

# Maternal and Newborn Health Care Providers' Preparedness for Provisions of Emergency Obstetric and Newborn Care

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**Abstract:** Emergency Obstetric and Newborn Care (EmONC) is a life-saving approach for mother and newborn experiencing complications during pregnancy, childbirth and or postpartum period. Like other developing countries, Ethiopia has high maternal and neonatal mortality (353/100,000 live births and 28/1000 live births respectively by 2015) where majority of them are due to lack of timely, effective, and accessible EmONC services. Even though Addis Ababa, Harar and Dire Dawa have met the WHO minimum requirements of EmONC service in terms of Availability and Accessibility unlike other regions, the report shows that the quality of care provided was highly compromised and mainly associated with poor providers' competence. A cross-sectional study design was employed in purposively selected health care facilities in Dire Dawa city to assess providers' level of knowledge, skills and confidence for provision of quality EmONC. The study used self-administered standardized questionnaire. Information letters, consent forms and questionnaires was handled to potential participants by research assistants. Data was coded, cleaned and entered using Epi Info 7 (7.0.9.34) and analyzed using SPSS version 20 for descriptive and inferential statistics. The finding of this study reveals that, out of 52 maternal and newborn health care providers filling questionnaires, majority (67.35%) of providers were untrained, where large numbers (38.5%) were reported from Health centers. Forty-five (86.04%) were reported of having sufficient knowledge of EmONC; while 31 (59.4%) and 46 (88.45%) reported of having adequate skills and confidence of performing major EmONC procedures, respectively. In conclusion, Even though there is a significant variation based on clinicians' place of work and year of work experience, providers' knowledge, skills and confidence were adequate. But, gaps in trained and specialized MNCPs were highly contributing to lack of improvements in quality of EmONC in Dire Dawa. Thus, the findings bear considerable implications for policy and local priorities.

**Keywords:** Emergency Obstetric and Newborn Care, Provider (s), Preparedness, Knowledge, Skills, Confidence, Ethiopia

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## 1. Introduction

Maternal and Neonatal morbidity and mortality is remaining the major challenge in developing countries. Sub-Saharan Africa and South Asian countries alone account for 286,000 deaths out of the global estimates of 287,000 maternal deaths in 2014 [1]. By the year 2013 only about 289, 000 women's and 3 million newborns were died in the process of pregnancy, childbirth and post-partum period globally [2-4]. Greater than 90% of these cases were takes place in developing countries where there were limited resources. It has been known that majority of the cases can be

easily avoidable and preventable with timely and effective emergency obstetric and newborn care services [4].

Save the children 2014 report shows that about 40 million mothers give birth at home without any trained health workers every year. As a result, most of the maternal and neonatal morbidities, mortalities and disabilities occur at the community level where there is no quality of care during labour and birth [5].

According to new ANC approaches, all pregnant mothers are considered as high risk and sought timely checkup and skilled attendance in their prenatal, intra and postnatal periods. Thus, all pregnant women need access to ANC

during pregnancy, skilled attendance in their labour and delivery; and holistic medical care support at least up to her first week after delivery to make pregnancy safer [1, 4]. A woman's benefited from skilled care during childbirth in poor resource and low income countries were only accounts for 46%. These simply imply that; majority of the delivery is not carried out by skilled or trained health professionals as indicated by increased home delivery [4].

Access to essential maternal health services which encompasses focused Antenatal care, skilled attendance during pregnancy, at delivery and post-delivery, appropriate and timely referral service system and Emergency Obstetric Care (EmOC) services can greatly avert maternal deaths and disabilities by 99% [6]. But, Sub-Sahara African women's continue facing limited access to skilled delivery services and continue suffering [6]. Sub-Saharan African countries alone, accounts for more than 62% of all deaths globally. Sub-Saharan African together with Southern Asian countries alone accounts for 99% (286,000 out of 287,000) of total maternal deaths across the globe [6-7].

By the year 2014, percentages of pregnant women who received ANC from skilled health care providers in Dire Dawa were about 78.4% of which 65.9% were from nurses and midwives, and 34.1% were from physicians. 59.2% of women in Dire Dawa gave births in the health facility, 36.8% of mothers were attended by nurses and midwives and 22.4% were by physicians. Not surprisingly, skilled health care providers attended an overwhelming majority of births from urban areas among those gave births in health facilities as compared with births delivered elsewhere. Urban births were more than six times as likely to be attended by skilled providers as rural births in Dire Dawa [8].

There are a lot of possible factors contributing to increased maternal mortality ratios in Ethiopia. These may include but not limited to low facility-based delivery rates, lack of skilled and trained health personnel, unavailability of emergency obstetric care services at facilities, inadequate and inefficient referral systems for obstetric emergencies were key health care system weaknesses [9-11]. Though EmONC initiative implementation in Ethiopia was begun in 1998, the services were not widely accessible. Except Addis Ababa, Dire Dawa and Harar almost all of the regions didn't meet the WHO minimum requirements in terms of availability and Accessibility. Though Addis Ababa, Dire Dawa and Harar had met the WHO requirement; a report showed that the quality of care was highly compromised [11]. Thus, this study accentuate the current knowledge and practice gap of maternal and newborn health care providers in provision of quality EmONC services as a major indices to take corrective action in a way of combating maternal and neonatal morbidity and mortality.

#### *Rationale of EmONC service Package*

Emergency obstetric and newborn care services alone can save the lives of the estimated 280,000 women and 3 million newborns lost in the process of pregnancy, childbirth, and the postpartum period every year. Millions of disabling conditions can also be prevented through timely and effective

EmONC [2, 12]. Though, most life threatening complications are not predictable, prevention of death and disability is possible with effective and timely emergency obstetric and newborn care services provided to the dyad [3].

#### *Significance of the study*

The finding of this study has a significant contribution to the knowledge and practices of maternal and newborn health care providers' inprovisions of recommended EmONC service package. It's also a grand and novellas input to be used by the surveyed and other facilities to ensure quality service delivery sought to mother and newborn in emergencies by the spur of providers understanding of quality care services. Further, helps those program efforts working towards improvement of EmONC service delivery quality through identification of gaps in maternal and newborn health care providers' competence. Overall, the study will provide important information for policy makers and program managers in planning human resource for health to address maternal and newborn health collectively.

#### *Aims of the study*

To assess Maternal and Newborn Health Care providers Knowledge, Skills and Confidence for provisions of quality Emergency Obstetric and Newborn Care Services in Dire Dawa Public health care facilities of Ethiopia

#### *Research question (gap)*

Do Maternal and Newborn health care providers have adequate knowledge, skills and confidence in delivering basic signal functions of EmONC service package?

## **2. Methods**

### **2.1. Study Design**

A facility based quantitative cross-sectional design was employed to assess the knowledge, skills and confidence of providers for provisions of quality emergency obstetric and newborn care in public facilities in Dire Dawa, Ethiopia

### **2.2. Study Area**

Dire Dawa is so-called "a place of remedy" and one of the two chartered cities in Ethiopia, the other being the capital, Addis Ababa. Dire Dawa is 565 km away from Addis and located at 9°36'N latitude and 41°52' E longitude along Ethio-Djibouti border. Has 1191 meters (3907.48 ft) elevation above sea level and 594 mm annual rain fall with an average of 25°C. Have two Public hospitals, 14 Public health centers, 34 Health posts with different level governmental, privates' and NGO's clinics where seven public EmONC facilities were networked with referral system in the region since 2012.

### **2.3. Source and Study Population**

*Source Population:* All maternal and newborn health care providers in Dire Dawa, Ethiopia.

*Study population:* All maternal and newborn health care service providers working in EmONC unit/department in purposively selected (networked) health facilities and

consented to participate in the study

#### 2.4. Sample Size

Maternal and newborn health care providers working in EmONC department (unit) and available at a time of data collection were purposively included in the study. For purposive sampling, sample size is determined by data saturation not by statistical power analysis [13]. Thus, fifty two (52) maternal and newborn health care providers were participated in this study.

#### 2.5. Data Collection Process and Quality Control

A pilot study was done to seven(10%) of MNCH care providers in Tikur Anbessa specialized and referral hospital in Addis Ababa on items in a questionnaire and observational schedule to identify practical or local problems that might be potentially affect the research process before data collection starts. A code number was used in a place of participant's name and an open code system for pilot study samples; to exclude them from study. Participants told to sign the consent form first and then provided them a self-administered Questionnaire.

A questionnaire prepared in English language was used, since all MNH care providers were learn (t) and trained in English. The questionnaires were filled in the presence of trained data collectors; and participants were free to ask questions or clarifications in case some items in the questionnaire were not clear or need elaborations. Data collectors were four BSc nurses and volunteer expert nurse in the field, and two supervisors who had experience on qualitative data collection were recruited to supervise the data collection process and all of them took training for a minimum of one day on the objective and procedure of the study.

Ten percent (10%) of the collected data was checked by the supervisors daily for completeness and finally the principal investigator monitored the overall quality of the data. Data was collected from May to June, 2016; where good rapport was maintained in the whole period of data collection.

#### 2.6. Data Management and Analysis

Data was cleaned, coded and entered using Epi Info 7 (7.0.9.34) and analyzed using SPSS version 20 for descriptive and inferential statistics. Data received from data collectors daily then cleaned and coded by research supervisors. Data exploration was undertaken to see if there were odd codes or items that were not logical and then subsequent editing was made. As well as, double entered to check the consistency before analysis, and displayed using frequency tables, pie chart, figures and tables. Chi-square, Binary and Multiple logistic regressions were used to explore factors affecting provisions of quality emergency obstetric and newborn care services. Variables having p-value less than and equals to 0.05 on Chi square/ Binary logistic regression was a candidate for Multiple logistic regressions and

statistical significance was declared at  $P$ value<0.05.

#### 2.7. Ethical Considerations

The proposal was submitted to Pan African University Life and Earth Science Institute, University of Ibadan, College of medicine Research Ethic Review Committee and has granted an approval (Assigned number: UI/EC/15/0400). Following the approval by University of Ibadan, University College Hospital Ethical Review Committee (UI/UCH/EC), and formal letter was written to Ethiopian Federal Ministry of Health and Dire Dawa Regional Health Bureau for providing us a study permit and letters to respective hospitals and health centers on which study was conducted. Since a cross-sectional study was conducted, non-invasive data collection method took place with individual study participants. Thus, they weren't subjected to any harm as far as confidentiality is kept. A code number was used instead of participants name and no personal identifiers were used on data collection form. The recorded data wasn't accessed by third person except the principal investigator and was kept confidential.

### 3. Results and Discussions

Most of the identified barriers contributing to quality gap in EmONC service delivery on different literature among facilities fulfilled WHO recommended minimum requirements (in terms of availability and accessibility) were more or less related to poor providers' competence and poor community/client health care seeking behaviors. Thus, this study tried to uncover gap related to providers' level of knowledge, skills and confidence for provision of quality EmONC service sat EmONC delivery points of the surveyed facilities in Dire Dawa, Ethiopia.

Women were encouraged to give birth in health facilities to be benefited from skilled birth attendants, but these also calls in to questions the skills and knowledge of those attendants because in context of limited workforce, material resources, the knowledge and skills of providers are of utmost importance; highly skilled health professional might be able to overcome resource limitation through careful monitoring, identification of emergencies, right/correct use of drugs and equipment's, and correct referrals [14].

"Emergency Obstetric and Newborn Care (EmONC) requires a skilled birth attendant with the ability to provide parental medications (Antibiotics, oxytocics and anticonvulsants), perform procedures (manual removal of placenta, vacuum or forceps deliveries), carryout blood transfusions, caesarean sections and newborn care /resuscitation" said Penny S. et al and Omrana P. et al [15-16].

Though there is a significant variation based on a clinicians' place of work, majority of the study participants (39.52%) in this study reported that they had good knowledge; where birth asphyxia identification and management, and preeclampsia/ eclampsia treatment (including use of  $MgSO_4$ ) were the two areas where poor knowledge was reported. Though knowledge of correct

monitoring during routine labour was 55.69% good, 44.31% was poor and were not keeping with internationally recognized good practices; with high rates of potentially life threatening responses from BEmONC facilities. CEmONC staffs were slightly more knowledgeable than BEmONC staffs, and reported training and work experiences had much impact on their level of knowledge. 67.33% of providers reported that they didn't receive EmONC in-service training but majority (59.4%) had reported that they had adequate skills of performing major EmONC procedures, whereas; about 58.1% reported of having sufficient confidence while performing these major EmONC procedures. This study also inferred that untrained MNHC providers were twice less likely to have confidence in performing major EmONC procedures than their trained counterparts (pvalue < 0.05, COR 95%CI: 1.89[1.32-8.23]). The binary and multi logistic regression result also revealed that there is a sufficient evidence to support the relationship between knowledge, skills and confidence, and training (Pvalue > 0.05) which contribute to quality of care being delivered.

Thus, Lack of competent health care providers is a key predictor to unsafe care and it will negatively affect the quality of care and has been identified on different literature as determinants of the third delays of emergency obstetric care which accounts to the quality of services available within the facilities. The study from Malawi shows that poor providers' competences were among the major barriers to quality of EmONC. The finding from Malawi is more or less similar with this study where it found out that, provider's knowledge regarding management of routine labour was 80% good and 35% was not keeping with internationally recognized good practice. Knowledge of emergency newborn care was poor across all groups' surveyed (with 58% correct response) where majority of the responses were from BEmOC facilities, but they reported confidence and training level had little impact on their knowledge [14] and knowledge deficient regarding early identification and management of post-partum infection and hypertensive complication were identified among PHC staffs in Mali as well [17].

Thirty five (67.35%) providers out of the total 52, reported that they didn't take any of an in-service EmONC training within the past one year; where large proportions (57.2%) of untrained staffs were reported from health centers, BEmONC facilities. Interviewed participants' were also reported training gap in BEmONC and CEmONC, and lack of refreshment training. Untrained MNHC providers were twice less likely to have confidence in performing major EmONC procedures than their trained counterparts, and those who received EmONC training had twice more likely to have adequate knowledge on birth asphyxia diagnosis and management than their untrained co-workers. A highly realistic, low-tech simulation-based obstetric and neonatal emergency training program (PRONTO training) with pre/post measurement was given on management of obstetric hemorrhage, neonatal- resuscitation, general obstetric emergencies, pre-eclampsia/ eclampsia and shoulder dystocia

at intervention hospitals in Mexico also demonstrate significant improvements in knowledge and self-efficacy for both physicians and nurse participants [18].

The same experience from Guatemala also reveals a significant improvement in knowledge and self-efficacy scores of obstetric and neonatal care providers post PRONTO training, and more than 60% of goals to improve clinic functioning and emergency care were achieved [19]. Trainees' reaction and knowledge acquisition to BEmONC training in Addis Ababa, Ethiopia have also identified an improved provider's knowledge and skills as evidenced by post knowledge score of 83.5% [20].

All the literature identified here are more or less supportive of training as a better means whereby providers get an opportunity to expand their knowledge base. This discussion clearly shows that training provides better opportunities to expand the knowledge base of all employees. Employees who got trained feel more satisfaction towards their job and able to deliver quality services and contribute a lot to the success of their organization/company. Because the success of one facility or organization is depending on how well their employees perform. But lack of training leads employees' turnover, physical distress/noncompliance and unproductivity. Thus this highly indicates that, health care directors and program managers sought to maximize the trained staff either through TOT (Training of Trainee) or through creating an opportunities for every staffs to get trained and further helping through establishing training infrastructure within the facilities that enables the trained providers to share their know ledges' and experiences with the other staffs. It is also important to work in collaboration with other external organizations/NGO's to maximize the opportunities and get all the dedicated staffs trained and further corroborate mentoring and supervisions from program officers unduly contributes to the better maternal and newborn health outcome.

## 4. Conclusion

Though there is a significant variation based on clinicians place of work and year of work experience, providers knowledge, skills and confidence were adequate. But, gaps in trained and specialized MNCPs were highly contributing to lack of improvements in quality of EmONC in Dire Dawa. Thus, the findings bear considerable implications for policy and local priorities.

## List of Abbreviations

- BEmONC-Basic Emergency Obstetric and Newborn Care
- CEmONC- Comprehensive Emergency Obstetric and Newborn Care
- EmONC-Emergency Obstetric and Newborn Care
- NGOs- Non-governmental Organizations
- MNCP- Maternal and Newborn Care Provider
- WHO- World Health Organization

## Declarations

Ethics approval and consent to participate.

The proposal was submitted to Pan African University Life and Earth Science Institute, University of Ibadan, College of medicine Research Ethic Review Committee and has granted an approval (Assigned number: UI/EC/15/0400).

Since a cross-sectional study was conducted, non-invasive data collection method took place with consented study participants. A code number was used instead of participants name and no personal identifier was used on data collection form and was kept confidential.

## Consent to Publish

The study granted consent for publication from Dire Dawa Regional Health Bureau and Ibadan University College Hospital Ethical Review Board.

## Availability of Data and Materials

Data supporting the findings can be found at Pan African University life and Earth sciences Institute, Ibadan University, University College Hospital library data base and Dire Dawa regional health bureau data repository, Ethiopia.

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## Competing Interest

The authors of this manuscript declare that they have no competing interest (financial or other) in this publication.

## Author's Contribution

GAW as a principal investigator was involved in all aspects of this study. OO provided the technical and intellectual inputs, as being a supervisor. Both authors reviewed and approved various drafts and the final paper as well.

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