also ensured accountability and has raised productivity among the service providers and resulted in a better patient clinical outcome.

Even though its implementation was challenging during the initial phase of the process, the outcome is very rewarding both for the client and for the health care system as a whole.

# Ethiopia Digital Health Projects Inventory System



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## Introduction

Digital health projects have been recognized as a major transformational tool in the Ethiopian health sector transformation plan (*Information revolution road map, April 2016; Health sector transformation plan II, December 2020, FMOH*). In line with this many digital health projects have been implemented in the country to improve the efficiency and effectiveness of health service delivery. The numerous digital health projects being implemented and to be implemented in the sector by the different stakeholders in the various health facilities and regions of the country should be properly governed and managed if we need to maximize the benefits of the projects and avoid duplication of efforts and resource wastage.

The Ethiopian eHealth Architecture (January 2018, FMOH) is the foundational plan or blueprint that creates a framework for how the HIS subsystems interact. The eHA is created to ensure that information and data can be easily shared and appropriately used across the health system. The eHA ensures that systems are developed and maintained to support patient care and the collection and aggregation of population health data. Adherence to the eHealth Architecture, an agreed-upon blueprint for HIS systems and data, enables the MOH to share knowledge, collaborate on care, and understand the reports and population health data available for use throughout the health system. eHealth Architecture supports the creation of patient-based longitudinal health records through the establishment of an interoperability layer. This architectural framework creates the HIS system support needed to help achieve health equity.

So far due to lack of proper governance mechanism to identify the existing digital health tools, their geographic distribution, their intended purpose, the technology they used, the organizations involved in the development and roll-out, and their alignment

with the Ethiopian eHealth architecture, it has not been possible to properly manage these important assets and properly coordinate the stakeholders working on them.

As part of developing the eHealth architecture, digital health application inventory has been conducted nationally, and based on the assessment around 280 various digital health projects have been identified of which 77 were found to be unique.

A new web-based application called Ethiopian digital health projects inventory (eDHPI) has been developed based on the requirement document and after rigorous testing and feedback collection from all the relevant stakeholders the application is deployed at the FMOH data center

## Objective:

**Major Objective** The major objective of this initiative is strengthening the HIS governance mechanism of the health sector

### **The Specific objectives of the E-DHPIS are**

- Establish transparency of the digital health projects validation and certification process
- Align digital health efforts with the national (?) eHealth architecture
- Avail robust visualization and reporting mechanisms about digital health projects in the country for informed decision
- Encourage stakeholders' integration and coordination
- Strengthen information sharing
- Realize data exchange and integration of various digital health projects

**Method:** This project has been implemented as part of developing the Ethiopian ehealth architecture (eHA).

Inventory of the digital health application implemented in the health sector was conducted (August 2018) and the result has been incorporated in the WHO digital health atlas. After analyzing the features of the WHO digital health atlas and identifying the requirements of the FMOH a new software requirements (SRS) document has been developed. Feedbacks were collected from all the relevant stakeholder and incorporated by presenting the various stages of the software development.

After the digital health projects inventory application is fully developed both technical and end-user training was provided. The application has been presented to the ministry’s management.

**Results/outputs:**

A web-based application is implemented and It is now accessible globally via a hyperlink (<https://dhpi.moh.gov.et/>) All the relevant documentation has been produced.

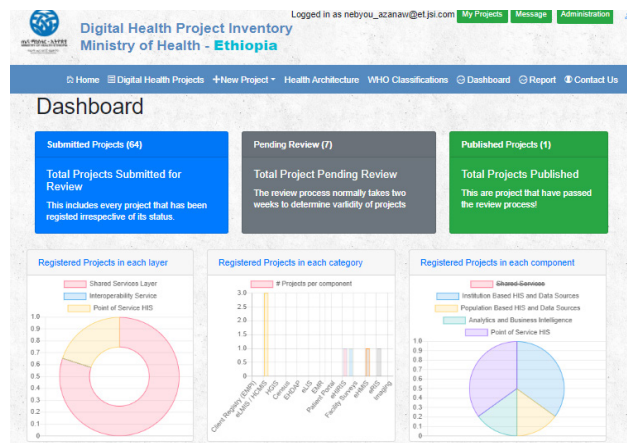


Fig. 2 Dashboard of the application

**Conclusion and way forward**

This is a major milestone in the endeavor towards aligning digital health initiatives with ehealth architecture. However, without clear governance and implementation mechanism of the E-DHPIS, it will be impossible to achieve the intended benefits of the system. There should be a coordinated effort among all the major stakeholders and continue reviewing to update and incorporate any new features. Regional health bureaus should own this system and register any digital initiative being implemented in their respective regions. The system will be used as a main repository and source of truth or the authorized source for all digital health information systems and will serve as a reference for new digital health initiatives to avoid duplication of efforts

Fig. 1 How a new system is to be registered in the digital health project

# Web-Based Unified Nutrition Information System for Ethiopia for Multi-Sectoral Food and Nutrition Data Management System, Seqota Declaration Woredas



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## Introduction

Nutrition has a multi-sectoral dimension, and multidimensional nutrition problems require a multi-sectoral approach. It requires different sectors engagement like agriculture, health, education, trade and industry, women, children and youth, finance, labor and social affair, water, irrigation and energy sectors, and other nutrition stakeholders. Tackling malnutrition requires coordination and integration among food and Nutrition implementing sectors for effective implementation of nutrition-specific and nutrition-sensitive interventions. Multi-sectoral coordination requires joint planning, implementation, monitoring, and evaluation through exchanging information, sharing resources, and enhancing sector capacity for mutual benefit and a shared vision.

Seqota Declaration activities are wide-ranging in terms of the sectors and geographies they cover, which makes monitoring and evaluation more complex than the average large-scale program. The Seqota Declaration (SD) has identified a “data revolution” in nutrition as one of its innovative approaches to improve data availability essential to design and implement effective, evidence-based policies and programs, mobilize resources, and monitor progress. To this end, the Unified Nutrition Information System for Ethiopia (UNISE) has introduced in Seqota declaration Woredas that designed to track routine multi-sectoral nutrition data from lower to higher levels, and effectively analyze data to get meaningful information and show performance progress in a dashboard, for use by decision-makers and implementers.

The list of nutrition-specific and sensitive indicators was finalized in agreement with the national food and nutrition implementing sectors

and encoded into the UNISE/DHIS2 platform to manage and monitor multi-sectoral nutrition data at all administrative levels. Using this web-based platform, the data revolution innovation aims to bring all nutrition data from different sectors into a single common hub for joint and routine monitoring by all sectors, to help in data analysis, visualization, and use for decision.

## Objective

### General objective

To develop, pilot, and scale up the implementation of the UNISE Platform for regular multisectoral food and Nutrition data collection, analysis, visualization, and use for decision at national and among regional levels through piloting the platform at SD woredas, documenting best practices and lessons, then use at the expansion and scale-up SD woredas; and improve the culture of data-driven decision-making at all levels and finally contribute for the reduction of Malnutrition particularly childhood stunting.

### Specific Objective

- To develop and implement the Unified Nutrition information system for Ethiopia
- To pilot or introduce the UNISE platform at Seqota declaration woredas
- To document lessons/best practices and major challenges
- To build the capacity of frontline workers on food and nutrition data management
- To implement the findings from the pilot for the expansion and national scale-up and contribute to the reduction of malnutrition particularly childhood stunting.

**Method**

UNISE platform is a multisectoral nutrition information system that has merged to the national DHIS2 system and was introduced in 8 Seqota declaration Woredas of Amhara and Tigray region. The System is designed to track routine multi-sectoral nutrition data on Key performance indicators of the sectors which follow the exact data definition of the DHIS2 platform. Key nutrition-sensitive and nutrition-specific indicators for six priority SD implementing sectors (Health, Agriculture, Women, Youth, and

Children, Labor and Social Affairs, Water Irrigation and Energy, and Education) were defined. The UNISE user guide was developed and the system was installed into the woreda, zone, region, and federal system of these six sectors. Adequate training on the use of the system was provided to staff of the six implementing sectors at all levels to enter input data and track progress. And this platform will be planned to be scaled up to other regions and woredas by including in the Seqota Declaration Expansion phase.

## Offline Data Entry in SD Woredas

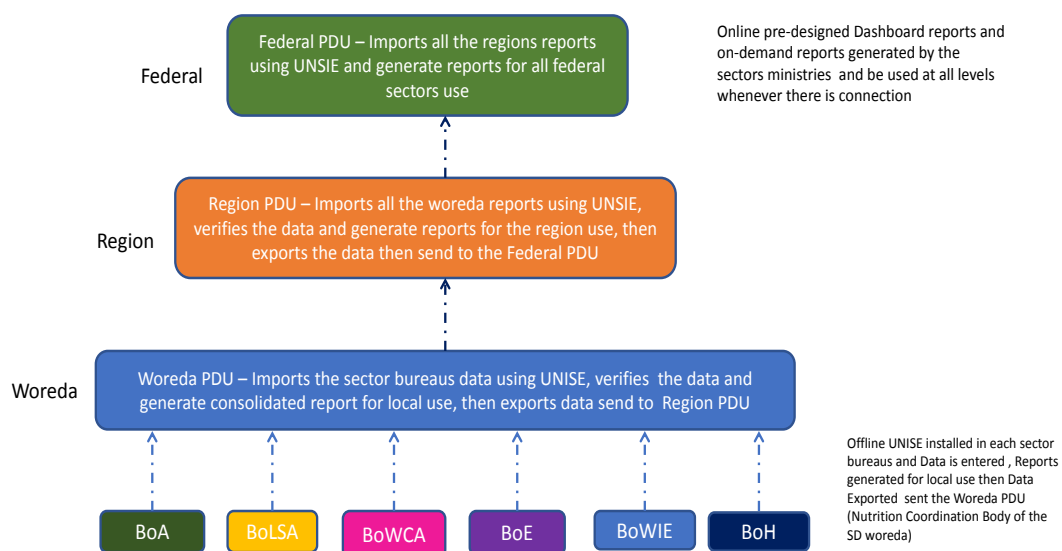


Figure 1: UNISE Data Flow from the implementing sector Woredas to Federal level

**Result**

Computer distributed for 8 UNISE implementing Woredas and training was given for Sector nutrition focal person at all levels and successfully piloted a Unified Nutrition Information System for Ethiopia (UNISE) data management and sharing system in this Piloted Seqota Declaration woredas. Continuous onsite technical support and orientation were provided for the Woredas. The pilot was successful as key partners and sectors at all levels of government were able to use the outputs of the data collection. Currently, UNISE is implemented in 6 sectors per woreda. These are Health, Agriculture, Women, youth and children, Social and Labor Affairs, Water Irrigation,

and Energy and Education sector. The system resolved the data accessing gap in multisectoral nutrition intervention and has been ensured the data visualization features for easy tracking and interpretation of nutrition data. Based on this sectors enabled in multi-sectoral data capturing, data entry, analysis, visualization, and utilization for evidence-based decision making. Though there is good uptake of UNISE at the woreda level, data quality and internet accessibility across sectors need to be resolved.



## Conclusion

Expanding the web-based UNISE data system are promising solutions to overcome the challenge to ensure real-time nutrition data reporting, analysis, and use at all levels to adjust program plans and the course of program implementation in a timely way. Elatedly, there should be capacity-building training for implementing sectors at all levels on data analysis and visualization tools. The regional coordination office should have a fully dedicated M&E expert that should own and lead the Seqota Declaration data revolution during the Expansion Phase responsible for coordinating timely data collection and reporting on the analysis,

In the current version of UNISE only indicators of six sectors are designed and implemented, however, UNISE is endorsed as the data management tool for multisectoral nutrition score-card. To automate fully the multisectoral nutrition score-card, data elements and indicators of the remaining sectors should be designed in UNISE, and nutrition focal staff should be trained on the tool.

UNISE expansion requires rigorous capacity building and reliable internet connectivity for implementing sectors at all levels on data analysis and visualization to ensure data quality during the Expansion Phase.



**Keywords:** UNISE, Data, Decision making, Multi sectorial, data quality



# The Role of the Health Sector in the Civil Registration and Vital Statistics Ecosystem; Yesterday, Today and Tomorrow.



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## Background

Civil Registration and vital statistics system (CRVS) is a compulsory, continuous, universal, and permanent recording of the occurrence of vital events from which vital statistics (VS) can be produced for planning, policy-making, and research purposes (1). Under the United Nations (UN) Principles and Recommendations for Vital Statistics, the UN recommends countries register 10 vital events which include: birth; death; fetal death; marriage; divorce; annulment; judicial separation; adoption; legitimation; and recognition (judicial declarations of paternity). However, not every country records all vital events as per the UN recommendation due to different reasons, even though they should (2).

Registration of vital events immediately after the occurrence of the event enables individuals to be recognized and serves as a legal document or certification. Information obtained from the CRVS system mainly has three benefits namely legal, administrative and statistical benefits (3). The legal benefit enables an individual to access a wide variety of rights to which an individual is entitled. In addition to issuing a certificate to provide legal benefits, the CRVS system yield different paybacks for public administration by the continuous process of recording, maintaining, and retrieving vital records that cover the entire population (3). The vital statistics derived from the CRVS systems provide reliable and disaggregated data at any level and even at a low cost. It helps the government to have a more accurate plan and deliver services accordingly. Vital statistics also provide dependable information which can be used for monitoring of different national and international commitments including the SDGs (4).

In principle, the CRVS system as a whole typically involves three key organizations, namely the Ministry of Health that notify the occurrence of births, death, and cause of death; the registrar office which holds the registrar system that registers and certify the occurrence of events and the Central Statistics Agency that produces vital statistics reports (5).

CRVS system in Ethiopia has passed different forms and the modern CRVS system is established in 2012 after Ethiopia has approved the proclamation of 760/2012 by the Parliament in July 2012 (6). Following this proclamation, the Federal Vital Events Registration Agency (FVERA) that is responsible to lead and coordinate the nationwide registration of vital events was established by regulation 278/2012 (7). In 2019, the Ethiopian government introduced administrative reforms resulting in the merge of the FVERA to the department of Immigration and Nationality Affairs by regulation of the Council of Ministers No.449/2019. The new agency was named the Immigration, Nationality, and Vital Event Agency (INVEA) and placed under the Ministry of Peace. In these reform processes of the CRVS systems, the role of the ministry of health has evolved from an inactive phase where no birth and death events are notified to a legally grounded, well-coordinated, strategically planned, and improving part of the CRVS systems. This has been clearly articulated under the recent Proclamation No. 1049/2017 which urges the health institutions to notify the birth, death, and cause of death and the civil registration related to refugees and non-Ethiopian nationals residing in the territory as the legal basis.

## Objectives

This study reviews the status of the CRVS system in Ethiopia and the role of the health sector in the improvement of this system. Specifically, the study was aimed to review the role of the health sector in the CRVS eco-system, gauge the status of the CRVS system the role of the health sector in the past, present, and future; describe the long-run plan of the health sector in the improvement of the CRVS system (Strategic plan- customized for health sector).

## Methods

The content of this paper is a desk review based on information collected through a review of the available documents relevant to the CRVS system in Ethiopia including the CRVS national comprehensive assessment report and the five-year CRVS strategic plan of the country. The meticulous literature review was also conducted from global publications (World Bank, UNICEF, WHO, UNFPA, etc.) to refer to international standards. Three years of HMIS data was also used to analyze the national progress on notification of birth and death events. In addition, joint supportive supervision documents, review meetings, and consultative workshop minutes are used as an additional data source.

## Results

### **The status of the CRVS system and the role of the health sector:**

As per the proclamation 760/2012, seven vital events need to be registered in Ethiopia. These include birth, death, marriage, divorce, adoption and acknowledgment, and judicial declaration of paternity (6). In the implementation of the CRVS system, the Ministry of Health (MOH) has a major responsibility in notifying of birth, death, and causes of death that happen at the facility and in the community while the Central Statistical Agency (CSA) is mainly responsible to produce an official statistic that further is used by different bodies for planning and policy-making purposes. The proclamation of 760/2012 mandated the health sector to notify the occurrence of birth and death that happens only at the health facilities. However, this Proclamation was amended by Proclamation No. 1049/2017 which depicts the role of

the health sector to notify events happening both at the health facility and in the community (8).

Currently, the registration of vital events takes place in 89% of the registration centers and 30 refugee registration centers (9). The INVEA annual technical report for the year 2020/2021 indicates that 18.02 % of births and 9.32% of deaths have been registered nationally. This is below Ethiopia's GTP II target of 50% of births to be registered by 2020 and SDG target of 16.1(10). In addition, it also affects the regional and global numbers of children with a legal identity which are measured by the percentage of children under-5 with births registered by civil authorities. Key factors contributing to the low registration are lack of demand for vital event registration and certification, limited public awareness on the importance of registration, and lack of full-time dedicated registrars at many kebele level registration centers (9).

### **Current status of birth and death notification**

When birth and death happen in the health facility, the health professional who attends the event is responsible to complete the notification form and provide it to the attendant. It is the responsibility of the health care providers to notify deaths within 30 days and births within 90 days after the occurrence of events in the health facility. Similarly, health extension workers (HEWs) are required to notify deaths and births occurring in the community in the same span of period specified above.

In health facilities, the District Health Management Information System (DHIS-II) is filled to aggregate data, while the paper-based birth notification form is completed with three copies, one archived by the health facility, the other for the guardian/attendant and the other to be given to OCS at the nearest civil administrative office.

For the past many years notification of birth and death were only limited to the health facility and there is no established reporting system at the health sector to notify events outside of the health facility. Due to this, the coverage of birth and death notification is below expected that further affects the registration of these vital events.

### The facility birth and death notification performance

In latest years, the birth and death notification activities have been significantly strengthened due to the promising collaborative efforts made by the three key stakeholders: INVEA, MOH, and CSA. This collaboration ignited the stagnated pace of its implementation due to the loose focus it has given, weakened follow up and poor monitoring. The increased number of review meeting platforms, the integrated supportive supervision, the performance follow-up and feedback, and the recurrent workshops and training between these key stakeholders could be mentioned as the critical reasons for such progress. Moreover, the Ministry of Health has started to put this responsibility as its prime agenda and integrated it with different relevant directorates roles. To this regard, the facility birth and death notification performance has shown a significant improvement over the past two years. (Fig 1 & 2)

Figure 1: National facility birth notification, 3 years comparison

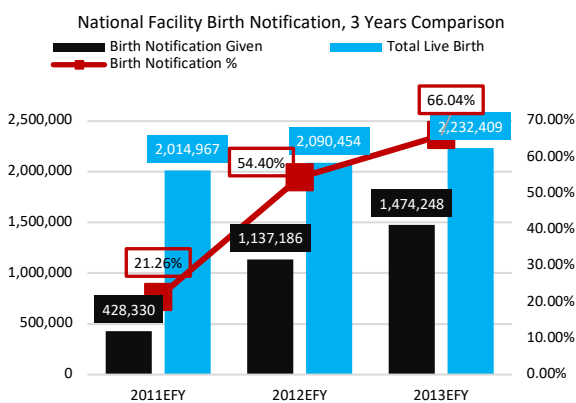
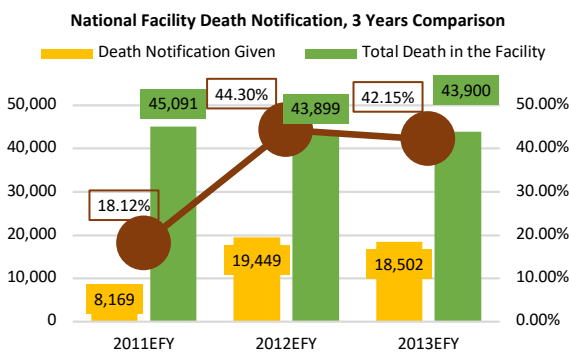


Figure 2: National facility death notification, 3 years comparison

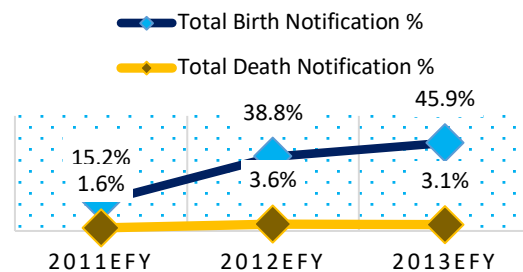


The data from the HMIS report shows, the health facility birth notification performance from live births that occurred in the facility has shown significant progress over the last three years. In 2011EFY, only 21.26% of the live births were notified by the health facilities. However, this has progressed to 54.4% in 2012EFY and 66.04% in 2013EFY. On the other hand, the facility death notification has progressed from 18.12% in 2011EFY to 42.15% in 2013EFY. The performance of death notification on the latest year has shown a slight decrement as compared to 2012EFY. The reason for such decrement should be further investigated in the future.

Even though, more than 90% of death and 50% of birth occur outside of the health facility, notification of birth and death is limited to the health facility (11). So far, there is no established health information system for reporting birth and death notifications happening outside of the health facility. Moreover, even though the community birth and death notification pad has already been designed, printed, and distributed; the orientation training to HEWs and all relevant bodies is not yet completed. For this reason, the community birth and death notification activity could not be started. When the performance of birth and death notification is calculated from the expected live birth and death (CRD), the coverage is still way below the target set for the HSTP II. See Fig. 3: Total birth and death notification performance.

Figure 3: Total birth and death notification performance

### TOTAL BIRTH AND DEATH NOTIFICATION YEARLY TREND



The birth notification performance from the expected live birth for that specific period was only 15.2% in 2011EFY. However, this has been doubled and tripled in the two consecutive years respectively (2012EFY and 2013EFY) with 38.8% and 45.9% birth notification.

Whereas the death notification in the year 2011EFY was only 1.6% from the total expected death in that specific period. Though this performance has increased to 3.6% in 2012EFY, it has shown a slight decrement (3.1%) in the following year. The total birth and death notification performance should be calculated as an aggregate of the community and facility birth notification reports. However, since the community birth and death notification are not yet started, the total notification performances cut to a low value when only calculating the facility notification from the expected projected values of birth and death. Therefore, in the coming years when health extension professionals start to notify community birth and death events, the total notification performances are expected to significantly increase to reach the HSTP II targets.

### The Next 5-year plan to improve CRVS

By the next 5 years, Ethiopia has planned to increase coverage of birth notification to 80% and death notification with causes of death data to 50%. To achieve this, the country prepared and endorsed a 5-year CRVS strategic plan that is effective from 2021-2016. This strategic plan has envisioned Ethiopia to be a country where everyone is recognized through a strong CRVS system. This strategic plan has prepared to achieve four strategic outcomes: (i) Conducive legal and policy framework, (ii) Improved governance and expanded services, (iii) Reliable vital statistics, and (iv) Modernization of the CRVS system (12).

They are designed to focus on what is important to transform the CRVS landscape of Ethiopia. The strategic plan is prepared based on the finding from the comprehensive assessment (9) and the desk review. From the national assessment, poor coordination, legal, material, infrastructure, human resource, and financial limitations were identified as a potential constraint that compromise the country's CRVS system. Therefore, based on such findings, the five year strategic plan has given the health sector a tedious but rewarding journey of establishing a

community causes of death identification system through Verbal Autopsy procedure, establishing pre- and in service training programs to health professionals to improve causes of death assignment, and strengthening the community and facility birth and death notification with a coordinated monitoring mechanism of the actual event registration. The strategy document has also given the assignment to all key stakeholders to minimize the copy of registration from 4 to 2 and digitalize the birth and death notification, hire an independent civil status officer at lower registration centers, and produce an annual vital statistics report (12). Moreover, it is highly believed that the most important of the success factors is leadership that will deliver coordinated political and executive decisions through a formally established National CRVS Steering Committee (NSC).



### Conclusion and Recommendation

CRVS system is an infant system in Ethiopia that was legally established in 2012. Even if there are some improvements on birth notification and registration, death and causes of death notification and registration are still below 4%. The low notification performance is also attributed to the inexistence of the community notification for events that occur outside the health facility.

Hence, the collaborative effort started in recent years needs to be further strengthened to achieve both the national and international commitments and the targets set on the CRVS strategic plan, HSTP II strategic plans, and SDG. As CRVS is one of the data sources which help for planning, policy-making, and monitoring of different national programs, improving the coverage, completeness, and quality of CRVS data remains to be vital in the system. Finally, the active engagement and coordination of all relevant sectors, partners, and stakeholders is a central point for the improvement of the CRVS eco-system in general.

## References

1. United Nations (UN). Principles and recommendations for a vital statistics system RU, 2001. [https://unstats.un.org/unsd/publication/SeriesM/SeriesM\\_19rev2E.pdf](https://unstats.un.org/unsd/publication/SeriesM/SeriesM_19rev2E.pdf).
2. United Nations (UN). Principles and recommendations for a vital statistics system RU, 2014. <https://unstats.un.org/unsd/demographic/standmeth/principles/m19rev3en.pdf>.
3. <https://crvsgateway.info/The-benefits-and-beneficiaries-of-CRVS-systems-551>.
4. Community P. Civil Registration and Vital Statistics (CRVS) and the Sustainable Development Goals (SDGs). 2016 [https://getinthepicture.org/sites/default/files/resources/CRVS\\_and\\_the\\_SDGs\\_2016.pdf](https://getinthepicture.org/sites/default/files/resources/CRVS_and_the_SDGs_2016.pdf).
5. Mills S, Lee JK, Rassekh BM. A multisectoral institutional arrangements approach to integrating civil registration, vital statistics, and identity management systems. *Journal of Health, Population and Nutrition*. 2019;38(1):19.
6. ETHIOPIA FNGOTFDRO. Proclamation No.760/2012 Registration of Vital Events and National Identity. <https://chilotfileswordpresscom/2013/04/proclamation-no-760-2012-registration-of-vital-events-and-national-identity-card-proclamationpdf>. 2012.
7. ETHIOPIA FNGOTFDRO. Regulation 278/2012, Vital Event registrationn Agency establishment. <https://chilotme/wp-content/uploads/2017/04/regulation-no-278-2012-vital-events-registration-agency-establishmentpdf>. 2012.
8. ETHIOPIA FNGOTFDRO. Proclamation no.1049/2017, Vital Events Registration and National Identity Card proclamation (amendment) proclamation. <https://wwwrefworldorg/cgi-bin/texis/vtx/rwmain/opendocpdfpdf?reldoc=y&docid=5ec7fa674>. 2017.
9. Immigration NaVEAwMoHaCSAoE. The Ethiopian Civil Registration and Vital Statistics (CRVS) Systems Comprehensive Assessment Report. 2021.
10. National Planning Commission. The Second Growth and Transformation Plan (GTP II) (2015/16-2019/20). <https://wwwafricaintelligencecom/c/dc/LOI/1415/GTP-IIpdf>. September 2015
11. Ethiopian Public Health Institute FMoH. Ethiopia Mini Demographic and Health Survey 2019. <https://dhsprogramcom/pubs/pdf/FR363/FR363pdf>. 2019.
12. Immigration NaVEAwMoHaCSAoE. CRVS SYSTEMS IMPROVEMENT STRATEGY AND COSTED ACTION PLAN OF ETHIOPIA: 2021/22 – 2022/26. 2021.

# The Health Sector's Response to the COVID-19 Pandemic: Experience from the HRH perspective



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On March 13<sup>th</sup>, 2020, Ethiopia reported its first case of COVID-19, an infectious disease caused by a novel coronavirus that is now renamed severe acute respiratory syndrome coronavirus 2 (SARS-COV-2). The Ministry of Health as being the primary responder to any threat to the nation's health and the Human Resources Administration Directorate being one of the main players in deploying the needed Health Workforce has been fully engaged since then.

Despite the unfamiliarity of public health emergencies of international concern in the country, the Ministry was able to deploy an additional 6,721 health professionals at various fronts to control the pandemic and save our precious citizens' lives. Deploying healthcare workers to be the front-line combaters against COVID-19 didn't come without a cost as it demands a huge resource mobilization to effectively motivate and retain these professionals. Amongst huge milestones achieved regarding Health Workforce motivation and retention mechanisms used in such a life-threatening pandemic were the introduction and implementation of the special risk allowance payment guideline for COVID-19 workers, life insurance coverage in case of fatality, recognition week for acknowledgment of all stakeholders involved in the response against COVID-19 and permanently employing health professionals that have been deployed in the fight against the pandemic.

Undoubtedly, this pandemic has presented us with various challenges including taking 5,254 Ethiopian lives till present day while on the other hand, it allowed us to evaluate our public health emergency response and the need for local, national, and global multi-sectoral collaboration in overcoming such global health tackles and its deemed sustainability in a much more integrated and aligned manner for future endeavors.



**Keywords:** *Global Human Resources for Health Strategy, Health Workforce, COVID-19, Multi-Sectoral Collaboration, Motivation, and Retention Mechanisms, Resilient Health Systems*

## Background

On March 13<sup>th</sup>, 2020, Ethiopia reported its first case of COVID-19, an infectious disease caused by a novel coronavirus that is now renamed as **severe acute respiratory syndrome coronavirus 2 (SARS-COV-2)**. The news was overwhelming just as it was announced 2 days after it has been waged as a global pandemic by the World Health Organization on March 11<sup>th</sup>, 2020. The Ministry of Health as being the primary responder to any threat to the nation's health and the Human Resources Administration Directorate being

one of the main players in deploying the needed Health Workforce has been fully engaged since then.

The pandemic has caused greater devastation since its outbreak. It has put a detrimental effect on developing countries and its effect is no less in developed countries that were assumed as having a resilient health system. As such, the world has gained a learning experience on how to improvise its health system.



Ethiopia, being a developing country, had a worrisome expected outcome from the pandemic. The Ministry of Health had to set up a responsive system in combating COVID-19 through deploying HWF on a contract basis departing from the routine HWF deployment cultures which have enormously decreased the anticipated devastations. The importance of effective HRH management in deploying the right number of HWF, at the right place and at the right time has been noted well in such times of crisis through systematic and digitized ways of registration, screening, recruitment, and deployment methods.

### General Objective

Safeguarding the health of our citizens through creating effective and efficient HRH responsive to all health threats.

### Specific Objective

- Determining the impact of new recruitment methods in times of global health crisis
- Establishing and evaluating the effectiveness of new motivation and retention mechanisms in motivating and retaining the health workforce in times of pandemic.



### Method

New challenges require new solutions. Routine responses to the public health crisis of international concern are not sufficient in alleviating the detrimental consequences of COVID-19. Digitized methods of registration, screening, recruitment, and deployment of health professionals have been effectively applied to mobilize HWF at various fronts in the prevention and control of the pandemic. Establishing new ways of motivation and retention mechanisms like special risk allowance payment to the HWF and life insurance coverage have also been successfully introduced and implemented to the benefit of the HWF.

Health and care workers' celebration week and ensuring the continuity of job security of the HWF who were engaged in the COVID-19 response were amongst the effective recognition methods applied. Multi-sectorial collaboration at local, national and international levels have greatly contributed in tackling the various detrimental effect through multiple efforts.



### Results

As part of COVID-19 prevention and control measures, the Ministry had set up an online registration platform to recruit and mobilize health professionals. As a result, we were able to register 10,131 professionals of various categories and recruited 546 general practitioners, 821 nurses, 123 laboratory professionals, 11 pharmacists, 143 health officers, after effective screening methods were applied.

Another merit was the Memorandum of Understanding signed between our Ministry and Ethiopian Insurance Corporation in providing life insurance coverage for healthcare workers in times of fatality due to COVID-19. Sadly, we lost 46 healthcare workers to COVID-19 and premium payments were given to their loved ones even though their dearest lives couldn't be replaced.

We were able to transfer the recruitment modality of 6,721 health professionals to permanent staff after successful agreement with the Public Service Commission which is to be recorded as the first time in history without having the formalities applied which was formerly used in employing permanent recruits.

Health and care workers' week is markedly celebrated nationally and globally from July 17-23, 2021 in recognition of the HWF's utmost contribution to the public.



## Conclusion and recommendations

A digital method needs to be applied at all levels of the health system especially in recruiting and deploying HRH. They have been found effective in consuming less time and advantageous in monitoring, evaluation, and tracking of healthcare workers.

Mechanisms have to be set in place to motivate and retain healthcare workers in times of a pandemic that is of international concern amongst which setting up a special risk allowance payment to frontline healthcare workers, providing life insurance coverage, and ensuring job security to healthcare workers are amongst the few that have been applied. These actions have greatly kept in balance and gave birth to continuous related initiatives like revising the incentive guideline of healthcare workers, drafting an insurance coverage scheme for healthcare workers, and creating diversified employment opportunities which will enable the long-term durability of creating a motivated, competent and compassionate health workforce.

Establishing a resilient health system requires multi-sectoral collaboration locally, nationally, and internationally with government bodies, the private sector, and development partners. A threat to the health system is the threat to all sectors as COVID-19

has demonstrated to our recent experience affecting the global economy. Due to the collaboration of all stakeholders, our country was able to control the damage before it could have reached the projected mortality and morbidity thanks to all engaged parties. A special thanks to health care workers first and foremost who have also sacrificed their lives fighting the deadly virus.

As the HWF being the main pillar of the health system, investing in the HWF as clearly outlined in the GLOBAL HRH STRATEGY 2030 by the World Health Organization is a benefit for all. Various recognition methods are vital in creating a motivated, competent, and compassionate health workforce.

Let's all commit ourselves to create healthier citizens for a prosperous nation.

# Maternal and Newborn Health Quality of Care initiative in the 14 learning districts of Ethiopia: implementation status and results



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## Background

Ethiopia has achieved a substantial decline in maternal and under-five mortality in the last subsequent years. Under-5 mortality declined from 166 deaths per 1000 live births in 2000 to 67 deaths per 1000 live births in 2016, representing a 60% decrease over 16 years [1]. Similarly, maternal mortality declined by 53%, from 871 per 100,000 live births in 2000 to 412 death per 100,000 live births in 2016. [1, 2].

Though overall under-five mortalities reduced significantly, the proportion of deaths occurring during the neonatal period was reducing at a slower rate and the current burden of maternal mortality with 412 maternal deaths per 100,000 live births and neonatal mortality with 29 neonatal deaths per 1000 live births is still higher [2]. On the other hand, a recent Mini EDHS 2019 study revealed that, with improved maternal health coverage, 74% of women received antenatal care from a skilled provider, 43% received four or more ANC visits and 48% of women delivered at a health facility. These findings indicated improvement in maternal health coverage needs to integrate health care quality to address the current persistent disparities and unmet need for maternal health care.

Cognizant of this, the Ministry of Health of Ethiopia has prioritized maternal and newborn quality of care and has been designing and implementing several Quality improvement initiatives. Accordingly, Ethiopia to join the WHO-led Global network to 'Improve Quality of Care for Mothers, Newborns, and Children. The Network provides a platform for countries to ensure that quality of care becomes an integral part of health care delivery; it facilitates intercountry learning, knowledge sharing, and generation of local evidence and best practices.

To operationalize the NQS agenda of improving the Quality of Care for Mothers, Newborns, and Children, the Ministry of Health with its development partners has developed an MNH quality of care Roadmap.

## Objectives and approaches

The Goal of the Maternal and Newborn health Quality of care (MNH QoC) initiative is to halve Institutional maternal and newborn deaths and improve clients' experience of care in the participating learning health facilities over five years period.

- Moreover, four strategic objectives named LALA were identified adopted from the World Health Organization (WHO) MNH QoC framework, Leadership, Action, Learning, and Accountability (4).
- **Leadership:** Build and strengthen national institutions and mechanisms for improving the quality of care in the health sector.
- **Action:** Accelerate and sustain implementation of quality of care improvements for mothers and newborns.
- **Learning:** Facilitate learning, share knowledge and generate evidence on quality of care.

**Accountability:** Develop, strengthen and sustain institutions and mechanisms for accountability.

The initiative implemented in the selected 14 districts representing the agrarian, pastoralist, and urban setups in the country (3 - 5 learning health facilities per district with a total of 48 learning health facilities consisting of 8 Referral & General hospitals, 12 primary hospitals, and 28 health centers) since July 2018.

- A district-based learning collaborative network was established, and technical support has been provided on the implementation of the identified MNH QoC roadmap packages which includes;
- National coordination mechanism established through forming Maternal & newborn Health QoC technical working group (TWG) comprising relevant directorates from Ministry of Health and all partners working on maternal and newborn QoC and regular monthly meetings has been conducted to guide technical aspect of the implementation including overall monitoring of the initiative.
- The WHO MNH QoC Monitoring and Evaluation framework was also adopted and implemented to track the implementation of the program and results that include fifteen common core indicators measuring provision of care, the experience of care, and WaSH.
- MNCH quality standards were developed based on the WHO standards included as one chapter in the Ethiopian Health sector transformation for quality guideline (HSTQ) and used to undertake a clinical audit in the learning Hospitals.
- Existing Health care Quality structures at National, sub-national, and Health facility levels were capacitated through providing basic and advanced QI training.
- National QI Coaching Guide was also developed, and two rounds of QI coaching training were provided to the established pool of QI coaches from Districts and lead Hospitals who provided quarterly on-site QI coaching support to their respective learning health facilities. Besides, in collaboration with supporting partners. **(Transform PHC, Transform HDR, IHI, CHAI & WHO) who provide technical support to learning districts,** on-site support regular mentoring, and coaching support provided to build clinical and QI skills of learning health facilities.
- Maternal and Perinatal death surveillance and response system (MPDSR) strengthening were one of the key areas of support. Accordingly, four rounds of MPDSR training were provided to

MNH and QI staff in all learning health facilities, districts, and RHBs. Besides, maternal deaths and death responses in the 48 learning health facilities were regularly tracked and monitored and feedbacks were provided to Regional Health Bureaus.

National MNH QoC learning network learning platforms were established and bi-annual learning collaborative sessions have been organized where all the 48 health facilities share the best experience and lessons amongst themselves. Global MNH QoC summit was organized to exchange the best experiences and lessons learned among the network countries.

As part of the regular MNH QoC monitoring, 15 common core indicators were used for monitoring of process and outcomes and quarterly feedback was provided.



### Major results and lessons

Three outcomes measures included in the MNH common core indicators reporting system which have been collected and reported by the 48 learning health facilities were used to assess the achievement of the network intended outcomes. The implementation Period Performance was compared with the pre-implementation period or baseline reference year of 2010 EFY. The three outcome measures used for the assessment are institutional pre-discharge maternal mortality, institutional pre-discharge neonatal deaths, and fresh stillbirth. Stillbirth is a fetal death with no signs of life at  $\geq 28$  completed weeks of gestation (5).

- Accordingly comparing the follow-up period performance against the baseline for reporting health facilities, (Fig.1-3).
- Pre-discharge maternal mortality ratio (MMR) per 100,000 live births declined by 17% (from 163 to 135 per 100,000 live births).
- Pre-discharge neonatal mortality rate (NMR) per 1000 livebirths decline by 5.4%, from 24.0 to 22.7 per 1000 live births.

Fresh stillbirth per 1000 births declined by 18%, from 19.7 to 16.1 per 1000 births.

### Conclusions and lessons learned

Nevertheless, the performance across the health facilities may be affected by the variation in the availability of the existing resources such as medical supplies, human resources, and other structures, the early results of the MNH QoC network implementation has shown promising result concerning the reduction in institutional mortality outcomes. On the other hand, continued and sustained implementation of the quality improvement efforts may also be required for long-term and sustained results.

### References

13. Ethiopia Demographic and Health Survey: 2016. Addis Ababa, Ethiopia, 2017.
14. Ethiopia Mini Demographic and Health Survey 2019: Key Indicators. Rockville, Maryland: EPHI and ICF; 2019.
15. Ethiopian National MNH quality of care roadmap: 2017, MOH, Addis Ababa, Ethiopia, 2017.
16. Quality of care for maternal and newborn health: a monitoring framework for network countries, updated February 2019.
17. Ethiopian Maternal and Perinatal death surveillance and response Technical Guidance: 2017, MOH, Addis Ababa, Ethiopia, 2017

### Annex 1: Figures

Fig 1. Pre-discharge maternal mortality ratio per 100,000 live births, 2017 Q2 – 2021 Q2.

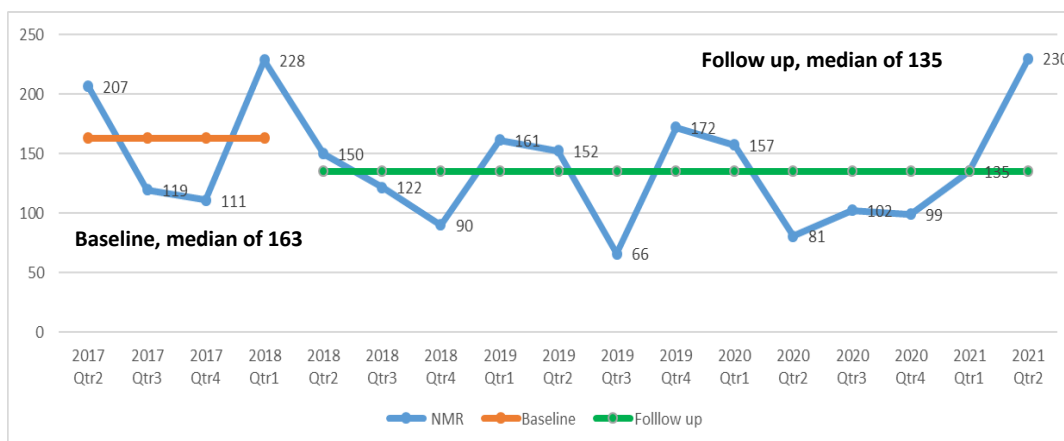
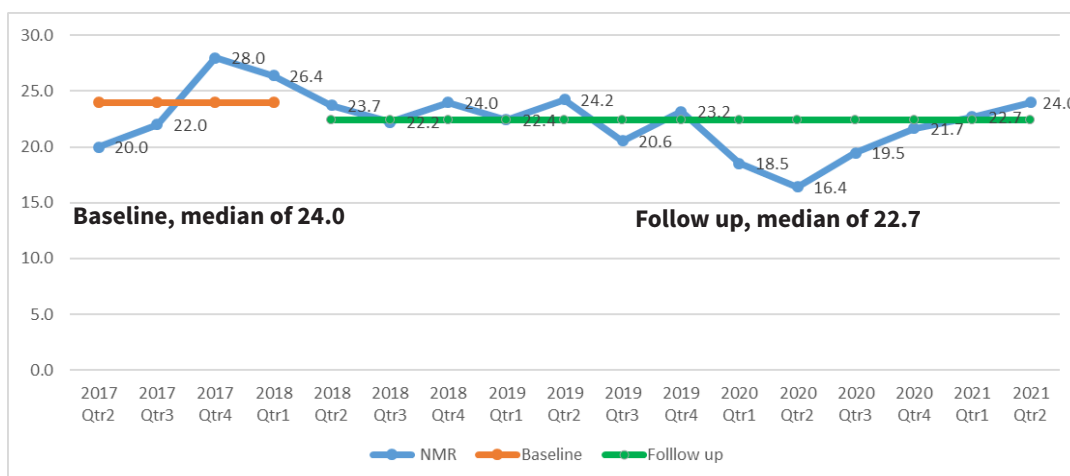


Fig.2. Pre-discharge neonatal mortality rate per 1000 live births, Baseline and follow up the median, 2017 Q2 – 2021 Q2.



# Blended Learning- an Efficient Way to Build Knowledge and Skills of Community health workers



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## Background

The Health Extension Program (HEP) was designed as a community health program delivered by a team of two Health Extension Workers (HEWs) to serve in community health posts with a catchment area population of 5,000 people. The goal of the program is to increase geographic access to primary health care services and address the high burden of preventable diseases. HEWs provide preventive, promotive, and curative health services at their health post, house to house, and outreach (1).

To improve the knowledge, skills, and attitude of HEWs, 15-30 days of in-service Integrated Refresher Training (IRT) is provided to HEWs once every two years at the district level for each of the following six modules: 1) reproductive, maternal, newborn, and child health; 2) hygiene and sanitation; 3) non-communicable diseases; 4) communicable diseases; 5) social behavior change communication; and 6) first aid/emergency (2).

The reproductive, maternal, newborn, and child health (RMNCH) in-service training module is one of the IRT modules which has a seven days schedule. The Ethiopia Ministry of Health (MoH) and partners have prioritized updating this module. However, the current IRT, which is dependent on only face-to-face sessions, face many challenges including length of time required to complete the training, cost of the training, limited innovative tools for learning, dependency on only face-to-face training, a limited competency framework, and ineffective measurement and evaluation processes (3).

The MoH has partnered with Last Mile Health, an organization that has worked for 15 years to build exemplary community health systems in partnership with governments, to overcome these challenges by developing a blended learning design for the RMNCH module of the in-service training for HEWs.

## Objective:

The report aims to show the experience of developing blended with a combination of face-to-face and digital sessions, high-quality, learning content for the RMNCH module of the in-service training for HEWs accessible on mobile devices anywhere, anytime.

## Method

The development of the RMNCH blended learning content included three components:

1. Instructional Design: The competencies of the RMNCH module were mapped against the HEWs scope of practice and occupational standards. Based on that, a blended-model instructional design plan was developed. Accordingly, content for face-to-face training and content for digital self-learning were identified. The instructional design was reviewed and endorsed through an instructional design workshop involving participants from the MoH, Regional Health Bureaus, District and Zonal Health Offices, Partners, and HEWs.
2. Multimedia: Locally relevant and culturally appropriate multimedia content was developed in three local languages, including illustrations, animated videos, and animated character stories.
3. Digital platform: The training app called Extension Essentials was developed using OppiaMobile, an open-source learning app for health workers, to deliver content on mobile devices. The app has been tested and found to be interoperable with the national electronic community health information system (e-CHIS).

User testing of the app was conducted to ensure the design was user-centered using the following method:

- Five users were selected from three regions with purposive sampling and matched HEW representativeness by age, experience, and sex.



- Using the cumulative binomial probability formula claim that a sample size of five users is sufficient to detect 85% of problems in an interface. The given probability a user would encounter a problem is 31% (as determined by an average problem frequency from several studies).
- The participants were selected based on their familiarity with technology, using eCHIS to get better feedback on the application.
- Data collection tools used were screen recording, question and answer, observation checklist, dashboard monitoring, and focused group discussion.
- User testing was conducted on June 29 and 30, 2021 at Adama, Oromia region.
- User testing was facilitated by female staff to integrate gender consideration and create a friendly environment where participants can speak up.

## Results

A blended learning training was designed, which includes an initial 2-days of training in person, followed by 5 days for digital self-learning, and concludes with a 2-day closing in-person session. The Extension Essentials app contains all training content and a daily schedule for digital and facilitated learning.

Once downloaded onto the user's device, all the contents and activities of the module can be accessed offline by the learner anytime, anywhere. The approach integrates effective learning activities such as role-plays, case studies, group discussions, case-based pre-and -post-knowledge questions, pre-and post-self-efficacy questions, quizzes, and skills assessments. Multimedia resources including illustrations, animated videos, and character stories were effectively integrated with the blended design. The learning methods used in the approach are interactive and engaging to keep the learner focused and interested in the content.

By understanding user experiences and preferences, we were able to amend the training content, format, and resources to better meet learner expectations and needs.

The user testing showed that HEWs were very receptive to the blended design, and they provided vital feedback on the functionality of the app, as well as content and multimedia resources, which were used to further enhance the design. Quizzes and multimedia resources were chosen by HEWs as the best features of the training. One user said that “The videos and quizzes are good in adding the practical knowledge. As a refresher course, knowing the basics knowledge in our previous training, I say the contents are good.” They were determined to be effective for retraining, interactive, easy to understand as they use local languages, related to real-life community challenges, and easy to navigate as mentioned by one user who said “The application orientation has made us to be familiar with the app and know how to use it. I say I am confident to complete the training at home using this knowledge.”

## Conclusion and way forward

The blended learning design can address challenges related to long duration of training, limited interactive content and ineffective learner engagement by enhancing the training content through content review and competency mapping, development of multimedia-aided blended design, and integration with a digital platform that can deliver content on mobile devices. Moreover, the digital platform provides real-time data to evaluate the training, including participation and time spent in activities and course completion, learner's reaction to the course, pre and post-training knowledge and self-efficacy assessments, quizzes, and engagement with digital components after the training. The RMNCH blended learning approach will be piloted in 20 districts between August 2021 and January 2022, and the lessons learned will inform the scale-up of this module and the future IRT modality nationwide.

## References

1. Ministry of Health of Ethiopia. A roadmap for optimizing the Health Extension Program of Ethiopia (2020-2035). 2020;
2. Ministry of Health of Ethiopia. Reproductive, Maternal, Newborn, Child, Adolescent, Youth Health and Nutrition (RMNCAYH-N) Integrated Refresher Training Module. 2020.
3. Teklu AM, Alemayehu YK, Medhin G. The National Assessment of The Ethiopian Health Extension Program Abridged Report Recommended Citation [Internet]. 2020. Available from: [www.merqconsutlancy.org](http://www.merqconsutlancy.org)

# Accelerating the Implementation of Auditable Pharmaceutical Transaction and Service in Public Health Facilities of Ethiopia



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## Introduction

Before 2012, there was no appropriate system established for pharmacy service. This led to pharmaceutical wastage, medication diversion, illegal medication trafficking, and improper budget utilization. The economic and social impact of these consequences was very high. These were because of poor pharmaceutical service organization and management, unscientific workforce deployment and development, non-standardized workflow and processes, lack of systems and tools that ensure transparency and accountability, inefficient use of meager resources, poor infrastructure, and lack of legal frameworks.

Recognizing all these problems, Auditable Pharmaceuticals Transactions and Services (APTS) was one of the strategic initiatives designed to improve pharmacy practice by the Ministry of Health, Ethiopia. APTS is a data-driven package of interventions designed to establish an accountable, transparent, and responsible pharmacy practice. APTS has five result areas: efficient budget utilization, transparent and accountable transactions, reliable information, effective workforce development and deployment, and improved customer satisfaction, and ultimately, it contributes to better health outcomes.

Ministry of Health, all regional states, and City Administrations of Ethiopia have enacted a legal framework for its implementation. In HSTP I it was targeted to scale up APTS in all health facilities by 2020. However, only 217 of them were implemented until the end of June 2020. Analyzing this sluggish progress, the Pharmaceutical and Medical Equipment Directorate of the Ministry of Health, devised and implemented a new approach for accelerating the expansion of APTS implementation.

## Objectives

To accelerate the expansion of Auditable Pharmaceutical Transaction and Service implementation in public health facilities of Ethiopia from July 2020 to June 2021.

### Approach

To reverse this lethargic progress in the expansion of APTS implementation, the ministry devised a new approach to implementing this service in July 2020. The following were key interventional made by the Ministry to accelerate the expansion of APTS implementation in public health facilities in Ethiopia.

1. **A one-year strategy to implement APTS in 100 public health facilities was devised by the Pharmaceutical and Medical Equipment Directorate.**

Before June 2020 the implementation of the service was donor-dependent and most facilities engaged only in hiring human resources needed to run the service. To accelerate the rate of service expansion, it is believed that increasing the role of health facilities in the initiation should be increased so that the sense of ownership and competition between facilities to implement the service will be increased. Accordingly, in addition, to provide the necessary human resource to run the service, it was believed that health facilities should allocate half of the budget for renovation, shelving, and training necessary to initiate the service. The Ministry secured a budget of around 18 million birr for this activity to be matched with public health facilities and their respective regional Health Bureaus (RHB). Accordingly, to select health facilities that could implement the service, facilities that have enough human resources, those that have already

renovated their pharmacies as per APTS layout, and those facilities that can allocate budgets through matching funds for shelving and training were set as criteria.

## **2. Data was collected to identify public health facilities that could implement the service in collaboration with Regional and City Administration Health Bureaus**

A data collection tool was sent to the Regional and City Administration Health Bureaus to collect data from their respective public health facilities under their jurisdiction. They were trained on how to use the tool and told to collect the data within two weeks. Two weeks after the data collection tool was sent, a team of experts was deployed to the Health Bureaus to confirm and clarify the data collected. Each team assigned to RHBs was contacted and confirmed data collected from each health facility identified to implement APTS within one year.

## **3. Necessary budget support was provided to public health facilities through their respective regional health bureaus**

After identifying health facilities that could implement the service until the end of June 2021, these facilities were sorted into two categories. The first category included those that require training, renovation, and shelving and can allocate a matching budget to implement the service. The second category included those who only needed training to implement the service. Consequently, considering public facilities' level of readiness and based on federalism budget calculation, the Ministry transferred the budget for all RHBs.

## **4. Implementation phase and monitoring the progress of regional health bureaus regularly**

Health facilities having enough human resources, those that have already renovated and shelved their dispensaries, and those committed to allocate matching funds were included in the implementation plan for the accelerated APTS expansion from July 2020 to June 2021. After the implementation plan was reached in consensus with RHBs, the training, renovating, and shelving, and onsite mentoring to initiate the service was undertaken in most of the facilities as per the plan. The assigned focal person

communicates and monitors the progress of the RHBs and presents their progress to the directorate. Immediate action was taken for those regions not abiding by the implementation plan.

## **Results**

As indicated in the figure below, starting from 2012 to June 2021, the number of health facilities that implemented APTS was 217. Around 32% and 19% of these facilities were in Amhara and Oromia regions respectively. During the same period, 10.5%, 11%, and 11.5% of the facilities that implemented APTS were those under Addis Ababa, SNNP region, and Federal Government jurisdiction.

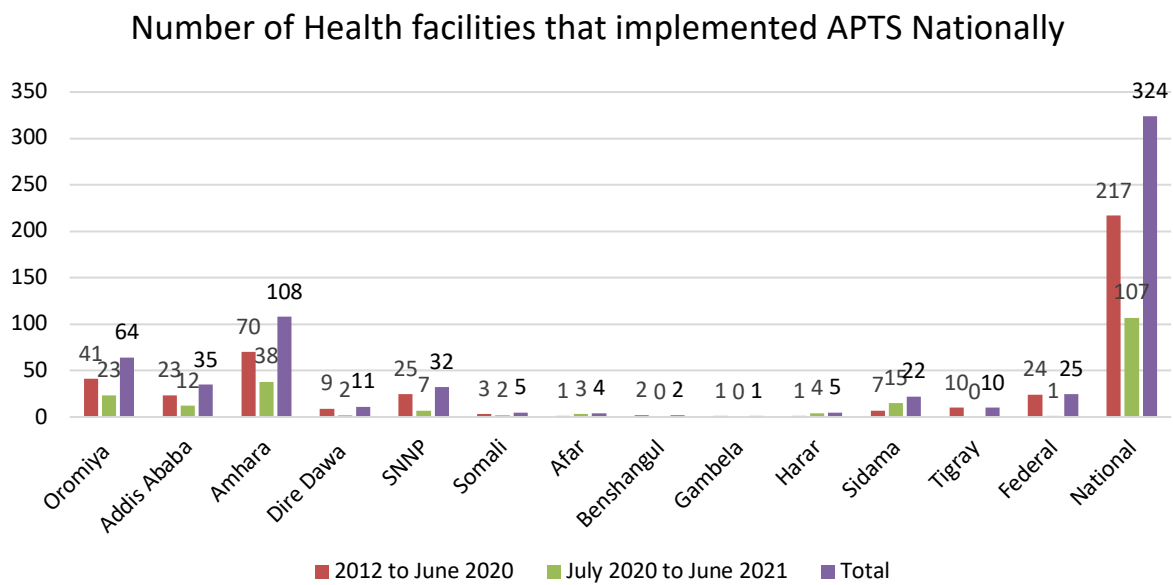
From July 2020 to June 2021, the number of health facilities that were implemented based on the new strategy developed by the Ministry was 107. This figure is around half of the efforts made in the nine previous years. From all facilities that implemented the service during this period, around 36% and 21% of them were in Amhara and Oromia respectively. In Harari, Afar, and Sidama regions, of all the health facilities that are expected to implement APTS, around 80%, 75%, and 68% of them were implemented during this accelerated expansion period. These tremendous achievements were mainly related to different efforts being made to involve health facilities in exerting their efforts to implement the service. This fostered a sense of ownership of the service as well as a competitive environment among health facilities and RHBs. Special focus in terms of allocating budget and follow up by the Ministry also played a great role in these achievements (see Fig. 1).

### Conclusion

It has been around ten years since APTS was started to be implemented in Ethiopia, and all these years later, there are still only 324 health facilities that have implemented the service. In the past fiscal year, the accelerated expansion plan enabled the implementation of the service in 107 health facilities, and this accounted for 34% of all the health facilities

that implemented APTS and around half of those implemented in nine years. Health facilities and other administrative bodies, dedication to allocating matching funds from their limited resources also played a crucial role. The approaches designed and achievements brought will be good lessons for all stakeholders to continue exerting more efforts in the next years.

Annex 1: Figure 1: Number of Health facilities that implemented APTS Nationally



# The Outcome of A Short Course, Onsite Integrated Management of Newborn and Childhood Illness) Training in Four Regions of Ethiopia



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## ABSTRACT

### Background

Pneumonia, newborn problems, and diarrhea remain among the top causes of death in young children in developing countries. Implementation of IMNCI as a strategy to prevent and treat major childhood illnesses has contributed to reductions in child mortality. The problems in IMNCI implementation are inadequate budget for training, human resources including insufficient quality and quantity of staff, and turnover.

### Methodology

Short course onsite IMNCI training using the standard materials was conducted in learning woredas. The quality of case management was compared with those trained on a standard approach. The selection of woredas and HCs was purposive. The results were entered in excel, and significance was tested using the p-value.

### Results

Correct classification in < 2months children was 81%, and 86% in onsite, and standard approach trained HWs respectively, p- 0.502, correct treatment 76% and 62% respectively, p-0.145. In 2 months to 5 years, children's correct classification was 91%, 81% onsite, and standard approach trained respectively, p-0.09 and correct treatment in both approaches was 81%, p-1.

### Discussion

There was no significant difference in the quality of case management by health workers trained onsite and standard approach. The average cost of training per trainee was much lower to 22% of the standard training.

### Conclusion

Onsite IMNCI can be an alternative approach to standard training where many health workers need to be trained, where staff turnover is high, and resources are limited.

## Introduction

Over the past quarter-century, child mortality has more than halved, dropping from 91 to 43 deaths per 1000 live births between 1990 and 2015, the rate fell

to 39 in 2018. Globally 85 percent of deaths among children and young adolescents in 2018 occurred in the first five years of life, accounting for 5.3 million deaths.

Pneumonia, newborn problems, and diarrhea remain among the top causes of death in young children. Integrated Management of Childhood Illness (IMCI) strategy was launched in 1995 by UNICEF and WHO. It aimed to collate technical guidance related to the management of the leading causes of childhood mortality in a holistic and child-centered way.

IMNCI is used in the generic 11-day course that combines classroom work with hands-on clinical experience. It was expanded to include care for sick newborns under 1 week of age and has been regularly updated to reflect advancements in technical knowledge. Evidence suggests that IMCI has contributed to reductions in child mortality over the era of the Millennium Development Goals (MDGs), and a recent Cochrane review found the strategy was associated with a 15% reduction in child mortality when activities were implemented in health facilities and communities. Ethiopia adopted IMNCI in 1997 and ICCM in 2010.

The foremost problems are inadequate budget for training, human resources including insufficient quality and quantity of staff, and turnover. At the regional level, 84% of countries cited staff turnover, and at the facility level 80% identified staff retention as a barrier to IMCI implementation.

This research was conducted to evaluate the quality of case management by short course onsite trained HWs compared with those trained by standard approach.

## Materials and methods

USAID Transform: Primary Health Care works to strengthen the quality of child health services through targeted training and technical assistance in 400 woredas found in the four regions (Amhara, Oromia, SNNP, and Tigray).

## Onsite IMNCI training

The name on site was used to denote training that took place at the health center level. The agenda was the same as the standard one and uses the same materials. The theoretical part was given on two weekends - 4 days. Practical part, clinical sessions were conducted during the weekdays (10 days) in their facilities, after busy working hours. Chart booklets were used, while the six modules were omitted from

the onsite training approach, but selected exercises from each topic were included. Very essential practical parts of EPI were integrated.

The training was conducted in learning woredas, four woredas were selected purposively for the study (one per region), two HCs with onsite trained HWs and another two with standard trained HWs were selected purposively from each woreda, and the quality of the performance was evaluated by two experienced IMNCI facilitators and supervisors.

**Data analysis:** results of performance were entered in an excel sheet, and p-value was calculated to measure the significance between the two approaches. The study period; was one year, January to December 2018

## Results

Evaluation of the onsite training using the registration book for the quality of case management, program integration, budget, and time was done. Table 1 shows the number of cases, with a ratio of 1:1.7 in onsite and standard trained respectively. The cases were a very severe disease, preterm low birth weight and local bacterial infections in under two months, Pneumonia, Malaria, Diarrhea, and severe uncomplicated malnutrition in 2 months up to five years of children.

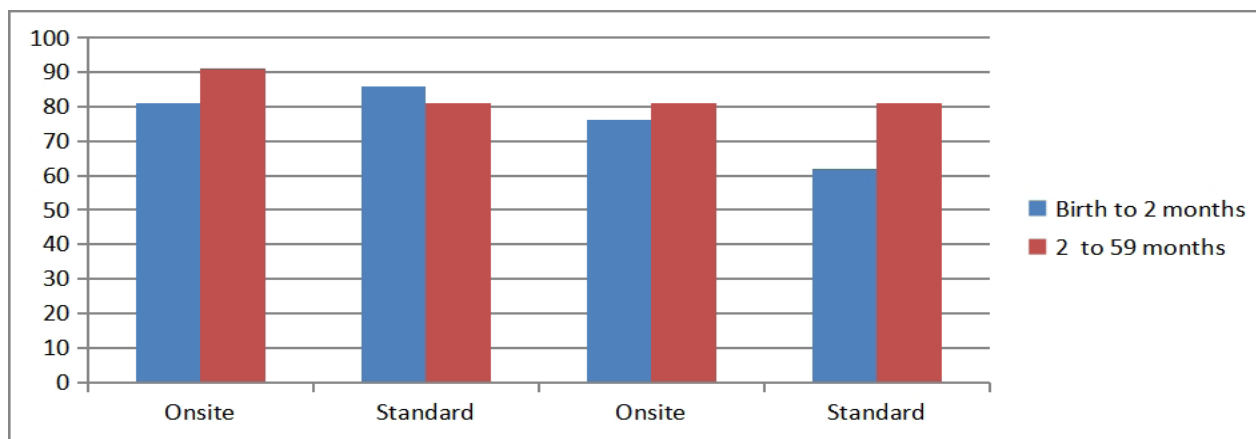
Table 1: Number of cases reviewed

Age group	Onsite Approach	Standard Approach
< 2 months	37	86
2 months to 5 years	68	106

A review of cases showed correct classification of < 2months children was 81% in onsite trained HCs and 86% in HWs trained on standard approach, p-value 0.502, correct treatment 76% and 62% respectively, p-0.145. In 2 months to 5 years, children's correct classification was 91%, in onsite trained HCs, and 81% in standard trained approach, p-0.09., correct treatment in both approaches it was 81%, p-1.



Figure 1. Consistency of case management, onsite and standard training approaches



**Cost:** Average budget for the standard IMNCI training was 130,000- 150,000 to train 25 HWs, and that of onsite is 35,000-40,000 birr (1250-1667 /trainee). Money spent to print six modules is also saved. The indirect cost saved during onsite training is 650 birr/trainee (salary of one HW for one week).

**Time:** The number of days to train IMNCI standard training is seven days out of their workplace, but that of onsite is two weekends, and weekdays in their health facilities without interruption of their routine activities after busy hours. Facilitators were from their health centers or woreda.

**Service integration:** Health workers in delivery, EPI, nutrition, FP, emergency area participated in the training which helped them to assess children when assigned.

**Supervision:** The health workers were able to provide technical support on IMNCI, iCCM, CBNC, and EPI to their satellite health posts

## Discussion

The standard IMNCI training is resource-intensive and requires displacing staff from their workplace. Evaluation of the cases managed by health workers trained through the onsite and the standard training approach revealed similar case management quality. Correct classification of < 2months children 81% and 86% in HWs trained on onsite and standard approach, p-value 0.502, correct treatment 76% and 62% respectively, p-0.145. Correct classification was 91%, and 81%, trained in onsite and standard approach p-0.09, correct treatment in both approaches

was 81%, p-1, shows that there was no significant difference in the quality of treatment given by health workers trained by onsite and standard approach.

Promoting monitoring and supervision; encouraging on-the-job training for health workers; and strengthening training programs, counseling and other promotional activities are important for promoting IMCI implementation

**Limitation of onsite training;** the evaluation was conducted only in four woredas, selected purposively by project staff. The quality was reviewed from IMNCI registration, direct case review was not done.

## Conclusion

Onsite IMNCI training can be an alternative approach to standard training where many health workers are needed to be trained, in hard-to-reach areas where staff turnover is high, in the case of budget limitation, and in HFs where the service quality and utilization is poor. Training must be supplemented with supervision and review meetings to improve knowledge and skills.

**Conflict of interest;** authors declare that there is no conflict of interest.



**SPECIAL BULLETIN**