

**Status of Emergency Obstetric and Newborn Care Services and Client
Satisfaction among Public Health Facilities in Jimma Zone, Oromia
Region, Ethiopia**

By:

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Jimma, Ethiopia

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Abstract

Background: United Nations Millennium Project of Transforming Health Systems for women & children report of 2005 concluded that universal access to EmONC could reduce maternal deaths by 74%. Even though there are some studies conducted in the country and outside the country towards the availability, utilization and quality of EmONC there is no similar studies conducted in Jimma zone. This study is aimed to the status of EmONC services among public Health Facilities in Jimma Zone, South West Ethiopia.

Methods: A facility- based cross sectional study was conducted in Jimma Zone from April 01-30, 2014. Health care workers assigned on maternity ward, health facility in charge, referral focal person and client interview were done to obtain the required data. The sample size of the study was randomly selected 30 Health Centers and 4 hospitals in Jimma zone a total of 34 health facilities. Six persons were participated in data collection. Data was entered by using Epi info version 3.5.4, analyzed using SPSS version 20 for windows and presented with frequency distribution tables, graphs, charts and texts. Linear regression was done to ascertain the association between covariates and the outcome variable.

Result: From 30 health centers and 4 hospitals assessed in this study, only 1 health center and 3 hospitals and a total of 4 (11.8%) health facilities qualified the requirements of EmONC facilities. For a population of 3,030,740 in Jimma zone, the estimated result is 3 BEmONC and 3 CEmONC health facilities a total of 6 EmONC facilities which is one sixth of the minimum acceptable level of ≥ 5 EmONC facilities per 500, 000 population. Regarding service utilization the proportion of all births in EmOC facilities is only 7 % and caesarean sections in EmOC facilities as a proportion of all births is 1.2% which is again below the minimum acceptable level of 5-15% births by cesarean section. The major reasons for health facilities not performing the signal functions are related to drugs, supplies, equipment and absence of indication. The overall proportion of client satisfaction is 79%.

Conclusion: Based on the UN minimum requirements of availability of EmOC, a 3,030,740 population needs at least 6 CEmONC and 24 BEmONC health facilities. But, the estimated obtained result from this study shows only 3 CEmONC and 3 BEmONC which is much lower than the recommended standards. The utilization and quality of the existing services is also low which can be explained from proportion of deliveries in EmONC facilities and from client's point of satisfaction.

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Table of Contents

Abstract.....	i
Acknowledgement	ii
Table of Contents.....	iii
List of Tables.....	v
List of figures	vi
Acronyms	vii
Chapter One: Introduction	10
1.1. Background	1
1.2. Statement of the Problem	3
Chapter Two: Literature Review	6
2.1. Literature Review	6
2.2 Significance Of The Study	8
2.3 Conceptual Framework of EmONC Status	9
Chapter Three: Objectives	10
3.1 General Objective:	10
3.2 Specific objectives:	10
Chapter Four: Methods and Materials	11
4.1 Study area and period.....	11
4.2 Study design	12
4.3 Study Population	12
4.3.1 Source Population	12
4.3.2 Study Population.....	12
4.4 Sample size.....	12
4.4.1 Health Facilities Sample Size	12
4.4.2 Clients Sample Size	12
4.5 Sampling technique /Sampling procedures	12
4.5.1 Inclusion and Exclusion Criteria.....	14
4.6 Variables	14
4.7 Data collection procedures	14
4.7.1 Preparation	14
4.7.2. Data collection personnel.....	14
4.7.3. Data Quality Management	14
4.8 Data analysis	14
4.10 Ethical consideration.....	15

4.11 Dissemination plan	15
4.12 Operational definitions	16
Chapter 5: Result	17
5.1 Health Facility Result	17
5.1.1 Facility Infrastructure	18
5.1.2. Human Resources	18
5.1.2.1 Available Human Resources	18
5.1.2.2 Training Information.....	19
5.1.3. Availability of Drugs, Equipment, and Supplies	20
5.1.3.1 Availability of Essential EmONC Drugs	20
5.1.3.2 Availability of Diagnostic Equipment	21
5.1.3.3 Availability of Supplies	22
5.1.3.4 Availability of Vacuum Extraction /Forceps Delivery Sets	23
5.1.3.5. Availability of Laboratory Services	23
5.2.EmONC Signal Functions Performances	24
5.2.1.Reasons for not performing the signal functions.....	26
5.2.2. Zonal-wide estimates of EmONC	28
5.3.Status of EmONC.....	28
5.4. Client Interview Result	29
5.4.1. Socio-demographic and Maternity Related Characteristics.....	29
5.4.2. Client Satisfaction.....	30
5.4.3.Logistic Regression Analysis.....	32
Chapter 6: Discussions	33
Chapter 7:Limitation of the Study.....	37
Chapter 8:Conclusion.....	37
Chapter 9: Recommendation	38
REFERENCE.....	39
Annex 1:List of health facilities in the zone and selected health facilities.....	43
Annex 2:Data collection tools for health facility assessment-----	44
Annex 3: EmONC Indicators.....	62

List of Tables

Tables	Pages
Table 1: Health facilities expected to provide delivery services in the zone	11
Table 2: Infrastructures availability.....	17
Table 3: Emergency Communication, Transportation & Services availability	18
Table 4: Facilities with Trained man power on and performed some EmOC signal functions	20
Table 5: Available Parenteral Dugs	21
Table 6: Availability of Diagnostic Equipment	22
Table 7: Availability of Supplies.....	22
Table 8: Availability of Vacuum Extraction /Forceps Delivery Sets.....	23
Table 9: Anesthesia Equipment.....	24
Table 10: Socio demographic Characteristics and past obstetric history of the respondents	29
Table 11: Proportion of respondents satisfaction	31
Table 12: Linear regression result of client satisfaction	32
Table 13:List of Public Hospitals in Jimma Zone.....	43
Table 14 :List of Public Health Centers in Jimma Zone.....	43
Table 15:List of Visited Public Health Facilities in Jimma Zone.....	44

List of figures

Figures	Pages
Figure 1: Conceptual framework showing the status of EmONC	9
Figure 2: Map of Jimma zone.....	11
Figure 3: Pictorial representation of the sampling procedure of the study health facilities.....	13
Figure 4: Human Resources.....	19
Figure 5: Number of Health Facilities Performed Signal Functions for the past 3 months.....	25
Figure 6: Number of EmONC Signal functions performed per number of facilities.....	25
Figure 7: Reasons for not performing signal functions.....	26
Figure 8: Status of BEmONC based on the past 3 months 7 signal functions performances....	27
Figure 9: Status of CEmONC based on the past 3 months 9 signal functions performances...	27
Figure 10: Status of EmONC based on the past 3 months signal functions performances.....	27
Figure 12: Percentage level of satisfaction to obstetric services	35

Acronyms

AIDS	Acquired Immune Deficiency Syndrome
AMDD	Averting Maternal Death and Death ability
APH	Ante partum Hemorrhage
BEmONC	Basic Emergency Obstetric and Neonatal Care
CEmONC	Comprehensive Emergency Obstetric and Neonatal Care
D&C	Dilatation and Curettage
EDHS	Ethiopian Demographic and Health Survey
EmONC	Emergency Obstetric and Neonatal Care
FMOH	Federal Ministry of Health
HC	Health Center
HAD	Health Development Army
HEW	Health Extension Worker
HSDP	Health Sector Development Plan
IEOS	Integrated Emergency Surgery Officers
MCH	Maternal and Child Health
MDG	Millennium Development Goal
MMR	Maternal Mortality Ratio
MVA	Manual Vacuum Aspiration
NICU	Neonatal Intensive Care Unit
PMTCT	Prevention of Maternal to Child Transition of HIV/AIDS
PPH	Postpartum Hemorrhage
SAMM	Severe Acute Maternal Morbidity
UN	United Nations
WHO	World Health Organization

Chapter One: Introduction

1.1 Background

Emergency Obstetric and Newborn Care (EmONC)-refers to a set of life saving interventions or signal functions used to treat direct obstetric complications that make up approximately 70-80% of maternal deaths globally. The availability of EOC depends on having in place a set of seven key interventions known as “signal functions” for health facilities providing Basic EOC (BEOC) and nine for facilities providing Comprehensive EOC (CEOC). Basic EmOC facilities are expected to provide the following seven services: administration of Parenteral antibiotics; Parenteral oxytocic drugs; Parenteral anticonvulsants for pre-eclampsia; manual removal of retained placenta; removal of retained products of conception; assisted vaginal delivery (vacuum extraction or forceps delivery) and neonatal resuscitation with bag or mask. Comprehensive EmOC facilities are expected to provide caesarean section and blood transfusion in addition to those services provided by the basic (1).

Globally, there were an estimated 287 000 maternal deaths in 2010, yielding a MMR of 210 maternal deaths per 100 000 live births among 181 countries. Developing countries account for 99% (284 000) of the global maternal deaths, the majority of which are in sub-Saharan Africa (162 000) and Southern Asia (83 000). These two regions accounted for 85% of maternal deaths, with sub-Saharan Africa alone accounting for 56%. The MMR in developing regions (240) was 15 times higher than in developed regions which is 16 (2). Similarly around 44% of the global under-five deaths –now 2.9 million a year occur in the neonatal period (the first 28 days of life) (3). Around 1 million are dying during their first day of life-yet over two thirds of these deaths are preventable without intensive care (4).

At the country level, Ethiopia with 9000 maternal deaths is one of the ten countries in 2010 contributed for 60% of the global maternal deaths (2). The maternal mortality ratio was 676 maternal deaths per 100,000 live births for the seven year period preceding the survey which is not significantly different from those reported in the 2005 EDHS and the 2000 EDHS.

Again one in every 17 Ethiopian children dies before the first birthday, and one in every 11 children die before the fifth birthday and neonatal mortality rate was 37 deaths per 1,000 live births, the post-neonatal mortality rate was 22 deaths per 1,000 live births, and the prenatal mortality rate was 46 per 1,000 pregnancies (5).

The major causes of maternal deaths in Ethiopia are similar to most developing countries: infection, hemorrhage, obstructed labor, abortion and hypertension in pregnancy. The study conducted in Jimma specialized hospital on incidence, causes and outcome of obstructed labor also shows that commonest maternal complications observed were uterine rupture in 55 (45.1%) and sepsis in 48 (39.3%) of the cases with complications. Forty-five point eight percent of fetuses were born alive and all had low first minute APGAR score (6).

Overall an estimated 15% of women are expected to experience 15% of pregnant women experience serious obstetric complications (7). The estimated average interval between onset of major obstetric complications and death, in the absence of medical interventions is 2hrs for postpartum hemorrhage, 12hours for ant partum hemorrhage, 1day for ruptured uterus, 2days for eclampsia, 3days for obstructed labor and six days for infection (8). Since the majority of the complications are unpredictable, an appropriate use of skilled birth attendance and supportive emergency obstetric care are critical interventions for the survival of the mother (7).

On the other hand EDHS 2011 shows that only 10 percent of births in the past five years were delivered by a skilled provider. Postnatal care is extremely low: 9 in 10 mothers with live birth received no postnatal care and only 5 percent of mothers received postnatal care within the critical first two days after delivery.(4). From HSDP IV 2012/13 Annual Performance Report, even though the coverage is below the annual target, when compared to the baseline regionally an increase was observed in ten regions (Tigray, Afar, Amhara, Somali, Benishangul Gumuz, SNNP, Gambella, Harari, Addis Ababa, and Dire Dawa), while a decrease from 24.2% to 21.4% was observed in Oromia Region (9). Similarly Jimma zone one of the seventeen administrative zones of Oromia region`s 2006EFY first quarter institutional delivery report shows that the overall zonal coverage for the quarter is 19.7% which is even lower than that of national as well regional coverage(10).

The UN Secretary-General launched the *Global strategy for women's and children's health* and identified: (i) country-led health plans; (ii) a comprehensive, integrated package of essential interventions and services; (iii) integrated care; (iv) health-systems strengthening; (v) health workforce capacity building; and (vi) coordinated research and innovation as key pillars to achieve MDGs 4 and 5(11).

1.2 Statement of the Problem

UN Millennium Project of Transforming Health Systems for women & children report of 2005 concluded that universal access to EmONC could reduce maternal deaths by 74% (12). It has been estimated that with EOC in place, up to 60% of maternal deaths, 40% of intra partum-related neonatal deaths and 45–75% of intra-partum stillbirths could be averted (7, 13–15).

In recognition of the difficulties and limitations of the maternal mortality ratio, WHO/UNICEF/UNFPA/AMDD and partners developed eight EmOC Indicators for monitoring and evaluation of maternal mortality reduction interventions (1). These indicators depend largely on data from routine service records to show the availability, utilization and quality of EmOC. It is one way of reducing maternal mortality by improving the availability, accessibility, quality and use of services for the treatment of complications that arise during pregnancy and childbirth.

Monitoring Emergency Obstetric Care: a Handbook (7) recommends the availability of emergency obstetric care: basic and comprehensive care facilities that at least five emergency obstetric care facilities (including at least one comprehensive facility) for every 500 000 population. Availability of Basic Emergency Obstetric Care (BEmONC) and Comprehensive Emergency Obstetric Care (CEmOC) are two of the six health system indicators of 2011/13 Ethiopian health and health related indicators report (11).

A survey of Indicators for availability, utilization, and quality of emergency obstetric care in Ethiopia was conducted in 2008 and concluded that the quality and availability of EmONC in Ethiopia is well below recommended levels, which contributes to a level of maternal mortality estimated to be among the highest in the world. Ethiopia shares with many low-income countries the challenges of limited resources, weak infrastructure (especially roads), and a shortage of health personnel. The survey shows that a 0.6 EmOC facilities per 500 000 population, which is far short of the recommended goal (16).

A final year of 2013 special bulletin of FMOH shows that while 95% coverage of CEmONC is the target of the year 2012/13, the coverage of hospitals provided CEmONC is 82.7%. Again a 91 % converge of the BEmONC was the target of the year while the coverage is only 58.4% (17). A 2011/12 health and health related indicators reveal that while the national coverage of BEmONC is 34 %, it is even 17.1% in Oromia region. Again while the national coverage of CEmONC hospitals is 53.6%, in Oromia region it is 39% which is again below the national coverage (11).

In Ethiopia, facilities were concentrated in the center of the country, leaving peripheral areas underserved. Only 1 (Harare) of 11 regions met the goal of 5 per 500 000. The most populous regions of Oromia, Amhara, and Southern Nations, Nationalities, and Peoples' Region (SNNP) had only 0.4, 0.4, and 0.5 EmOC facilities per 500 000, respectively. The city of Addis Ababa met the minimum recommended number of comprehensive facilities, but had no fully functioning BEmOC facilities (16). Again gaps in midwives, doctors and anesthetists for provision of EmONC services; Absence of 24 hours a day and 7 days a week service in most health facilities, especially in HCs; Lack of a separate newborn corner and absence of a neonatal unit in some health facilities; Low coverage of skilled delivery and newborn care; and Inadequate supply of water and electricity at HP and HC levels; are the main challenges observed during the third year report of HSDP IV (9).

On the other hand the most barriers to access to health services for women are transport, distance, lack of money and concern about drugs & health professionals' availability at health facility. EDHS 2011 identified that the most important barrier to access to health services that women mentioned is taking transport to a facility (71 percent), followed by lack of money (68 percent) and distance to a health facility (66 percent). Also, about six in every ten (58 percent) were concerned that drugs may not be available at the facility or said that they did not want to go alone to a health facility. More than half of women were concerned that there may not be a health provider at the health facility (56 percent) (5).

To solve the bottleneck related to expansion of basic emergency obstetric and neonatal care (BEmONC) services, training manual and monitoring forms have been prepared, and around 3,000 health workers have been trained, with the number of Health Centers (HC) providing BEmONC services 1,813 in 2012/13 out of the total 3,245 HCs nationally. Comprehensive emergency obstetric and neonatal care (CEmONC) services are being provided in 105 hospitals out of the total 127 hospitals of the country (an increase from 69 in 2011/12). Treatment with magnesium Sulphate (MgSo₄) and pre-referral clinical care has been started at HCs (9).

In general, in a national efforts to all these methodological responses towards decreasing maternal & newborn mortality there is still a huge gaps towards improvements in a key, high impact strategies like EmONC which is 34% nationally, 17% in the largest regions of the country Oromia in 2011/12 and even the status is unknown in Jimma zone one of the largest zones of Oromia which needs urgent action towards health system strengthening.

Health system strengthening and reform are often necessary actions to achieve better outcomes. Health systems in developing countries are being strengthened to provide both BEmONC and CEmONC in sufficient numbers of facilities in order to improve access to skilled care. Health systems strengthening programs in MNCH have focused on the upgrading of health facilities and infrastructure, purchasing and distribution of essential equipment, strengthening of supply chains for essential drugs. (18-24). As core social institutions, health systems also need to be responsive to the needs and demands of the population (25). These all need adequate and updated information from different stakeholders including clients who are utilizing the service, especially at places where the magnitude of the problem is high like Jimma zone where institutional delivery 19.7% below regional & national coverage and accurate information on EmONC status is unavailable.

The availability of EmONC measures the capacity of the health system to respond to direct obstetric and newborn complications, a critical pathway to reducing maternal and newborn mortality. On the other hand the current district planning process shows a lack of reliable data on maternal and newborn health at the local level. Hence, there is a need to establish baseline information for monitoring the status of EmONC by assessing the availability of infrastructures of the health facilities, essential drugs, equipment, and supplies for EmONC, availability of human resources who perform the EmONC signal functions, fees for obstetric services and performance of each signal functions. Again clients' satisfaction the extent to which clients expectations for the services are met is of fundamental importance as a measure of the quality of care.

Finally the data will be analyzed and presented for Jimma University department of population & reproductive health; copy will be provided for Jimma zonal health department, Oromia regional health bureau and all concerned bodies to advocate for health system strengthening and reduction of maternal & new born mortality the current challenge of the country as well a globe.

Chapter Two: Literature Review

2.1 Literature Review

Regarding the availability of signal functions of EmONC facilities, findings from National needs assessments in nine countries in sub-Saharan Africa demonstrated fewer than 1 in 4 facilities aiming to provide CEOC were able to offer the nine required signal functions of CEOC (23.1%) and only 2.3% of health facilities expected to provide BEOC provided all seven signal functions. The two signal functions least likely to be provided included assisted delivery (17.5%) and manual vacuum aspiration (42.3%). The total number of available facilities (283) designated to provide EOC for this population exceeded the number required (158) a ratio of 1.8. However, none of the districts assessed met minimum UN coverage rates for EOC (26).

Another study in Somalia also found that four out of seven MCH (57%) did not offer any BEmONC signal functions. The main reasons were physical infrastructure and space limitations, lack of skilled HR and required supplies (27). Results from a maternity health facility survey of emergency obstetric care services in Nairobi also shows that Out of the 25 health facilities, only two met the criteria for comprehensive emergency obstetric care (both located outside the two slums) while the others provided less than basic emergency obstetric care. Lack of obstetric skills, equipment, and supplies hamper many facilities from providing lifesaving emergency obstetric procedures (28).

A similar assessments in Ethiopia also shows that too few facilities provided EmONC to meet the UN standards of 5 per 500 000 population, both nationally and in all but 2 regions. Only 7% of deliveries took place in institutions of any type, and only 3% of facilities were routinely provided all the signal functions (16). Again a recent study conducted in Gamo Gofa zone of south west Ethiopia showed out of visited and reviewed all the 66 health institutions (hospitals and health centers) in the zone, only 3% of institutions provided all signal functions, and were thus designated as providing comprehensive EmOC and (4.5%) provided basic EmOC (29).

Though infrastructure and supplies are the major factors to the availability of EmONC and the related available and updated data is not adequate in the country a rapid assessment of the availability and use of Obstetric Care in Nigerian Healthcare Facilities shows that while three quarter of all the assessed primary healthcare facilities had a “Labor ward” and a separate “Delivery room”, most of them lacked neonatal wards/intensive care units (NICU), or guaranteed power supply whenever there were obstetric emergencies(30).

Again a study in Somalia shows that about 60% of the MCH did not have physical space available to carry out delivery services. Only 28% of MCH assessed facilities had both electricity and water supply available, whereas 43% of MCH neither had electricity nor water supply. Only 12.5% of the assessed facilities were supplied with Magnesium Sulphate and other related drugs while Oxytocin, an effective prophylactic uterotonic to prevent atonic PPH, was missing in all of the 100% of assessed facilities. Virtually all MCH did not have injectable antibiotics, magnesium Sulphate etc. and were using tab. diazepam as first drug to prevent pre-eclampsia becoming eclampsia (27). Again results from a maternity health facility survey of Kenya shows that all health facilities surveyed use only disposable syringes and needles but some essential equipment and supplies were lacking in most facilities (28).

Human resource is also another crucial factor affecting EmONC availability. Results from a maternity health facility survey of Kenya shows that majority of the skilled birth attendants could not perform some of the basic emergency obstetric procedures for example only 20% of the skilled health care workers could perform manual removal of retained placenta; 16% could do dilation and curettage; 9% could perform manual vacuum aspiration; and 8% could carry out assisted vaginal deliveries (28). Findings from study in Somalia show that midwives, nurses, and medical doctors form the backbone of 24/7 service provision at both MCH and hospitals (27).

Even though a functional referral and communication system allows timely transfer of obstetric emergencies, results from a maternity health facility survey of Kenya shows that though almost all the health facilities had working telephones or shortwave radio, only 5 health facilities had emergency transport on site for referral of obstetric emergencies (28). Recent study in Somalia shows that virtually all the health facilities do not have any means of transport facility for referral cases. Patients' families are responsible to make such arrangements on their own (27).

In general, in all the reviewed studies the results of EmONC process indicators is below the recommended ones and there is great variations from country to country in terms of availability. There may also be variation from place to place within the country especially at places where institutional deliveries are below the national and even below the regional coverage which needs urgent action towards assessing the underlying causes. EmONC related updated information on infrastructures, supplies, trained manpower, availability of referral systems, and cost of the services are also inadequate. Again from the reviewed literature most of the studies didn't incorporated clients perspectives of the service.

2.2 Significance Of The Study

The national coverage of EmONC health centers is only 34 % while it is even half of the national coverage (17.1%) in Oromia region, the largest share of the country. Jimma zone is also one of the largest zones of Oromia region where a clear picture of EmONC status is not available and institutional delivery is below the national and even below the regional coverage. On the other hand lack of detailed information on the needs required informing improvements in EmONC, including human and financial resources, equipment, medication and service delivery capacity is one of the main constraints of MDG target 5.A

The proposed assessment will provide a baseline upon which future progress to strengthen health services for pregnant women and newborns can be measured. This information is critical for planning purposes, resource allocation and the support of human resource development (training, deployment, and retention). It will also help to develop advocacy tools that will be useful for negotiations with donors. It can help to narrow the information gap and make local planning more evidence-based. The EmOC status of a health facility can change quickly once interventions are in place. The data will also be useful in determining and mapping the adequacy of services and showing managers at all levels what life-saving interventions are or are not being provided.

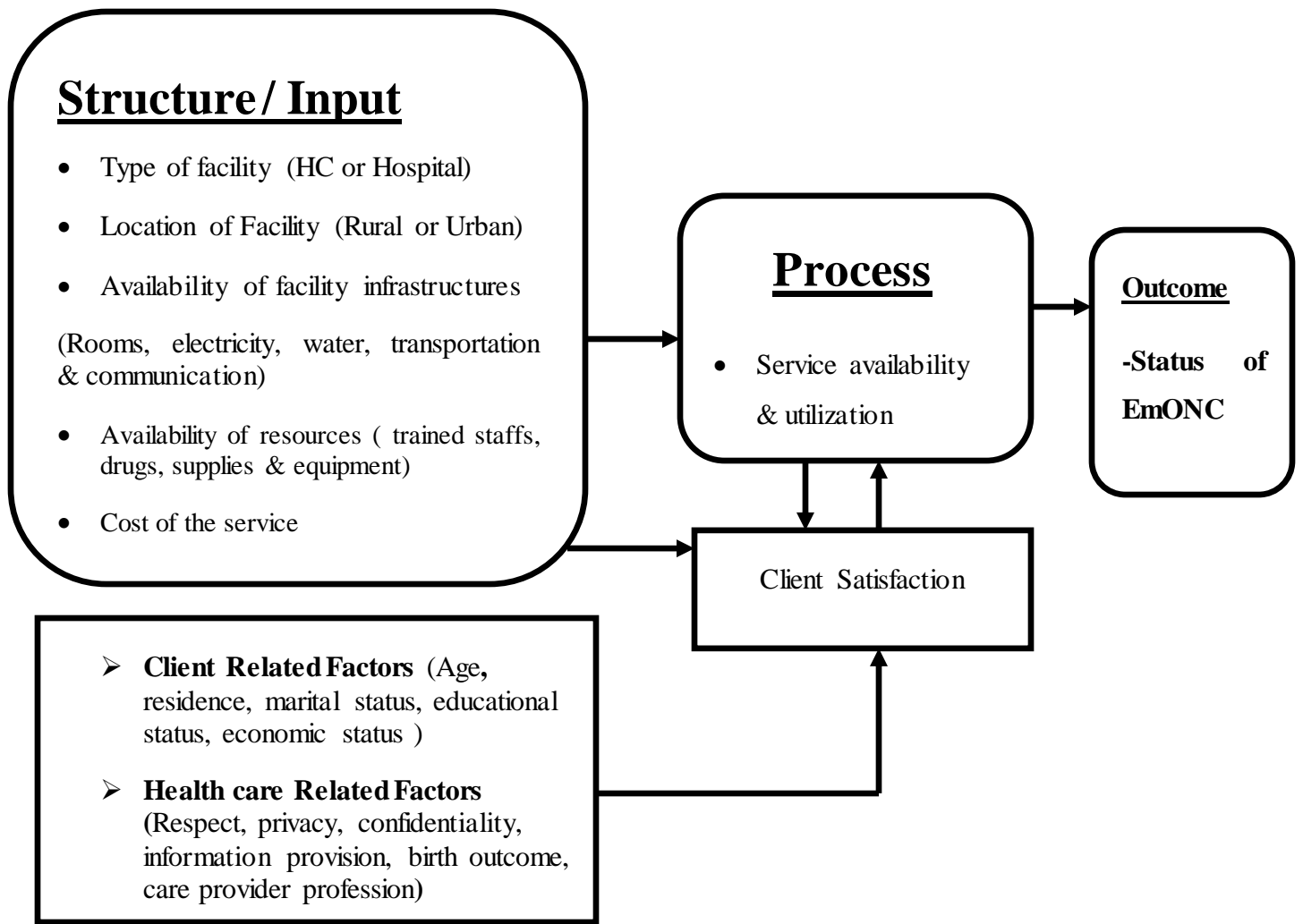


Fig.1 Conceptual framework to show the status of EmONC adapted from Donabedian's Quality Framework (31)

The frame work illustrates the intuitive relationship between three related concepts. First, *structures* for EmONC are the physical and organizational aspects of care settings (e.g., facilities, equipment, personnel, operational and financial processes supporting EmONC). Second, *processes* are performed in order to improve patient health in terms of promoting recovery, functional restoration, survival and even patient satisfaction which will result in *outcomes* of EmONC. Outcomes relevant to the information exchange process could include patient satisfaction with communication, timeliness of care.

Chapter Three: Objectives

3.1 General Objective:

- To assess the status of EmONC among public health facilities in Jimma Zone, Ethiopia from April 01-30,2014 G.C

3.2 Specific objectives:

- ✓ To assess the structural status of EmONC
- ✓ To identify EmONC service availability and utilization
- ✓ To assess the status of EmONC in terms of EmOC signal functions
- ✓ To measure client satisfaction regarding EmONC service and factors associated with it.

Chapter Four: Methods and Materials

4.1 Study area and period

The study area was Jimma zone one of the 18 administrative zones of Oromia Regional State, South West Ethiopia while the study period was from April 01-30,2014G.C. The Zone has 17 Woredas (districts) and two town administrations including the capital city of the zone Jimma town, each being directly administratively responsible to the Zone. However, people in the towns, as well as the surrounding districts of the towns themselves, use the health facilities/services/ in these towns. Eight (47%) of the seventeen rural Woredas (districts) in the zone are accessible by asphalt roads while the rest nine (53%) are accessed by all-weather gravel roads. The total population of the zone projected for the year 2013/14 from 2007census is 3,030,740 with rural=2,837,552 and urban=193,188. The expected women of reproductive age group of the zone is 669,794(22.1% of total population) with pregnant women 116,077(3.83% of total population). (32)

There are 4 hospitals, 100 health centers and 519 HPs in the zone. Hospitals are to provide comprehensive emergency obstetric care, while the health centers are expected to provide basic emergency obstetric care. (Table-1)

Type of Facility	Number
Government Health Centers	100
Government Hospitals	4
Total	104

Table 1:Public health facilities expected to provide delivery services in the zone



Fig 2: Map of Jimma Zone

4.2 Study design

A facility based cross sectional study was conducted.

4.3 Study Population

5.3.1 Source Population: All public Health facilities expected to provide delivery service in Jimma zone

5.3.2 Study Population: Selected 30 public health centers and 4 public hospitals in Jimma zone.

4.4 Sample size

4.4.1 Health Facilities Sample Size

All randomly selected 30 HCs and 4 hospitals in Jimma zone a total of 34 health facilities.

4.4.2 Clients Sample Size

Using a single population proportion formula

$$n = \frac{(z_{\alpha/2})^2 \cdot pq}{d^2}$$

Where n = sample size,

P=0.61 (proportion of mother`s satisfaction for delivery services in Amhara region referral hospitals)(33)

Level of significance (α)=0.05

Margin of error (d)=0.05

$$n = \frac{1.96^2 * 0.61 * 0.39}{(0.05)^2} = 366$$

Added non response rate of 10 % n=403 mothers who gave birth in the facilities in the past 12 months.

4.5 Sampling Technique

The study was conducted both on health centers & hospitals of the zone. A handbook for monitoring emergency obstetric care (1) recommends that for hospitals: if there are 25 or fewer, to study all of them and if there are more than 25, to select a sub set as many as possible that should represent at least 30% and for lower-level facilities including health centers if there are 100 or fewer, to study all of them and if there are more than 100, to select a subset as many as possible that should represent at least 30%. Visiting all the health facilities in the zone was difficult in cost wise as well human power & time. Therefore in order to minimize bias the existing health facilities were listed according to facility type which is hospitals and health centers. Then by using simple random sampling method 30 (30%) health centers and all the four hospitals (100%) a total of 34 health facilities were selected to be included in the study. Finally health facility in charges, staffs working at maternity ward and pharmacy of each health facilities and women who gave birth in the past 12 months at the study facility were interviewed. (Fig.3).

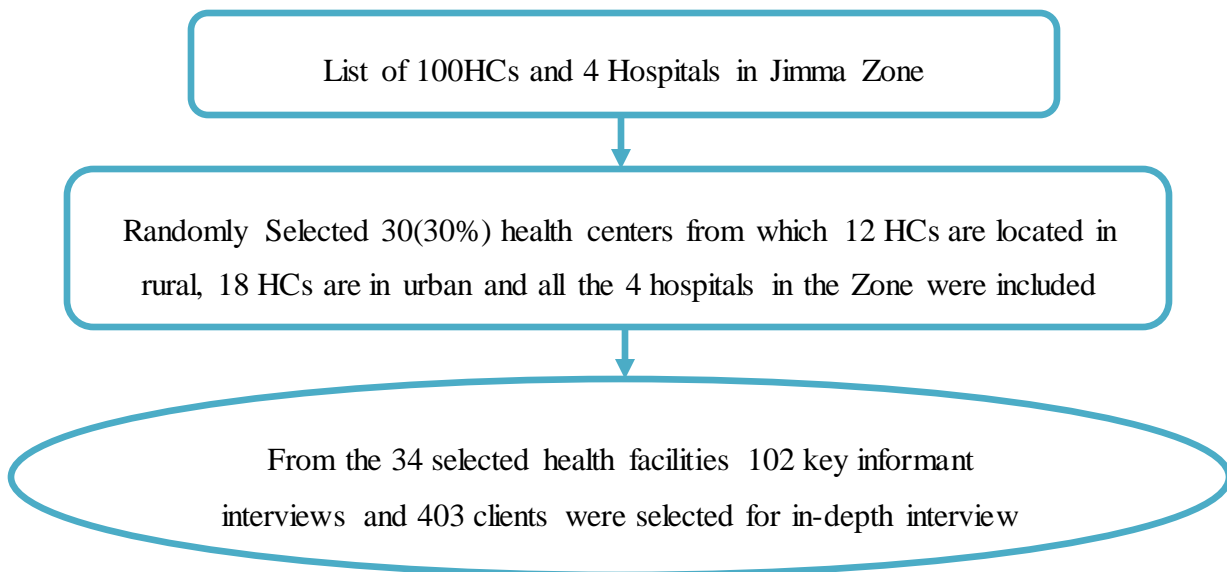


Figure 3: Schematic Representation of randomly selected health facilities in Jimma zone, April, 2014

4.5.1 Inclusion and Exclusion Criteria

4.5.1.1 Inclusion Criteria

- All selected public health facilities providing delivery services were included.
- All women who gave birth in the past 12 months at the study facility were included.

4.5.1.2 Exclusion Criteria

- All public health facilities that didn't start providing delivery services during data collection were excluded.

4.6 Variables

- The status of EmONC (EmONC & Non-EmONC)
- Degree of mother's Satisfaction with maternity service

At Process

- Availability and utilization of the service

Structural/Input Related

- Facility infrastructure (rooms, electricity, water, emergency transportation, communication means),
- Resources for this service (trained staffs, availability of necessary drugs, equipment's and supplies)

Client Related Factors & Care related factors

- Residence, Marital status, Educational status, Economic status, Birth Outcome and time of stay, privacy and confidentiality

4.7 Data collection procedures

This study has used data from clients visiting health facilities and health facility staffs. Gathering information on availability of infrastructures, drugs, equipment's, supplies and provision of signal functions were done by visiting health facilities and interviewing key informants (facility in charge and maternity ward representatives) as well observation of facility supplies & equipment's. Again data regarding client satisfaction were obtained by interviewing women who are getting health services from health facilities and who gave birth in the past 12 months in health facilities.

4.7.1 Preparation

Different data collection tools like forms for gathering possible EmONC facilities and review of potential EmONC facilities were adapted and multiplied from hand book of Monitoring Emergency Obstetric Care and AMDD EmONC Monitoring tools (Annex-1). Regarding clients, a structured questionnaire with 20 questions was developed, translated in to Afan Oromo by external body and was again translated back to English language after data collection. A two days training was provided for five data collectors and one supervisor and all the necessary tools were be provided them prior to data collection.

4.7.2. Data collection personnel

Data was collected by three male health officers, one female BSc. Nurse and one diploma male nurse and supervised by one male health officer all of which are working on non-study health facilities.

4.7.3. Data quality management

To ensure the quality of data, a two days training was given to all the five data collectors and one supervisor. The tool was pre tested at one health center during training. Field visits during the days of data collection were done to check each and every questionnaire for completeness and consistency. Validation of collected data by re-administering questionnaires in 2 facilities was also another means of data quality management for this study and when the result of the collected and read ministered questionnaires were compared there is the same in completeness as well consistency of the results in both facilities.

4.8 Data analysis

Data was entered by using data entry software Epi Info version 3.5.4 and SPSS version 20 for the data analysis. A descriptive analysis was done on facility infrastructures, available resources and each signal functions performances of the services. Frequency and percentage were computed to describe the findings.

To calculate indicators formulas from a hand book of monitoring emergency obstetric care (1) were used:

Indicator 1: Availability of EmONC

$$\frac{(\text{Total no. of basic +comprehensive EmOC facilities in the zone}) \times 500,000}{\text{Population of the zone}}$$

Indicator 3: Proportion of all births in EmOC facilities and all surveyed facilities

$$\frac{\text{Total no. of women giving birth in EmOC facilities in the zone}}{\text{Expected births in the zone}}$$

Indicator 5: Caesarean sections as a proportion of all births

$$\frac{\text{Total no. of caesarean sections in EmOC facilities in the zone}}{\text{Expected births in the zone}}$$

For client interview the questionnaire was composed of two parts: socio-demographic section and past obstetric history and 20 satisfaction related variables which came up with a high internal consistency (Cronbach's alpha= 0.756). A five point Likert scale (1=completely dissatisfied, 2=somewhat dissatisfied, 3=neither satisfied nor dissatisfied, 4=somewhat satisfied and 5=completely satisfied) was used to rate satisfaction with various aspects of health care. The satisfaction variables were grouped into six dimensions: health facilities physical environment (eight questions), health workers communication (three questions), health care related (three questions), attitude of the health worker (three questions), the Overall client satisfaction (two questions) and future delivery plan.

Linear regression was done to ascertain the association between covariates and the outcome variable. Standardized Beta with 95% Confidence Interval (CI) was computed. P-value of 0.05 was taken for statistical significance. Finally data was presented in tables and summarized using graphs & pie-chart.

4.10 Ethical consideration

Jimma University ethical review board has reviewed and approved the proposal. After having a letter of cooperation from Jimma University, successively a letter of cooperation from Jimma Zonal Health Department and Jimma Town Woreda Health Office was obtained. Then permission from all study districts, facilities, as well consent of the respondents was maintained.

4.11 Dissemination plan

1. Presentation and submission to the University.
2. Sharing the findings for Jimma Zonal Health Department and Jimma Town Woreda Health Office.
4. Paper writing for one of the national or international scientific journals including publishing.

4.12 Operational definitions

Facility EmOC Status-is the level of functioning of the seven signal functions for BEmONC and nine signal functions for CEmONC in which the facilities will be classified as either EmONC or Without EmONC health facilities.

EmOC Signal Functions-The minimum package of necessary services to treat and save women with obstetric complications (Parenteral antibiotics; Parenteral uterotonic; Parenteral anticonvulsants; removal of retained products; manual removal of placenta; assisted vaginal delivery; and neonatal resuscitation for BEmOC; plus obstetric surgery and blood transfusion for CEmOC).

Parenteral-Administration of drugs by intravenous or intramuscularly.

Facility with EmOC - refers to a facility that is fully functioning as either a basic EmOC (BEmOC) facility or a comprehensive EmOC (CEmOC) facility.

Facility with Basic EmONC - A facility in which all the seven basic signal functions were performed in the last 3 months prior to the data collection.

Facility with Comprehensive EmONC - A facility in which all the nine signal functions were performed in last 3 months prior to the data collection.

Facility without EmONC- All facilities that do not classify as either Basic or Comprehensive.

Public Health Facilities-Hospitals or health centers owned by the government

Facility Structural Status-Availability and functionality of water, electricity, transportation, communication, human resources, necessary drugs, equipment and supplies

Client Satisfaction-The extent to which clients expectation for services are met

-20 questions were presented using a 5-scale likert scale.

Those who have a satisfaction rate of >median were classified as satisfied and the others were dissatisfied.

Training issue: Health care providers are available, but not trained and lack confidence in their skills.

Supplies, drugs and equipment issues: Supplies or equipment's or drugs are not available, equipment's not functional.

Management issues: Providers demand compensation to perform this function; Providers are encouraged to perform alternative procedures for reasons un related to training.

Policy issues: The required level of staff is not posted to this facility in adequate numbers (or at all); National health policies do not allow the function to be performed.

No indication: No woman needing this procedure came to the facility during the period.

Service Availability-Performance or provision of signal functions in the past 3 or 12 months prior to data collection

Chapter 5: Result

5.1 Health Facility Structural/Input Assessment

5.1.1 Facility Infrastructure

All the assessed hospitals are located in urban while 18 of the assessed health centers are located in urban districts with the remaining 12 health centers located in rural kebeles. Separate delivery rooms and labor wards are available in 27 of the assessed health centers and all the 4 hospitals in the zone while 3 of the 30 assessed health centers have common labor and delivery rooms.

Table 2: Infrastructures availability in Selected Public Health Facilities from Jimma Zone, April 2014(n=34)

Availability of at least one	Health Centers (n=30)		Hospitals (n=4)	
	Standard	Available	Standard	Available
Labor room	34	27	4	4
Delivery room	34	27	4	4
Postpartum ward room	34	19	4	4
Operating theater room	-	0	4	4
Neonatal care unit room	-	0	4	4
Blood bank room	-	0	4	1
Laboratory room	34	26	4	4
Source of Electricity	34	23	4	4
Source of Water	34	25	4	4

With regard to availability of electricity and water source, all the assessed 4 hospitals do have at least one source of water and electricity while only 23 and 25 of the 30 assessed health centers have at least one source of electricity and water, respectively. Regarding means of communications for emergency purpose, only 2 of the assessed health facilities do have means of communications (landline telephone) in the maternity room while 18 of the facilities have land line telephone elsewhere in the facility for which they are also using for emergency communication.

In all the 34 assessed health facilities, a cell phone owned by the staff is the most available mode of communication on site. However, none of the facility had a policy in place to reimburse the staff that uses their cell phones for work purposes. Motor vehicle ambulance in 27 and Stretcher in 27 of the 34 assessed health facilities are the most mode of transportation.

There is 24hrs/7days availability of obstetric service in 32 of the assessed facilities (Table 3). The maximum and minimum distance in kilometers between the nearest facility with surgical care services and health centers is 128 and 5 respectively from the assessed facilities with a mean of 31.78 kilometers. Again the maximum and minimum time it takes in minutes to reach the nearest surgical unit by car from health facilities with no surgical care services is 240 and 5 with a mean of 33.75 minutes.

Table 3:Emergency Communication, Transportation & Service availability in Selected Public Health Facilities of Jimma Zone, April 2014 (n=34)

Emergency Communication Facilities	Hospitals		Health Center	
	Standard	Available	Standard	Available
Landline telephone in the maternity room	4	1	30	1
Landline telephone elsewhere in the facility	4	4	30	16
Public Telephone in the Vicinity	-	4	-	1
Cell phone owned by staff	-	4	-	30
Emergency Transportation Availability				
Motor vehicle Ambulance	4	4	30	23
Motorcycle Ambulance	-	0	-	0
Other Motor vehicle	-	3	-	4
Stretcher	4	4	30	23
None of all	-	0	0	1
24hrs/7days availability of obstetric service	4	4	30	28

5.1.2 Health Care Providers

5.1.2.1 Available Health Care Providers

From the assessed health facilities, Integrated Emergency Surgery Officers 2(100%), nurse anesthetist 14(116%) ,all types of laboratory 116(111%),nurses 497(106%) and neonatologist 1(100%) fulfilled the minimum standard of health professionals required for facilities while midwives 103(76%),all types of pharmacy 88(69%), health officers 49(75%), general medical doctors 35(46%), anesthesiologist(MD) 1(33%),obstetrician/gynecologist and pediatrician each 1(25%) and general surgeon 1(20%) are below the standard in decreasing order .

All the assessed health facilities have at least one mid wife ranging from 1-3 per health center to 5-33 per hospital. In general, the overall staff position in assessed health centers and hospitals was at 90% which is below 100% of the standard to carry out full-fledged BEmONC and CEmONC functions.

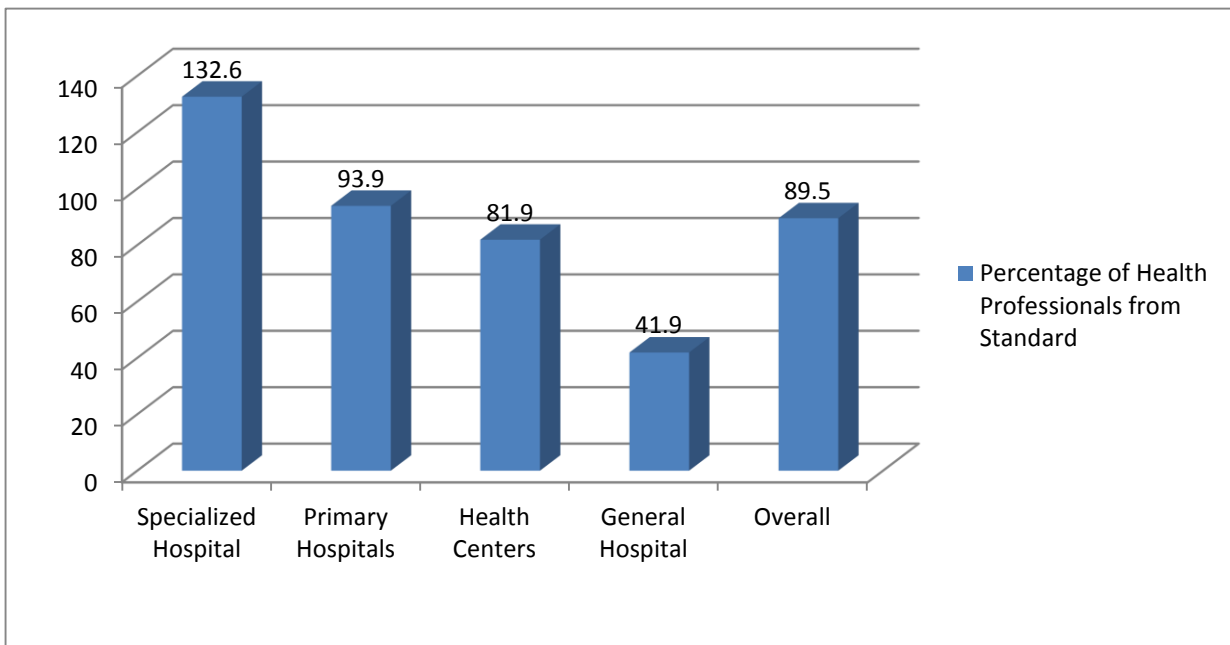


Figure 4: Overall percentage of available health professionals from the standards per facility type in selected public health facilities of Jimma Zone, April 2014 (n=34)

5.1.2.2 Training Information

Training is very important for the provision of signal functions of emergency obstetric care. Hence at least one health professional training information and provision of some basic emergency obstetric care signal functions they trained on for the past three months prior to data collection per facility were assessed for health professionals working at maternity wards.

From the study, manual removal of placenta in 27 health facilities, manual vacuum aspiration in 25 health facilities and new born resuscitation in 25 health facilities are the major signal functions health professionals trained on as well performed in the last three months prior to data collection in 30,20 and 27 health facilities respectively. Again the most signal function health professionals trained on in 19 health facilities but not performed in none of the facilities is IV Magnesium Sulphate administration, while the most procedure for which health professionals were not trained on are forceps application and D & C procedures 24 and 22 respectively.

Table 4:Facilities with Trained man power and performance of some EmOC signal functions in the past 3 months in Selected Public Health Facilities of Jimma zone, April 2014 (n=34)

Activities	Trained	Not Trained	Performed	Not Performed
Manual Removal of Placenta	27	7	30	2
IV Magnesium Sulphate administration	19	15	0	34
Vacuum Extractor Application	22	12	12	22
Forceps Application	10	24	3	31
MVA Performance	25	9	20	14
D & C	12	22	1	33
Newborn Resuscitation	25	9	27	7

5.1.3 Availability of Drugs, Equipment, and Supplies

5.1.3.1 Availability of Essential EmONC Drugs

Twenty nine of the 34 assessed health facilities have at least one parenteral antibiotic with Gentamycin in 29 followed by Chloramphenicol in 22 health facilities are the most available antibiotics. Again 30 of the 34 assessed health facilities have at least one parenteral anticonvulsants in which Diazepam is available in 27 of health facilities and magnesium Sulphate is nil in all the studied facilities.

Regarding the antihypertensive drugs, 29 of the 34 assessed health facilities have at least one type with Hydralazine availability in 27 facilities. On the other hand all the studied health facilities have at least one type of uterotonic drugs with oxytocin in all the 34 assessed health facilities followed by ergometrine in 30 and misoprostol drugs in 23 health facilities. Thirty three health facilities have at least one type of IV fluids Normal saline availability is dominating the other types in 31 health facilities followed by Ringer Lactate in 26 of the 34 health facilities (Table 5).

Table 5: Available Parenteral Dugs in selected public health facilities of Jimma Zone, April 2014 (n=34)

Parenteral Drugs	Facilities With Parenteral Antibiotics	
	Standard	Available
At least one antibiotics	34	29
Ampicillin		19
Chloramphenicol		22
Metronidazole		18
Gentamycin		29
Others	-	22
At least one anticonvulsants	34	30
Magnesium Sulphate		1
Diazepam		27
Others	-	7
At least one Antihypertensive	34	29
Hydralazine		27
Labetalol		7
Methyldopa		22
Other Antihypertensive		13
At least one Oxytocic's	34	34
Oxytocin		34
Ergometrine		30
Misoprostol		23
Prostaglandin E2		3
At least one type of IV fluid	34	33
Ringers Lactate		26
Normal saline		3
Dextrose		24
Other IV Fluids		17

Figure 5: Number of facilities with at least one EmONC related Drugs and IV fluid in selected public health facilities of Jimma Zone, April 2014 (n=34)

5.1.3.2 Availability of Diagnostic Equipment

Regarding the minimum diagnostic equipment necessary for EmONC services all the four hospitals have ultrasound and only BP apparatus and Stethoscope are available in all the assessed health facilities. Clinical thermometer, uristix dipstick for protein in urine, modified pantograph and compound microscope for cross-matching are below the minimum requirements (not available) in all the health facilities (Table 6).

Table 6: Availability of Diagnostic Equipment in selected public health facilities of Jimma Zone, April 2014 (n=34)

Diagnostic Equipment	Facilities With Diagnostic Equipment	
	Standard	Available
Ultrasound	4	4
BP Measuring Apparatus	34	34
Stethoscope	34	34
Clinical Thermometer	34	29
Uristix Dipstick for protein in urine	34	32
Modified Pantograph	34	28
Compound Microscope for cross-matching	34	13
Microscope Illuminator	34	24
Centrifuge, Electric	34	26
Centrifuge, hand driven	34	21

5.1.3.3 Availability of Supplies

Regarding essential supplies necessary for EmONC services, urinary catheters and IV cannulas are available in 33 of the facilities while the least available supply assessed is nasogastric tubes only in 19 of the 34 assessed health facilities (Table7).

Table 7: Availability of Supplies in selected public health facilities of Jimma zone, April 2014 (n=34)

Supplies	Facilities With Supplies	
	Standard	Available
Urinary Catheters	34	33
Cannulas	34	33
Adult Ventilator bag and mask	34	29
Mouth Gag	34	22
Nasogastric Tubes	34	19
Blood typing and cross matching reagent	34	21

5.1.3.4 Availability of Vacuum Extraction /Forceps Delivery Sets

Vacuum extractor set is available in 23 of the facilities while obstetric forceps set is available only in 15 of the facilities. Again vaginal speculum and sponge forceps are the most available instruments in 31 of the facilities while blunt uterine curette size 0 or 00 in 14 facilities, sharp uterine curettes size 0 or 00 in 16 facilities and malleable metal uterine sound in 16 facilities are the least available instruments of the set.

Table 8: Vacuum Extraction /Forceps Delivery Sets availability in selected public health facilities of Jimma Zone ,April 2014 (n=34)

Vacuum Extraction /Forceps Delivery Sets		
Equipment	Facilities With Equipment	
	Standard	Available
Vacuum Extractor with different Size	34	23
Obstetric Forceps (outlet, mid-cavity & breach)	34	15
Availability of Uterine Evacuation Sets		
Vaginal Speculum (Sims)	34	31
Sponge (ring) forceps or uterine packing	34	31
Uterine Forceps	34	23
Uterine Dilators sizes 13-27 (French)	34	18
Sharp Uterine Curettes size 0 or 00	34	16
Blunt Uterine Curettes size 0 or 00	34	14
Malleable metal uterine sound	34	16
Dissecting Forceps, serrated jaws 250mm s/s	34	26
Forceps towel approx.100mm s/s	34	26
Ovum Forceps, green high 240 mm s/s	34	22
Availability of Manual Vacuum Aspiration Sets		
Vacuum Aspirators / Syringes	34	25
Silicone lubricant for lubricating	34	24
Flexible Cannulas 4-6mm	34	25
Flexible Cannulas 7-12mm3	34	24
Obstetric Laparotomy/Cesarean Delivery Packs		
Surgical Knife handle / No4	34	13
Surgical Knife Blades	34	18
Abdominal Retractor /Size 3	34	7
Abdominal Retractors / Double ended	34	6
Curved Operating Scissors Blunt	34	13
Straight Operating Scissors Blunt	34	13
Scissors Straight,23cm	34	22
Suction nozzle	34	18
Suction Tube 22.5cm,23Frnech gauge	34	11
Intestinal Clamps, Curved (Dry),22.5cm	34	7
Intestinal Clamps ,Straight,22.5cm	34	6
Dressing (non-toothed tissue) forceps/15cm	34	16
Dressing (non-toothed tissue) forceps /25cm	34	22
Sutures (Different Sizes and types)	34	22

5.1.3.5. Anesthesia Equipment

All the assessed hospitals have sets of anesthesia equipment while most of these equipment's are not available in most of the assessed health centers. In general oxygen cylinder with manometer in 9 health facilities is the most available equipment while the rest are the least available in the assessed health facilities (Table 9).

Table 9: Anesthesia Equipment in selected public health facilities of Jimma zone, April 2014 (n=34)

Equipment	Facilities With Equipment	
	Standard	Available
Anesthesia face masks	34	5
Oro Pharyngeal Airways	34	5
Laryngoscopes (with spare bulbs and batteries)	34	5
Endotracheal tubs with cuffs	34	5
Intubation Forceps (Magill)	34	6
Endotracheal tube connectors: 15mm plastic	34	6
Spinal needles (18gauge to 25 gauge)	34	5
Suction Apparatus : Foot operated	34	5
Suction Apparatus :Electric	34	5
Anesthesia apparatus draw over	34	5
Oxygen Cylinder with manometer and flow meter	34	9

5.2 Service Availability /Process Assessment

5.2.1 EmONC Signal Functions Performance

Regarding the seven signal functions of BEmOC, the most signal functions performed in the past 3 months prior to data collection were administration of parenteral uterotonic drugs mostly oxytocin in 31 followed by manual removal of placenta in 30 of the facilities and new born resuscitation with bags and mask in 27 of the 34 assessed facilities. On the other hand the least performed BEmOC signal functions for the past 3 months prior to data collection were assisted vaginal delivery with vacuum or forceps in only 12 (35.3%) and parenteral administration of anticonvulsants with only diazepam in 10 (29.2%) health facilities. Regarding cesarean section and blood transfusion services 3 of the four hospitals expected to provide the services are performing these signal functions.

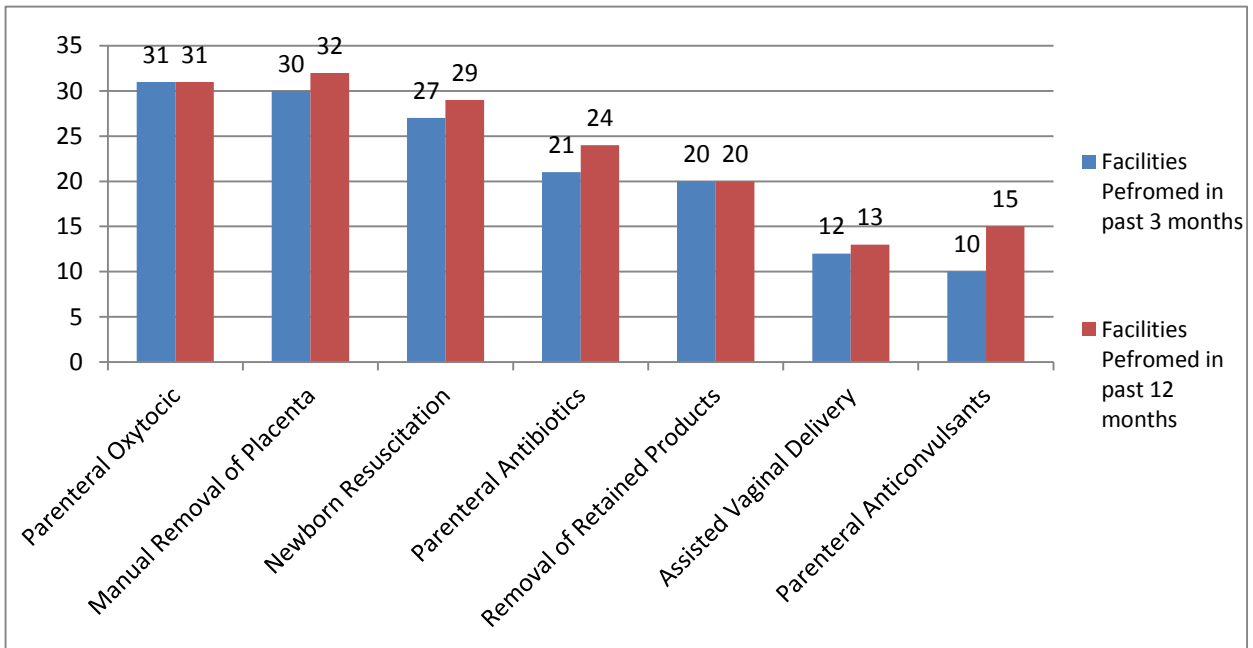


Figure 5: Number of health facilities performed different BEmOC signal functions in the past 3 months Vs. 12 months in selected public health facilities of Jimma Zone, April 2014 (n=34)

Regarding the number of EmONC signal functions performed per facility, only one health center of the 30 assessed health centers and 3 hospitals from the four met the requirements of fulfilling BEmOC and CEmOC status by performing the 7 basic signal functions and 9 signal functions for the past three months, respectively. Five health centers and one hospital performed six signal functions while one health center have performed only one signal function for the past three months. Again 8 of the 34 health facilities have performed 4 signal functions in the past 3 months. In general a total of four health facilities (3 hospitals and 1 health center) were classified as health facilities with EmONC while the rest were health facilities with non-EmONC according to this study.

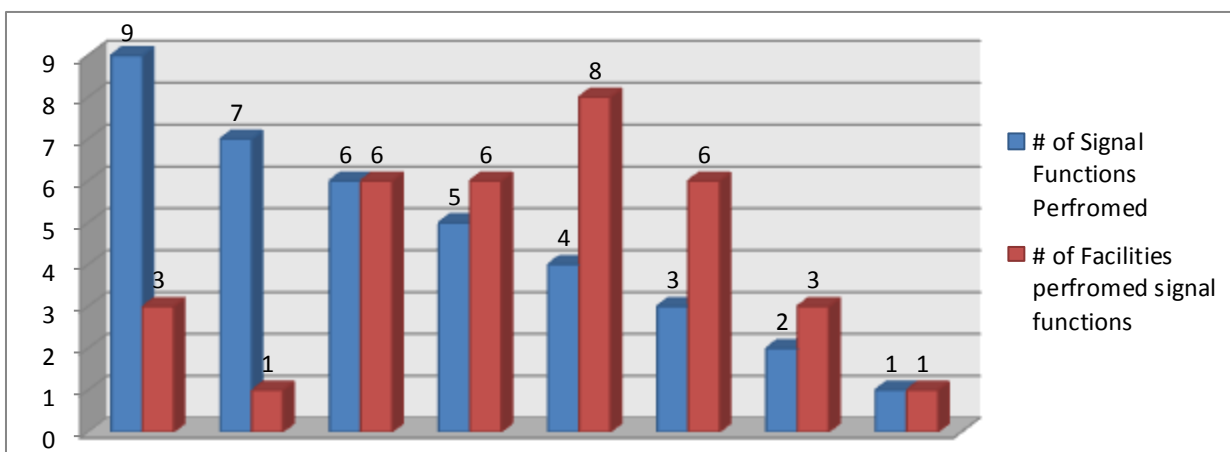


Figure 6: Number of EmONC Signal functions performed per number of facilities in selected public health facilities of Jimma Zone, 2014 (n=34)

5.2.2 Reasons for not performing the signal functions

From the seven signal functions expected to be provided for all the 34 health facilities, parenteral anticonvulsants in 24 health facilities followed by assisted vaginal delivery in 22 were the most signal functions not performed in the past 3 months prior to data collection. Regarding cesarean delivery and blood transfusion services, three of the four hospitals are providing while one of the four hospitals and all of the 30 health centers assessed are not providing both of the signal functions. There was more than one reason for not performing each signal functions in the past three months. From the health facilities who didn't performed each signal functions in the past three months, the majority of the reasons were related to supplies, drugs and equipment's accounting for 47% followed by no indications which account for 37 % contribution.

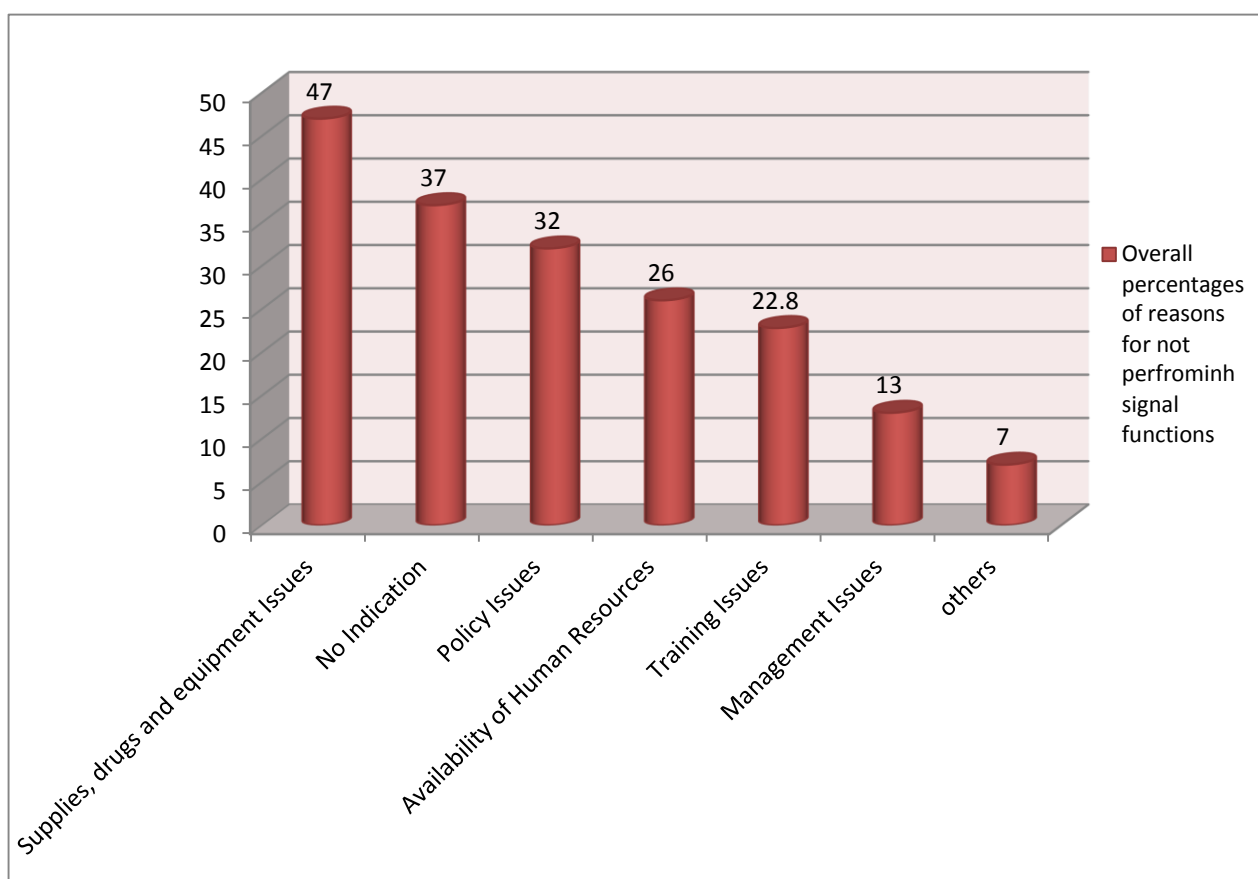


Figure 7: Percentage of overall reasons for not performing signal functions in selected public health facilities of Jimma Zone, April, 2014 (n=34)

7.2.3 Status of EmONC

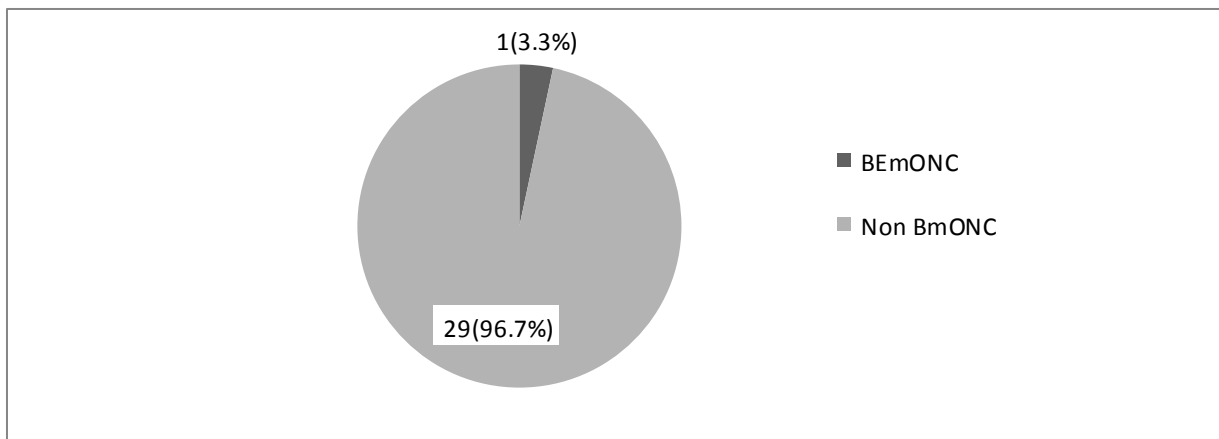


Figure 8: Status of BEmONC based on past 3 months 7 signal function performances in selected public health facilities of Jimma Zone,2014 (n=30)

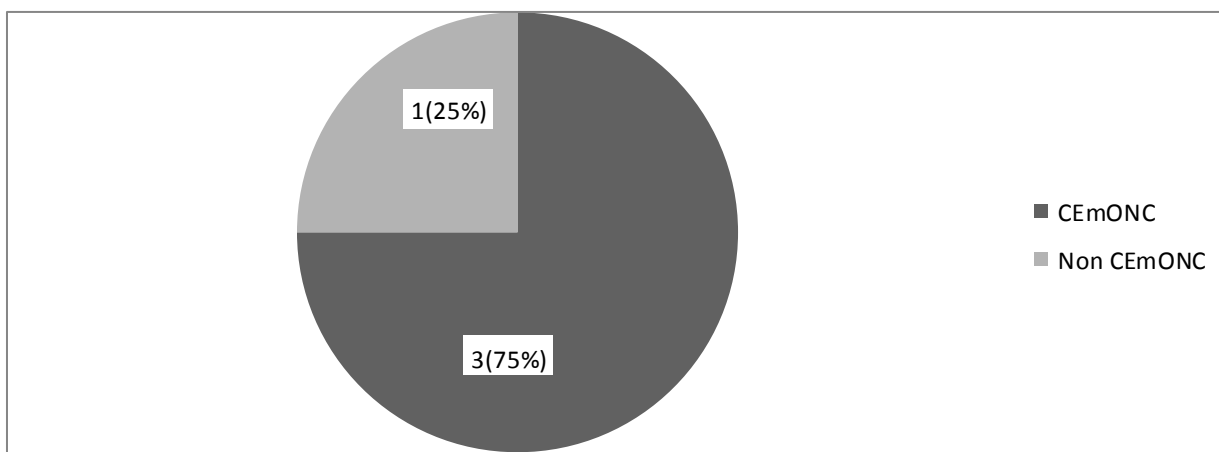


Figure 9: Status of CEmONC based on the past 3 months 9 signal functions performances in Selected public health facilities of Jimma Zone ,2014 (n=4)

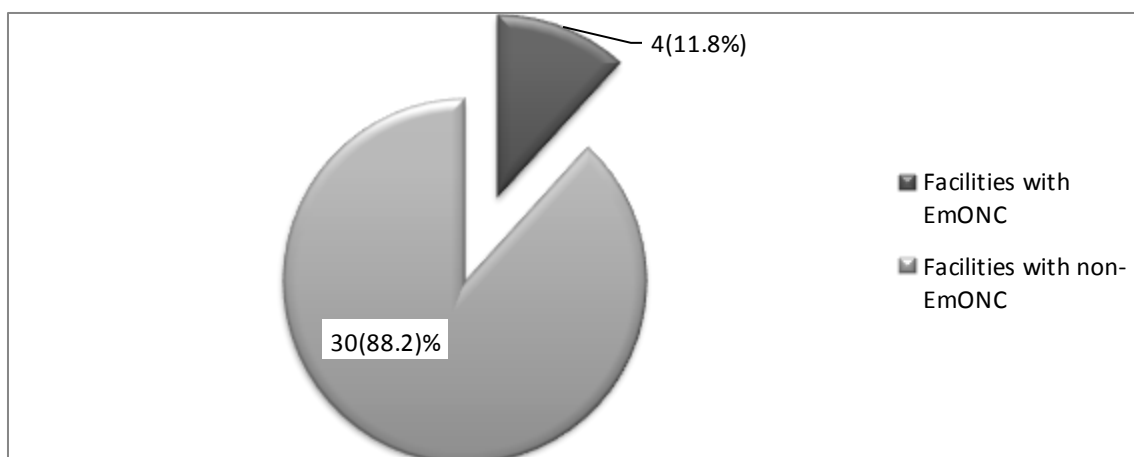


Fig.10:Status of EmONC based on the past 3 months signal function performance in Selected Public Health Facilities of Jimma Zone, April 2014 (n=34)

5.2.4 Zonal-wide estimates of BEmONC

The estimated number of BEmONC facilities for the zone is 3.3 while the estimated number of non-BEmONC facilities for the zone is 96.7. The available CEmONC facilities are 3 out of the 4 hospitals available in the zone. In general an estimated 6.3 EmONC facilities are available in Jimma zone.

5.2.5 Calculation of indicators for geographic zone

5.2.5.1 Indicator 1: Availability of EmONC

The ratio of 6.3 EmONC facilities in Jimma Zone to 3030740 population of the zone divided by 500,000 is 1 while the ratio of 3 CEmONC facilities in the zone to 3030740 population of the zone divided by 500,000 is 0.5 from this study.

5.2.5.2 Indicator 3: Proportion of all births in EmOC facilities and all surveyed facilities

The ratio of 8133 women giving birth in EmONC facilities of Jimma zone to 115,471 expected births in the zone is 7% while the ratio of 36,743 total numbers of women giving birth in all surveyed facilities of the zone to 115,471 expected births in the zone is 32%.

5.3.2. Indicator 5: Caesarean sections as a proportion of all births

The ratio of 1419 total number of caesarean sections in EmONC facilities in the past 12 months in Jimma Zone to 115,471 expected births in the zone in the same period is 1.2%.

5.4 Client Interview Result

From the 403 sample size, 399 (99%) mothers who gave birth at the facility in the past 12 months were interviewed to measure the client's satisfaction with the overall delivery services they got. Four questionnaires were excluded from analysis because of incompleteness.

5.4.1. Socio-demographic and Maternity Related Characteristics

In this study, 9 % of the clients were teenagers while most of the clients were in the age group of 20-24years (39.3%) followed by (26.8%) in the age group of 25-29years. With regard to educational status, most of the clients were not read and write (45.4 %), while 26% of the clients attained secondary school or above. Most of the clients' monthly income was below 600 ETB (70.4%) and the large majority of the clients (67.2%) were from rural community.

Pregnancy was planned and wanted by three quarter (75.9%), 189(47.4%) of the clients visited the facility up on personal decision while 16(4 %) visited the facility due to emergency. Majority of the respondents' mode of transportation to health facility during last delivery was by stretcher 181 (45.4%) followed by ambulance service 131(32.8%).

Most of the deliveries were attended by midwife nurses 270(67.7%), 370(92.7%) of the delivery being spontaneous vaginal delivery (SVD), 21(5.3%) of the clients delivered by cesarean section (C/S) (both emergency and elective) and 370(92.7%) of the clients having alive pregnancy outcome. Of the total clients, 125 (31.3%) of the cases were discharged from the health facility within 12 hours of admission. Majority of the clients 346(86.7%) received payment free service, while the rest of clients paid (Table 10)

Table 10: Socio demographic Characteristics and past obstetric history of the respondents in Jimma zone public health facilities,2014 (n=399)

Age Category in years	Frequency (%)	Mode of Transportation	Frequency (%)
<19	36 (9%)	Stretcher	181(45.4%)
20-29	264 (66.2%)	Private vehicle	18(4.5%)
30-39	95 (23.8%)	Public Transport	69(17.3%)
>39	4 (1.0%)	Others (Ambulance, etc.)	131(32.8%)
Delivery Outcome		Hours of Stay in facility	
Alive	370 (92.7%)	<1 hours	125(31.3%)
Died	29(7.3%)	13-24 hours	178(44.6%)
Educational Category		25-48 hours	49(12.3%)
Doesn't read and write	181 (45.4%)	>48 hours	47(11.8%)
Primary (1-8Grades)	114 (28.6%)	Treatment Fee	
Secondary (9-12Grades)	64 (16.0%)	Paying	53(11.3%)
Above Secondary	40 (10.0%)	Free	346(86.7%)
Monthly Income Category		Pregnancy Status	
<600ETB	281 (70.4%)	Wanted	303 (75.9%)
≥600ETB	118 (29.6%)	Unwanted	96 (24.1%)
Residence Category		How Respondents Visited the Facility	
Urban	131 (32.8%)	Come after referral	94 (23.5%)
Rural	268 (67.2%)	Relatives recommendation	76 (19.0%)
Mode of Delivery		Come due to emergency	16 (4.0%)
Spontaneous Vaginal Delivery	370(92.7%)	Come up on personal decision	189 (47.4%)
Instrumental Delivery	8(2.0%)	Others	24 (6.0%)
Elective Cesarean Section	3(0.8%)	Delivery Attended by	
Emergency C/S	18(4.5%)	Physician	40 (10%)
		Midwives /Nurse	270(67.7%)
		Unknown	89(22.3%)

5.4.2. Client Satisfaction

The level of satisfaction of the 19 items in decreasing orders were completely satisfied (54.8%), somewhat satisfied (31.3%), neither satisfied nor dissatisfied (7.6%), somewhat dissatisfied (3.5%) and completely dissatisfied (2.7%) (Figure 11).The overall mean (95% CI) satisfaction to this study was **79.4% [0.75, 0.83]**.

Table 11: Proportion of respondents satisfaction with each of the 20 items as well their mean satisfaction score in Jimma zone public health facilities ,April 2014(n=399)

Aspects of care received during stay in maternity ward	Frequency of Perceived Satisfaction in number (%)				
	Completely Dissatisfied	Somewhat Dissatisfied	Neither Satisfied Nor Dissatisfied	Somewhat Satisfied	Completely Satisfied
Health Facilities Physical Environment					
Availability of adequate number of health staffs	0(0)	24(6.0)	29(7.3)	148(37)	198(49.6)
Availability of water, hand washing & toilet facilities	4(1.0)	5(1.3)	13(3.3)	166(42)	211(52.9)
Availability of examination equipment	1(.3)	17(4.3)	47(11.8)	187(47)	147(36.8)
Availability of drugs and supplies	12(3.0)	4(1.0)	19(4.8)	152(38)	212(53.1)
Distance from home to the health facility	19(4.8)	47(12)	78(19.5)	149(37)	106(26.6)
Availability of transportation & communication	25(6.3)	20(5.0)	104(26.1)	125(31)	125(31.3)
Availability of adequate rooms for service	12(3.0)	18(4.5)	26(6.5)	129(32)	214(53.6)
Coffee ceremony after delivery in the health facility	80(20.1)	15(3.8)	40(10)	48(12)	216(54.1)
Health workers Communication					
Information the plan of delivery, upcoming procedures and interventions and asked for consent	13(3.3)	17(4.3)	24(6.0)	107(27)	238(59.6)
Sufficient time devoted & information provided on obstetric related danger signs by health staffs	2(.5)	18(4.5)	19(4.8)	107(27)	253(63.4)
Health advices on newborn care and breastfeeding	14(3.5)	9(2.3)	33(8.3)	87(22)	256(64.2)
Health Care					
The capability of health staffs in identifying the patients problems and providing early response	0	14(3.5)	18(4.5)	145(36)	222(55.6)
Easily obtaining the drugs prescribed in the facility	4(1.0)	8(2.0)	26(6.5)	131(33)	230(57.6)
Obtaining price free drugs for maternity service	10(2.5)	17(4.3)	15(3.8)	75(19)	282(70.7)
Attitude of Health Workers					
Privacy during examination and delivery	3(.8)	8(2.0)	23(5.8)	121(30)	244(61.2)
The respect of health staffs towards the patients	3(.8)	5(1.3)	13(3.3)	101(25)	277(69.4)
Immediately knowing the condition of baby, of maternal condition and seeing baby after delivery	0	0	14(3.5)	85(21)	300(75.2)
With the outcome of the service got during the stay	4(1.0)	14(3.5)	28(7.0)	143(36)	210(52.6)
With the complete services provided	1(.3)	5(1.3)	10(2.5)	169(42)	214(53.6)
In the case of future delivery , agreement to use again the facility	No delivery plan		No	Yes	
	13(3.3)		2(.5)	384(96)	

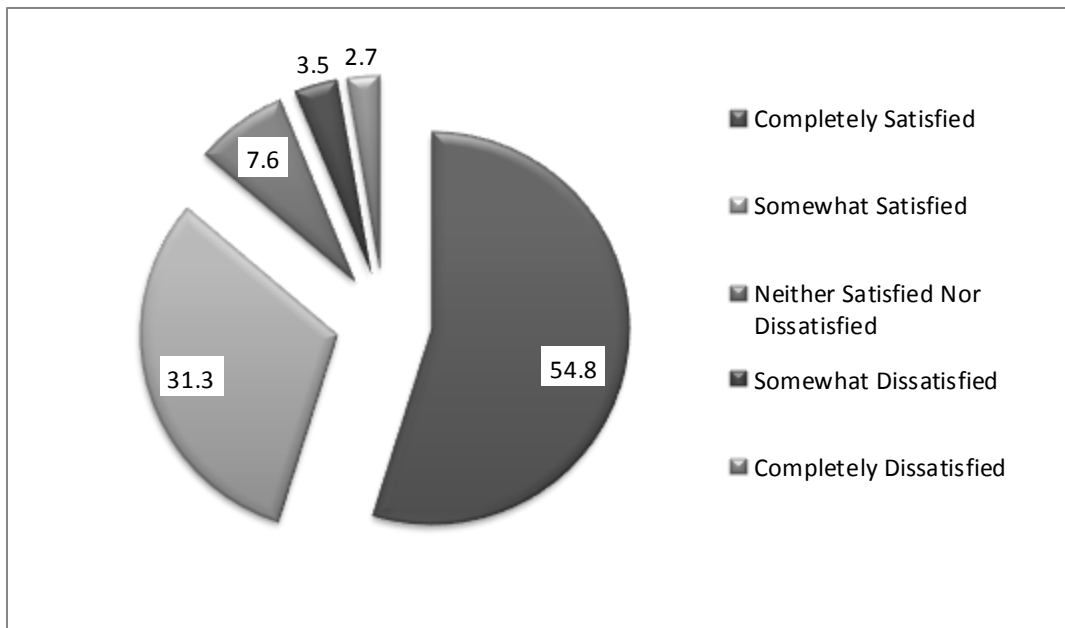


Figure 11:Percentage level of satisfaction to obstetric services in Jimma zone public health facilities, April 2014 (n=399)

5.4.3 Factor Analysis

For satisfaction to health facilities physical environment dimension, eight variables were entered and four components of variables with eigenvalues greater than one, Kaiser-Meyer-Olkin Measure of Sampling Adequacy of 0.616 and Bartlett's Test of Sphericity of 0.000 values were extracted by explaining 77.8 % of the total variance. Three variables under the satisfaction to health workers co immunization were entered and one component of variables with eigenvalues greater than one, Kaiser-Meyer-Olkin Measure of Sampling Adequacy of 0.574 and Bartlett's Test of Sphericity of 0.000 values were extracted by explaining 62.5 % of the total variance.

Regarding satisfaction to health care dimension, three variables were entered forming one component of variable with eigenvalues of greater than one, Kaiser-Meyer-Olkin Measure of Sampling Adequacy of 0.619 and Bartlett's Test of Sphericity of 0.000 values were extracted by explaining 65.8 % of the total variance.

With satisfaction to attitude of health workers dimension, from three entered variables, one component of variable with eigenvalues of 1, Kaiser-Meyer-Olkin Measure of Sampling Adequacy of 0.648 and Bartlett's Test of Sphericity of 0.000 values were extracted by explaining 67.59 % of the total variance. Finally, for the overall satisfaction to the service from two entered variables 1 component of variable with eigenvalues of 1, Kaiser-Meyer-Olkin Measure of Sampling Adequacy of 0.5 and Bartlett's Test of Sphericity of 0.000 values were extracted by explaining 79.5 % of the total variance.

5.4.4 Linear Regression Analysis

Results from linear regression analysis shows that a significant association between the dependent variable overall client satisfaction and satisfaction to availability of adequate number of health staffs , satisfaction to cleanness of the health facilities, satisfaction to availability of drugs and supplies, satisfaction to availability of transportation & communication, satisfaction to health workers communication, satisfaction to health care provided and satisfaction to attitude of health workers (Table 12).

Table 12:Linear Regression Analysis of Client Satisfaction to selected explanatory variables in selected Jimma zone ,April 2014(n=399)

Coefficients ^a						
Explanatory Variable	Unstandardized Coefficients		Standardized Coefficients	Sig.	95.0% CI for B	
	B	Std. Error	Beta		Lower	Upper
Satisfaction to availability of health staffs*	.956	.164		.000	.634	1.278
Satisfaction to availability of water, hand washing & toilet facilities	-.141	.053	-.141	.008	-.245	-.037
Satisfaction to availability of drugs and supplies	.230	.040	.230	.000	.151	.309
Satisfaction to health workers communication	.213	.039	.213	.000	.136	.290
Satisfaction to health care provided	.338	.059	.338	.000	.222	.454
Satisfaction to attitude of health workers	.248	.050	.248	.000	.149	.346

a. Dependent Variable: Overall satisfaction *constant

Result from linear regression revealed that an average decrease in satisfaction to availability of water, hand washing and toilet facilities by 0.141 unit increased overall client satisfaction (95%CI - 0.245 to -0.037).On the other hand an average decrease in satisfaction to availability of drugs and equipment's by 0.230 unit decreased overall client satisfaction (95% CI 0.151 to 0.309).Again an average decrease in satisfaction to communication with health workers by 0.213 unit decreased overall client satisfaction (95% CI 0.136 to 0.290).Similarly an average decrease in satisfaction to health care by 0.338 unit and attitude of health workers by 0.248 unit decreased overall client satisfaction (95% CI 0.222 to 0.454 and 0.149 to 0.346 respectively).

Chapter 6: Discussions

The findings of health infrastructure shows that even though all the assessed hospitals do have at least one separate delivery room and labor ward to carry out delivery services, only 27 (90 %) of the assessed health centers fulfilled the minimum requirements of the Ethiopian standard health center requirements which suggests that the health center shall have 3 separate rooms for delivery service with the following minimum requirements: one room for laboring (prenatal room), one room for delivery (second stage room) and one room for maternity (post natal room). Again the standard says that the health center shall have an electrical system that has sufficient capacity to maintain the care and treatment services and as well shall have and maintain an accessible, adequate both as to volume and pressure, safe and potable supply of water. But, from the finding of the 30 health centers assessed ,only 23 (76.6%) and 25(83.3%) have at least one sources of electricity and water respectively which is again below the recommended standard, while all the 4 hospitals do have both water and electricity.

A rapid assessment of the availability and use of Obstetric Care in Nigerian Healthcare Facilities also shows that while three quarter of all the assessed primary healthcare facilities had a “Labor ward” and a separate “Delivery room”, most of them lacked neonatal wards/intensive care units (NICU), or guaranteed power supply whenever there were obstetric emergencies(30).

Regarding means of communications for emergency purpose, only 2(5.9%) of the assessed health facilities do have means of communications (landline telephone) in the maternity room while 18 of the facilities (52.9%) have land line telephone elsewhere in the facility for which they are also using for emergency communication. Motor vehicle ambulance and stretcher are the most mode of transportation in the assessed facilities (79.4%), followed by other motor bikes (7%) and one facility (2.9%) does not have any means of transportation. This result is different from the result of a maternity health facility survey of Kenya that shows almost all the health facilities had working telephones or shortwave radio and only 5 health facilities having emergency transport on site for referral of obstetric emergencies (28). On the other hand HSDP IV target set to cover all health facilities with communication equipment (100%). That means the result from this study shows there is still far gap to reach the set target.

Again in terms of service time, the standard recommends that the health center shall make Basic Emergency Obstetric Care available 24 hours a day, 365 days a year, but in this study a 24hrs/7days availability of obstetric service is in 32 (94.1%) of the assessed facilities with two health centers left without fulfilling the recommended time. In all the assessed health facilities (100%) no women is expected to pay a fee or buy supplies for a normal delivery as well as obstetric/gynecological emergency which agrees with the national health policy.

In terms of human resources, though the standard recommends the minimum number required health professionals for health centers: 2 health officers, 3 midwives, 5 nurses, 2 laboratory and 3 pharmacy health professionals; from this study only the nurses and laboratory staffs fulfilled the minimum requirements. On the other hand the number of health officers and midwives are below the minimum requirements with a mean of only 1.83 available midwives. Again while the HSDP IV target for physician to population ratio is 1:5,500 the result of the study is 35:3,030,740 which is 1:86,592 and 15% percent of the target. With training of some EmONC related procedures, the most signal function health professionals trained on but not performed on per facility is IV Magnesium Sulphate administration 19(55.9%) which could be explained for the reason of lack of supply.

Regarding availability of essential drugs, supplies and equipment's, the target for HSDP IV is 100% for health facilities. But from this study the overall 85.7 % of the assessed health facilities have at least one parenteral antibiotic ,30(88.2%) of the assessed health facilities have at least one parenteral anticonvulsants in which Diazepam accounts for 27(79.4%) health facilities and magnesium Sulphate is nil in all the studied facilities, 29(85.3%) of the facilities have at least one type of parental antihypertensive drugs ,34(100%) with at least one type of uterotonic drugs with oxytocin in all 34 (100%) facilities followed by ergometrine in 30 (88.2%) and misoprostol drugs in 23 (67.6%) health facilities. Thirty three health facilities (97.1%) have at least one type of IV fluids. That means even though the target is not met there is an encouraging in terms of antibiotic availability. But, the study has revealed that a great gap on availability of magnesium Sulphate which was not availed in all of the assessed health facilities. These improvements in terms of essential drugs and supplies may be due to the current health care financing system that enabled health facilities to retain and utilize their revenue for health facilities priority problems like drugs and supplies availability.

Regarding the minimum diagnostic equipment's necessary for EmONC services all the four hospitals have ultrasound ,BP apparatus and Stethoscope are available in all the assessed health facilities while clinical thermometer, uristix dipstick for protein in urine, modified pantograph and compound microscope for cross-matching are below the minimum requirements (not available in all the health facilities). Again the least available supply assessed is nasogastric tubes only in 19 (55.9%). Vacuum extractor is available in 23 (67.6%) of the facilities while obstetric forceps is available only in 15 (44.1%) of the facilities which are also below the minimum requirements.

The result of this study is higher in provision of parental antibiotics which is in 21(68%),very low in performance of assisted vaginal delivery which is in only one third of the studied facilities, higher in performing manual removal of placenta (88.2%) and much higher in administration of parenteral oxytocic's which is almost three times when compared with a similar study conducted in Gamo Gofa zone of South West Ethiopia showing only 36 (54.5%) institutions provided parenteral antibiotics, 61 of 66 (92%) performed assisted vaginal deliveries, 47 (71%) performed the manual removal of placentas, 23 (35%) used parenteral oxytocin and 14 (21%) used anticonvulsants during eclampsia when indicated in the last three months (29). As we have seen in the result section of the reason for not performing each signal functions; three fourth (77.3%) of the reason for not performing assisted vaginal delivery in the past three months prior to data collection is related to lack of equipment's.

From this study, only one health center (3.3%) of the 30 assessed health centers and 3 hospitals from the four met the requirements of fulfilling BEmONC and CEmONC by performing the 7 basic signal functions and 9 signal functions for the past three months respectively. Five health centers and one hospital performed six signal functions while one health center have performed only one signal function for the past three months. Again majority of the health facilities 8(23.5%) have performed 4 signal functions in the past 3 months and almost one third of the facilities (12 health facilities) have performed 5 and above signal functions. In general a total of four health facilities from which 3 hospitals (75% of the four hospitals) and 1 health center (3.3% of the 30 assessed health centers) were classified as health facilities with EmONC while the rest were health facilities with non-EmONC in this study. The result of facilities with BEmONC is similar to the findings from indicators for availability, utilization, and quality of emergency obstetric care in Ethiopia, 2008 in which a national BEmONC coverage is 3.1% and national CEmONC coverage is 7.3%(16).

There is a similar result in the number of CEmONC facilities and a little less in the number of BEmONC facilities and an overall improvement in the total number of health facilities performing greater than 5 signal functions when compared with similar study conducted in Gamo Gofa zone of South West Ethiopia in which only the two hospitals in Arba Minch (3% of 66 institutions) provided all signal functions, and were thus designated as providing comprehensive EmOC and three health centres (4.5% of 66 health institutions) provided basic EmOC, but did not have a blood bank, while 61 (92%) facilities lacked some or all signal functions and 40 (60.6%) institutions lacked > 5 of the signal functions(29).

Lack of supplies, drugs and equipment's accounting for 47 % followed by no indications accounting for 37 % are the overall leading reasons for health facilities not performing each of the signal function. This is similar to the result from national survey on indicators for availability, utilization, and quality of emergency obstetric care in Ethiopia, 2008 in which the reasons for not providing a signal function included (in order of frequency) are: lack of supplies, equipment, or drugs; no patient presented with an indication for the function; lack of training; and other human resources issues (16).

Regarding clients satisfaction to the existing services this study has shown an overall mean satisfaction of 79% of which obtaining price free drugs for maternity service (70.7%), respect of health staffs towards the patients (69.4%), health advices on newborn care and breastfeeding (64.2%), provided necessary information about obstetric related danger signs (63.4%) and provision of privacy during vaginal examination (61.2%) in decreasing order were some of the highest scores recorded for complete satisfaction. On the hand the highest scores for completely dissatisfaction recorded were absence of coffee ceremony after delivery in the health facility (20.1%) followed by lack of obstetric emergency transportation & communication (6.3%). This means the study has shown important findings in relation to client satisfaction in different aspects.

Results from studies on assessment of client satisfaction in labor and delivery services at a maternity referral hospital in Ethiopia shows that the doctor and the nurse communication with overall satisfaction rate of 88.6% and 91% which is higher than the result of this study that is 64.2% (35). There are evidences that provider communication to the client have a significant impact on client satisfaction and the finding in this study would alert the health care system to design a client friendly approach to enhance communication (36,37).

From the result of linear regression table 17 above we can see that 5 variables explained the overall satisfaction of the clients. Satisfaction to availability of water, hand washing & toilet facilities affected the dependent variable overall client satisfaction negatively while, Satisfaction to availability of drugs and supplies, health workers communication, health care provided and satisfaction to attitude of health workers affected positively the outcome variable overall client satisfaction.

But socio demo-graphic characteristics were not found to be associated with patients' satisfaction. This finding is in agreement with the finding of a study carried out in Hawassa University Teaching Hospital, Ethiopia and at Calabar Teaching Hospital in Nigeria (43, 44).

Chapter 7: Limitations of the Study

This study has tried to reach an adequate number of public health facilities representing the zonal wide facilities. But, due to feasibility in terms of budget, time and human resource only three of the eight EmOC indicators were calculated and the rest needs further study. Lack of using geographic information system to locate the geographic distribution of facilities due to lack the apparatus is also another limitation. Inadequate literatures on EmONC services client satisfaction was also another limitation of this study.

Chapter 8: Conclusion

This study showed that the availability of minimum standards of health facilities infrastructures, human resources, supplies, drugs and equipment's are below the recommended standards especially for health centres in the studied facilities. World Health organization (WHO) recommends Magnesium Sulphate as drug of choice to prevent pre-eclampsia becoming an eclampsia. On the other hand none of the assessed health facilities do have this drug. Generally, availability and utilization of EmONC facilities in the zone is much below the recommended indicators and the target of HSDP VI. This is a grand gap towards reducing the maternal and new born mortalities and achieving the MDGs targets within the left one year.

Chapter 9: Recommendation.

■ Oromia Regional Health Bureau`s strong commitment could make changes by using this result and incorporating in to woreda based planning and advocating for different stake holders to fulfill the gaps observed

■ Zonal Health Departments` overall role in capacitating the existing health facilities is crucial to meet the standard

■ Woreda health office & PHCUs strong commitment in community awareness towards service utilization is key

■ Overall, commitment of health facilities and health care providers` efforts towards improvement of quality of care with the available resources they have at hand can contribute more for better maternal satisfaction.

■ NGOs and institutions` more contribution towards equipping the facilities and improving the competency of the health care providers take high position towards improving EmONC services.

■ In general, changing the overall broad health systems needs the contributions of every stakeholders starting from the community. More over the contribution of government sectors, NGOs, different institutions and community plays a crucial role

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Annex 1: Data Collection Tools for health facility assessment (43)

Table 13: List of public hospitals in Jimma Zone,2014

S/N	Name of Hospitals
1	Jimma University Specialize Hospital
2	Limu Genet Hospital
3	Shenen Gibe Hospital
4	Agaro Hospital

Table 14 :List of Public Health Centers in Jimma Zone,2014

S/N	Health Centers	S/N	Health Centers	S/N	Health Centers
1	Agalo HC	35	Deto Kersu HC	69	Mendara Kochi HC
2	Ako HC	36	Dimtu HC	70	Merewa HC
3	Alle HC	37	Dusta HC	71	Metesso HC
4	Ambuye HC	38	Gale Jimate	72	Mole HC
5	Anja HC	39	Gata HC	73	Nada HC
6	Asendabo HC	40	Gatira HC	74	Natri HC
7	Atnago HC	41	Gato kure HC	75	Nono HC
8	Babu HC	42	Gebjiro HC	76	Oba HC
9	Bacho Bore HC	43	Gembe HC	77	Odo HC
10	Bage HC	44	Gera HC	78	Ofole HC
11	Bake Gudo HC	45	Geta Bake HC	79	Raga Siba HC
12	Bala Wajo HC	46	Agaro HC	80	Robe HC
13	Bashasha HC	47	Gonna HC	81	Sadi HC
14	Baso HC	48	Gesecha HC	82	Secha HC
15	Benja HC	49	Gube Muleta HC	83	Sedu HC
16	Bilida HC	50	Haro HC	84	Seka HC
17	Bilu Arsu HC	51	Hassen Nupa HC	85	Seka HC
18	Jimma Higher 2 HC	52	Hinchini HC	86	Serbo HC
19	Boneya HC	53	Irgibo HC	87	Setema HC
20	Bulbul HC	54	Jimate	88	Setema HC
21	Busa HC	55	Jimma HC	89	Shebe HC
22	Buyo Kechema HC	56	Kata Buso HC	90	Sheki HC
23	Chafe Nega HC	57	Kishe HC	91	Sigmo HC
24	Chime HC	58	Koma HC	92	Sokoru HC
25	Chira HC	59	Kore HC	93	Sombo HC
26	Choche HC	60	Korjo HC	94	Tancho HC
27	Chora Anchebi HC	61	Kosaye HC	95	Toba HC
28	Dabo Yaya HC	62	Koticha	96	Tora HC
29	Dakeno Ilke HC	63	Kumbi HC	97	Wakito Meda HC
30	Dame HC	64	Kusaye Beru HC	98	Yachi HC
31	Darge HC	65	Limu Genet	99	Yebu HC
32	Decha Gibe HC	66	Limu Shayi HC	100	Yira Docha HC
33	Defkala HC	67	Lulu Cheha HC		
34	Deneba HC	68	Mechi HC		

Table 15: List of health centers and hospitals visited in Jimma zone, April 2014

S/N	Woreda/District	Health Center	Facility Location	Facility Type
1	Setama	Gatira	Urban	Health Center
2	Mana	Kore	Rural	Health Center
3	Limu Seka	Seka	Urban	Health Center
4	Gumay	Toba	Urban	Health Center
5	Limu Kosa	Ambuye	Rural	Health Center
6	Chora Botor	Bage	Urban	Health Center
7	Mana	Bilida	Rural	Health Center
8	Limu Seka	Atnago HC	Urban	Health Center
9	Limu Kosa	Limu Genet	Urban	District Hospital
10	Limu Kosa	Limu Genet	Urban	Health Center
11	Limu Kosa	Chime HC	Rural	Health Center
12	Omo Nada	Asendabo	Urban	Health Center
13	Seka Ckokorsa	Buyo Kechama	Rural	Health Center
14	Tiro Afeta	Dimtu HC	Urban	Health Center
15	Tiro Afeta	Raga Siba	Rural	Health Center
16	Kersa	Bulbul	Rural	Health Center
17	Kersa	Serbo	Urban	Health Center
18	OmoNada	Nada	Urban	Health Center
19	Jimma	Higher 2	Urban	Health Center
20	Jimma	Jimma	Urban	Health Center
21	Jimma	Shenen Gibe	Urban	Zonal Hospital
22	Sokoru	Denaba	Urban	Health Center
23	Dedo	Offole	Rural	Health Center
24	Agaro	Agaro	Urban	Health Center
25	Gomma	Gembe	Urban	Health Center
26	Agaro	Agaro Hospital	Urban	District Hospital
27	Dedo	Sheki	Urban	Health Center
28	Shabe Sombo	Sombo	Rural	Health Center
29	Shabe Sombo	Shabe	Urban	Health Center
30	Gera	Gera	Urban	Health Center
31	Gomma	Beshasha	Urban	Health Center
32	Jimma	JUSH	Urban	Specialized Hospital
33	Dedo	Korjo	Rural	Health Center
34	Dedo	Mole	Rural	Health Center

Facility Assessment Questioner for EmONC

Part 1: Identification of Facility and Infrastructure

SECTION 1: Interview Information

INSTRUCTIONS: Should be completed as soon as arriving at the facility and before interviewing the facility officer in charge. Copy the Unique Facility Identifier (UFI) onto each page of parts 1 before beginning to collect data.

Team Number _ _ _	Facility Number _ _ _ Sequential number beginning with 01	Unique Facility Identifier (UFI) _ _ _ _ _ 2-digit Team Number + 2-digit Facility Number
Facility Name 		
Region/Province		District
Region/Province Code		District Code
_ _ _		_ _ _ _

The UFI should be entered into the GPS unit when marking the coordinates in the device. The coordinates must also be entered below. Take the GPS reading at the front gate of the facility.

Geographic Coordinates	
Latitude (decimal format)	Longitude (decimal format)
_ _ _ _ _ . _ _ _ _ _ _ _ (N or S)	_ _ _ _ _ . _ _ _ _ _ _ _ (E or W)
Elevation	Accuracy reading
_ _ _ _ _ Meters	± _ _ _ meters

SECTION 2: Facility Identification Information

INSTRUCTIONS: Direct these questions to the officer in charge.

No.	Item	Response
1	Since the major topic of interest of this survey is obstetric and newborn care, it will help us to organize our visit here if you could first tell us if any deliveries have been attended in this facility in the last 12 months.	Yes..... 1 No.....0 <i>(If "No," please immediately inform your team members that there have been no deliveries in the last 12 months and continue the interview.)</i>
2	Urban/rural designation	Urban-----1 ,Rural-----2
3	Type of facility (circle one)	District Hospital-----1 Health Center-----2 General Hospital-----3 Specialized Hospital-----4

SECTION 3: General facility's overall capacity and infrastructure

No.	Item	Response	Skip to
4	Does this facility have a room for: <i>(read each item)</i> a. Labor b. Delivery c. Labor and delivery together d. Postpartum ward e. Operating theater f. Neonatal care unit g. Blood bank h. Laboratory i. Blood bank and laboratory together	Yes No 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	
5	How many beds are available for patients in this facility (total in all departments)? <i>(write number)</i>	_ _ _ _	
6	How many of the total number of beds are dedicated exclusively to obstetric patients? <i>(write number)</i>	_ _ _ _	
7	How many delivery coaches are available? <i>(write number)</i>	_ _ _ _	
8	Does this facility have electricity? (even if irregular, circle 1 for "Yes")	Yes --1 No --0	If "No," skip to Item 11

9	What is the <u>primary</u> source of electricity? (circle one)	Power lines (grid)-1 Generator-----2 Solar -----3 Other (<i>specify</i>)--4	
10	Is the electricity functioning (at the moment of this interview)?	Yes-----1, No-----0	
11	Is a back-up generator available?	Yes --1 No --0	If "No," skip to Item 13
12	Is the generator functional?	Yes-----1 ,No-----0	
13	Does this facility have water for functions such as infection prevention, patient and staff use, etc.?	Yes --1 No --0	If "No," skip to Item 16
14	What is the <u>primary</u> source of water? (circle one)	Piped water --1 Hand pump --2 Well -----3 River -----4 Other (<i>specify</i>) --5	
15	Is the water system currently functioning in the: <i>(read each item)</i> a. Operating theater? b. Delivery room? c. Postnatal room?	Yes 1 1 1 1 No 0 0 0 0 Room not available 9 9 9	

SECTION 4: Transportation and Communication Enabling to Emergency Referral

No.	Item	Is at least 1 available and functional?		If "Yes," is it used for referral?	
		Yes	No	Yes	No
16	Landline telephone in the maternity area	1	0	1	0
17	Landline telephone elsewhere in facility	1	0	1	0
18	Cell phone (owned by facility)	1	0	1	0
19	Cell phone (owned by individual staff)	1	0	1	0
20	Public telephone in the vicinity	1	0	1	0
21	Is there a cell phone signal at this facility?	Yes-----1 No-----0			If "No," skip to Item 23
22	Is it a policy in this facility to reimburse staffs that use their cell phones for work-related calls?	Yes-----1 No-----0			

Modes of transportation available for emergency referral

Transport		Is at least 1 available?		
No.	Item	Available and functional	Available but not functional	Not available
23	Motor vehicle ambulance	1	2	0
24	Motorcycle ambulance	1	2	0
26	Other motor vehicle	1	2	0
27	Animal drawn cart	1	2	0
28	Stretcher	1	2	0
29	Other (please specify): _____	1	2	0

24/7 Availability and general referral

No.	Item	Response
30	Does the facility provide obstetric and neonatal care 24 hours a day, 7 days a week?	Yes----- 1 No-----0
31	How far is the nearest referral hospital with surgical care? (8888 = does not refer; 9999 = does not know)	_ _ _ km
32	How long does it take by car to get to that referral hospital with surgical care?(record time in minutes under ideal circumstances: 8888 = does not refer; 9999 = does not know)	_ _ _ minutes

SECTION 5: Payment for Services

No.	Item	Response	Skip to
33	Is a woman expected to pay a fee or buy supplies for a normal delivery?	Yes ----- 1 No -----0 No deliveries in last 12 months-9	
34	In an obstetric/gynecological emergency, is payment required before a woman can receive treatment?	Yes---- 1 No---- 0 No deliveries in last 12 months-9	
35	In an obstetric/gynecological emergency, is the woman or her family asked to buy medicine or supplies prior to treatment?	Yes 1 No 0	
36	Is there a fee schedule for services posted in a visible and public place?(by observation only)	Yes 1 No 0	

No.	Item	Response			Skip to
37	What is the approximate current cost to the patient in this facility (in ETB) for: (read each item, and enter 0000.00 if there is no cost to the patient; 9999.99 if service or item not available; 8888.88 if the respondent does not know) (NB: inj = injection) a. Admission fee----- b. Normal delivery----- c. Gloves ----- d. IV fluids ----- e. Instrumental delivery with vacuum extraction-- f. Instrumental delivery with forceps----- g. Cesarean delivery----- h. Post abortion care----- i. Cost per prescription of Oxytocin (inj)----- j. Cost per prescription of Ergometrine (inj)----- k. Cost per prescription of magnesium sulfate (inj) l. Cost per prescription of penicillin (Benzyl) (inj) m. Cost per prescription of Gentamicin (inj)----- n. Cost per prescription of Chloramphenicol (inj)-				
38	Are women charged separately for the following things: (read each item) a. Bed----- b. Food----- c. Blood transfusion----- d. Neonatal intensive care-----	Yes 1 1 1 1	No 0 0 0 0	NA / No deliveries 9 9 9 9	
39	Is there a <u>formal</u> system in place to have fees for maternity services waived for poor women?	Yes No	1 0		If "Yes," skip to 41
40	Is there an <u>informal</u> system in place to have fees for maternity services waived for poor women?	Yes No	1 0		

Part 2: Human Resources

SECTION 1: Overall Staffing

Item	Medical doctor (general practitioner)	Obstetrician/ Gynecologist	General surgeon	Pediatrician	Neonatologist	IEOS	Health officer	Midwife(Dip+Bsc)	Nurse(Dip+Bsc)	Anesthesiologist (MD)	Nurse anesthetist	Laboratory (Dip+Bsc)	Druggist +Pharmacist
1. How many employed positions does this facility have for this type of staff member?(write number)													

Section 2: Training Information

Ask training (during pre-service or in-service training) and provision of the service in the last 3 months.

Service	Have anybody received training on how to...?		Have the trained health provider provided this service in the past 3 months?	
	Yes	No	Yes	No
a. Do manual removal of the placenta	1	0	1	0
b. Administer IM or IV magnesium sulfate for the treatment of severe pre-eclampsia or eclampsia	1	0	1	0
c. Apply vacuum extractor	1	0	1	0
d. Apply forceps	1	0	1	0
e. Perform manual vacuum aspiration (MVA)	1	0	1	0
f. Perform a dilation and curettage (D&C)	1	0	1	0
j. Resuscitate a newborn with bag and mask	1	0	1	0

Part 3: Essential Drugs, Equipment, and Supplies

SECTION 1: Pharmacy

1. Essential Drugs

No.	Drug	Available	
		Yes	No
1	Antibiotics: Does this facility have antibiotics? <i>If "No" → skip to Anticonvulsants (Item 17)</i>	1	0
1.01	Ampicillin (injection)	1	0
1.02	Chloramphenicol (injection)	1	0
1.03	Gentamicin (injection)	1	0
1.04	Metronidazole (injection)	1	0
1.05	Other parenteral antibiotics	1	0
2	Anticonvulsants: Does this facility have anticonvulsants? <i>If "No" → skip to Antihypertensive (Item 18)</i>	1	0
2.01	Magnesium sulfate (injection) 50% concentration	1	0
2.02	Diazepam (injection)	1	0
2.03	Other anticonvulsant drugs	1	0
3	Antihypertensive: Does this facility have antihypertensive? <i>If "No" → skip to Oxytocic (Item 19)</i>	1	0
3.01	Hydralazine	1	0
3.02	Labetalol	1	0
3.03	Methyldopa	1	0
3.04	Other parenteral anti-hypertensive drugs	1	0

No.	Drug	Available	
		Yes	No
4	Oxytocic and prostaglandins: Does this facility have oxytocic or prostaglandins? <i>If "No" → skip to Drugs used in emergencies (Item 20)</i>	1	0
4.01	Oxytocin	1	0
4.02	Ergometrine	1	0
4.03	Methylergometrine	1	0
4.04	Misoprostol	1	0
4.05	Prostaglandin E2 (dinoprostone)	1	0
5	Anesthetics: Does this facility have anesthetics? <i>If "No" → skip to Analgesics (Item 21)</i>	1	0
5.01	Halothane	1	0
5.02	Ketamine	1	0
5.03	Lignocaine/Lidocaine 2% or 1%	1	0
6	IV fluids: Does this facility have IV fluids? <i>If "No" skip to next section</i>	1	0
6.01	Ringer's Lactate	1	0
6.02	Normal saline	1	0
6.03	Dextrose	1	0
6.04	Other IV fluids	1	0

SECTION 2: Labor, Delivery and Maternity

2A. Guidelines and Protocols

No.	Item	Response	
		Yes	No
7	Are there guidelines or protocols available in the maternity for:		
7.01	Management of obstetric and newborn complications	1	0
7.02	Essential newborn care	1	0
7.03	Safe abortion	1	0
7.04	Post abortion care	1	0

2B. Equipment and Supplies

No.	Item	Is at least 1 available and functional?	
		Yes	No
8	Diagnostics		
8.01	Ultrasound	1	0
8.02	BP cuff	1	0
8.03	Stethoscope	1	0
8.04	Clinical thermometer	1	0
8.05	Uristix (dip stick for protein in urine)	1	0
8.06	Partograph (modified form)	1	0
9	Supplies		
9.01	IV Infusion stand(s)	1	0
9.02	Urinary catheters	1	0
9.03	IV cannulas	1	0
9.04	Adult ventilator bag and mask	1	0
9.05	Mouth gag	1	0
9.06	Watch or clock with second hand	1	0
9.07	Nasogastric tubes	1	0
10	Vacuum extraction / forceps delivery sets		
10.01	Vacuum extractor with different size cups	1	0
10.02	Obstetric forceps, outlet	1	0
10.03	Obstetric forceps, mid-cavity	1	0
10.04	Obstetric forceps, breech	1	0
11	Uterine evacuation sets		
11.01	Vaginal speculum (Sims)	1	0
11.02	Sponge (ring) forceps or uterine packing forceps	1	0
11.03	Dissecting forceps, serrated jaws 250 mm s/s	1	0
11.04	Forceps towel approx. 100 mm s/s	1	0
11.05	Ovum forceps, green height 240 mm s/s	1	0
11.06	Uterine forceps	1	0
11.07	Uterine dilators, sizes 13-27 (French)	1	0
11.08	Sharp uterine curettes, size 0 or 00	1	0
11.09	Blunt uterine curettes, size 0 or 00	1	0
11.10	Malleable metal uterine sound	1	0

No.	Item	Is at least 1 available and functional?	
		Yes	No
12.01	Vacuum aspirators/syringes	1	0
12.02	Silicone lubricant (for lubricating O-ring)	1	0
12.03	Other oil (for lubricating O-ring)	1	0
12.04	Flexible cannulas, 4 – 6 mm	1	0
12.05	Flexible cannulas, 7-12 mm ³	1	0
13	Obstetric laparotomy / cesarean delivery pack		
13.07	Surgical knife handle/No 3	1	0
13.08	Surgical knife handle/No 4	1	0
13.09	Surgical knife blades	1	0
13.12	Abdominal retractor/size 3	1	0
13.13	Abdominal retractors/double-ended (Richardson)	1	0
13.14	Curved operating scissors/blunt pointed (Mayo) 17cm	1	0
13.15	Straight operating scissors/blunt pointed (Mayo) 17cm	1	0
13.16	Scissors, straight, 23 cm	1	0
13.17	Suction nozzle	1	0
13.18	Suction tube, 22.5 cm, 23 French gauge	1	0
13.19	Intestinal clamps, curved (Dry), 22.5 cm	1	0
13.20	Intestinal clamps, straight, 22.5 cm	1	0
13.21	Dressing (non-toothed tissue) forceps/15 cm	1	0
13.22	Dressing (non-toothed tissue) forceps/25 cm	1	0
13.23	Sutures (different sizes and types)	1	0
14	Anesthesia Equipment		
14.01	Anesthetic face masks	1	0
14.02	Oro pharyngeal airways	1	0
14.03	Laryngoscopes (with spare bulbs and batteries)	1	0
14.04	Endo tracheal tubes with cuffs	1	0
14.06	Intubation forceps (Magill)	1	0
14.07	Endo tracheal tube connectors: 15 mm plastic (connect	1	0
14.08	directly to breathing valve; three for each tube size)	1	0
14.09	Spinal needles (18-gauge to 25-gauge)	1	0
14.10	Suction apparatus: Foot-operated	1	0
14.12	Suction apparatus: Electric	1	0
14.13	Anesthesia apparatus (draw-over system)	1	0
14.14	Oxygen cylinders with manometer and flow meter (low flow) tubes and connectors	1	0

SECTION 3. Laboratory and Blood Bank

All of the questions should be answered by circling 1 for "Yes," or 0 for "No."

4A. General

No.	Item	Available
71	Does this facility have a laboratory?	Yes-----1 No.....0 ,If "No" → skip to end.
72	Is there a set of guidelines for the laboratory?	Yes.....1 No0

4B. Equipment and Supplies

No.	Item	Is at least 1 available and functional?	
		Yes	No
73	Provision of donor blood for transfusion		
73.01	Refrigerator for blood bank	1	0
73.05	Compound microscope for cross-matching	1	0
73.06	Microscope illuminator	1	0
73.12	Centrifuge, electric	1	0
73.13	Centrifuge, hand driven	1	0
73.22	Blood typing and cross-matching reagents	1	0
73.23	Bags for collecting blood	1	0
74	Screening tests		
74.05	Hepatitis B test	1	0
74.06	Hepatitis C test	1	0
74.07	HIV test	1	0
74.08	Syphilis test	1	0

4C. Blood Transfusion Supplies

No.	Item	Response
76	How many units of blood ready for transfusion do you have in stock?	_ _ _ _

Part 4: Data for Indicators

Provide the number of cases for each category.

No.	Item	Jan	Feb	Mar	Apr	Ma	Jun	Jul	Aug	Se	Oct	Nov	Dec
Deliveries													
1	Spontaneous vaginal deliveries (normal, breech, face)												
2	Deliveries with vacuum extraction												
3	Forceps deliveries												
4	Craniotomies/embryotomies												
5	Cesarean deliveries (emergencies and electives)												
6	Laparotomies (for ruptured uterus)												
7	Total deliveries (add rows 14-19)												

Part 5: EmOC Signal Functions and Other Essential Services

Instructions: Answer the following questions regarding the EmOC Signal Functions by interviewing health workers in the maternity ward and other departments, reviewing facility registers, and through observation. Record whether the function has been performed in the past 3 months; if not, why it has not been performed,* and whether it was performed in the last 12 months. Remember that “Parenteral” means by injection, either intramuscular or intravenous.

Signal Function 1: Parenteral Antibiotics

No.	Item	Responses		Skip to
1	Have antibiotics been administered parent rally in the last 3 months?	Yes 1	No 0	If “Yes,” skip to Item 4
2	If Parenteral antibiotics were NOT administered in the last 3 months, why?(circle 1 for all spontaneous answers; otherwise circle 0) a. availability of human resources b. training issues c. supplies/equipment/drugs d. management issues e. policy issues f. no indication g. other (specify) _____	Spontaneousl y mentioned	Not mentioned	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
3	If Parenteral antibiotics were NOT administered in the last 3 months, were they administered in the last 12 months?	Yes-----1	No-----0	

Signal Function 2: Administer Uterotonic Drugs

No.	Item	Responses		Skip to
4	Have oxytocic been administered parent rally in the last 3 months?	Yes ---1	No ---0	If “No,” skip to Item 6
5	If Parenteral oxytocic were administered in the last 3 months, which type of oxytocic was used? (circle one)	Oxytocin ---1	Ergometrine-----2	All responses to this item skip to Item 9
		Both -----3	Other (specify)--4	
6	If Parenteral oxytocic were NOT administered in the last 3 months, why?(circle 1 for all spontaneous answer; otherwise circle 0) a. availability of human resources b. training issues c. supplies/equipment/drugs d. management issues e. policy issues f. no indication g. other (specify) _____	Spontaneously Mentioned	Not mentioned	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	

No.	Item	Responses	Skip to
7	If Parenteral oxytocic were NOT administered in the last 3 months, were they administered in the last 12 months?	Yes-----1 No-----0	If "No," skip to Item 9
8	If Parenteral oxytocic were administered in last 12 months, which type of oxytocic was used? (circle one)	Oxytocin-----1 Ergometrine---2, Both---3 Other (specify)----4_____	
9	Is misoprostol used in this facility for obstetric indications?	Yes-----1 No-----0	

Signal Function 3: Parenteral Anticonvulsants

No.	Item	Responses	Skip to
10	Have anticonvulsants been administered parent rally in the last 3 months?	Yes-----1 No-----0	If "No," skip to Item 12
11	If Parenteral anticonvulsants were administered in the last 3 months, which type of anticonvulsant was used?(circle one)	Magnesium sulfate-----1 Diazepam---2, Both---3 Other (specify)-----4	All responses to this item skip to Item 15
12	If Parenteral anticonvulsants were NOT administered in the last 3 months, why?(circle 1 for all spontaneous answers; otherwise circle 0) a. availability of human resources b. training issues c. supplies/equipment/drugs d. management issues e. policy issues f. no indication g. other (specify) _____	Spontaneously Mentioned Not mentioned 1 0 1 0 1 0 1 0 1 0 1 0 1 0	
13	If Parenteral anticonvulsants were NOT administered in the last 3 months, were they administered in the last 12 months?	Yes 1 No 0	If "No," skip to Item 15
14	If Parenteral anticonvulsants were administered in last 12 months, which type of medication was used?(circle one)	Magnesium sulfate----1 Diazepam---2, Both---3 Other (specify)-----4	

Signal Function 4: Manual Removal of Placenta

No.	Item	Responses	Skip to
15	Has manual removal of placenta been performed in the last 3 months?	Yes-----1 No-----0	If "Yes," skip to 18
16	If manual removal of placenta was NOT performed in the last 3 months, why?(circle 1 for all spontaneous answers; otherwise circle 0) a. Availability of human resources b. training issues c. supplies/equipment/drugs d. management issues e. policy issues f. no indication g. other (specify) _____	Spontaneously Mentioned Not mentioned 1 0 1 0 1 0 1 0 1 0 1 0 1 0	
17	If manual removal of placenta was NOT performed in the last 3 months, has it been performed in the last 12 months?	Yes 1 No 0	

Signal Function 5: Removal of Retained Products

No.	Item	Responses		Skip to
18	Has removal of retained products been performed in the last 3 months?	Yes 1 No 0		If "No," skip to Item 20
19	If removal of retained products was performed in last 3 months, which method was used? <i>(read options)</i> a. Vacuum aspiration b. Dilatation and curettage (D&C) c. Dilatation and evacuation (D&E) d. Misoprostol	Yes 1 1 1 1	No 0 0 0 0	All answers to this item skip to Item 23
20	If removal of retained products was NOT performed in the last 3 months, why? <i>(circle 1 for all spontaneous answers; otherwise circle 0)</i> a. availability of human resources b. training issues c. supplies/equipment/drugs d. management issues e. policy issues f. no indication g. other(specify) _____	Spontaneously Mentioned 1 1 1 1 1 1 1	Not mentioned 0 0 0 0 0 0 0	
21	If removal of retained products was NOT performed in the last 3 months, has it been performed in the last 12 months?	Yes-----1 No-----0		If "No," skip to Item 23
22	If removal of retained products was performed in last 12 months, which method was used? <i>(read options)</i> a. Vacuum aspiration b. Dilatation and curettage (D&C) c. Dilatation and evacuation(D&E) d. Misoprostol	Yes 1 1 1 1	No 0 0 0 0	

Signal Function 6: Assisted Vaginal Delivery

No.	Item	Responses		Skip to
23	Has assisted vaginal delivery (vacuum or forceps) been performed in the last 3 months?	Yes 1 No 0		If "No," skip to Item 25
24	If assisted vaginal delivery was performed in last 3 months, what instrument was used? (circle one)	Vacuum extractor 1 Forceps 2 Both 3		All responses to this item skip to Item 28

No.	Item	Responses		Skip to
25	If assisted vaginal delivery (vacuum or forceps) was NOT performed in the last 3 months, why?(circle 1 for all spontaneous answers; otherwise circle 0) a. availability of human resources b. training issues c. supplies/equipment/drugs d. management issues e. policy issues f. no indication g. other (specify) _____	Spontaneously Mentioned	Not mentioned	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
26	If assisted vaginal delivery (vacuum or forceps) was NOT performed in the last 3 months, has it been performed in the last 12 months?	Yes-----1 No-----0		If "No," skip to Item 28
27	If assisted vaginal delivery was performed in last 12 months, what instrument was used?(circle one)	Vacuum extractor-----1 Forceps-----2 Both-----3		

Signal Function 7: Newborn Resuscitation

No.	Item	Responses		Skip to
28	Has newborn resuscitation with bag and mask been performed in the last 3 months?	Yes 1 No 0		If "Yes," skip to Item 31
29	If newborn resuscitation with bag and mask was NOT performed in the last 3 months, why?(circle 1 for all spontaneous answers; otherwise circle 0) a. availability of human resources b. training issues c. supplies/equipment/drugs d. management issues e. policy issues f. no indication g. other (specify) _____	Spontaneously Mentioned	Not mentioned	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
30	If newborn resuscitation with bag and mask was not performed in the last 3 months, has it been performed in the last 12 months?	Yes-----1 No-----0		

Signal Function 8: Obstetric Surgery (Cesarean Delivery)

No.	Item	Responses		Skip to
31	Has a cesarean been performed in the last 3 months?	Yes 1 No 0		If "Yes," skip to Item 34

No.	Item	Responses		Skip to
32	If a cesarean was NOT performed in the last 3 months, why? (circle 1 for all spontaneous answers; otherwise circle 0) a. availability of human resources b. training issues c. supplies/equipment/drugs d. management issues e. policy issues f. no indication g. other (<i>specify</i>) _____	Spontaneously Mentioned	Not mentioned	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
33	If a cesarean was NOT performed in the last 3 months, has it been performed in the last 12 months?	Yes 1 No 0		If "No," skip to Item 35
34	What type of anesthesia is currently used when performing a cesarean delivery? (<i>read options out loud</i>) a. General b. Spinal/epidural c. Ketamine d. Other (<i>specify</i>) _____	Yes	No	
		1	0	
		1	0	
		1	0	
		1	0	

Signal Function 9: Blood Transfusion

No.	Item	Responses		Skip to
35	Has blood transfusion been performed in the last 3 months?	Yes 1 No 0		If "No," skip to Item 37
36	If blood transfusion was performed in the last 3 months, describe the primary supply of blood. (circle one)	Blood comes from central blood bank-1 Blood comes from a facility blood bank 2 Blood is collected from family or friends as needed (i.e., direct transfusion) -----3 Other (<i>specify</i>)-----4		All responses to this item skip to 40
37	If blood transfusion was NOT performed in the last 3 months, why?(<i>circle 1 for all spontaneous answers; otherwise circle 0</i>) a. availability of human resources b. training issues c. supplies/equipment/drugs d. management issues e. policy issues f. no indication g. other (<i>specify</i>)_____	Spontaneously Mentioned	Not mentioned	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
		1	0	
38	If blood transfusion was NOT performed in the last 3 months, has it been performed in the last 12 months?	Yes 1 No 0		If "No," skip to Item 36
39	If blood transfusion was performed in the last 12 months, describe the <u>primary</u> supply of blood:(circle one)	Blood comes from central blood bank --1 Blood comes from a facility blood bank 2 Blood is collected from family or friends as needed (i.e., direct transfusion) -----3 Other (<i>specify</i>)-----4		

Part 6: Clint Interview

I. Socio demographic Factors

Variable	Response
Age in years	
<15	-----0
15-19	-----1
20-24	-----2
25-29	-----3
30-34	-----4
35-39	-----5
>39	-----6
Education	
Does not read & write	-----1
Primary	-----2
Secondary	-----3
Above secondary	-----4
Income	
Below 600 ETB	-----1
600 ETB and more	-----2
Residence	
Town	-----1
Rural	-----2
Pregnancy status	
Wanted	-----1
Unwanted	-----2
How respondents visited the hospital	
Came after referral	-----1
Came upon recommendation from friend or relative	-----2
Came due to emergency	-----3
Came upon personal decision	-----4
Others	-----5
Mode of transport used to arrive at the hospital	
Walking	-----1
Private vehicle	-----2
Public transport	-----3
Others	-----4
Delivery attended by	
Physician	-----1
Nurse	-----2
Unknown	-----3
Mode of delivery	
Spontaneous Vaginal Delivery	-----1
Instrumental delivery	-----2
Elective Cesarean Section	-----3
Emergency C/S	-----4
Hours of stay in the hospital	
1-12 hours	-----1
13-24 hours	-----2
25-48 hours	-----3
Above 48 hours	-----4

Treatment fee	
Paying	-----1
Free	-----2
Delivery outcome	
Alive	-----1
Dead	-----2

II. Level of Perceived Satisfaction

Aspects of care received during your stay in maternity ward	Fully dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Fully satisfied
Health Facility					
1.How do you express your satisfaction with availability of adequate number of health staff in the health facility	1	2	3	4	5
2. With clean drinking water, hand washing facilities and toilets for women in the maternity ward.	1	2	3	4	5
3.With availability of medical equipment used to examine women during pregnancy ,delivery and PNC emergency	1	2	3	4	5
4.With availability of drugs and supplies for women during pregnancy ,delivery and PNC emergency	1	2	3	4	5
5.With the distance from your home to the health facility	1	2	3	4	5
6.With emergency transportation and communication during emergency related to pregnancy ,labor and delivery	1	2	3	4	5
7.Availability of waiting rooms for pregnant women in the health facility	1	2	3	4	5
Health Care Delivery					
8.The extent to which midwife or obstetrician informed you with the plan of delivery, upcoming procedures and interventions and asked for your consent	1	2	3	4	5
9.The extent to which mid wife or obstetrician devoted sufficient time to you, provided necessary information about danger signs of delivery and postpartum and answered your questions	1	2	3	4	5
10. Health advices on newborn care and breastfeeding	1	2	3	4	5
11.The capability of health staffs,in identifying the patients problems and providing immediate response	1	2	3	4	5
12.Easily obtaining the drugs prescribed in this health facility	1	2	3	4	5
13.Obtaining price free drugs for maternity service	1	2	3	4	5
14. With provision of privacy during vaginal examination and delivery.	1	2	3	4	5
15.The respect of health staffs_towards the patients	1	2	3	4	5
16.Procedures after delivery- you immediately received information about the condition of your baby, of your condition and you could immediately see your baby	1	2	3	4	5
17.Coffe ceremony after delivery in the health facility	1	2	3	4	5
Overall	1	2	3	4	5
18.With the outcome of the service you got during your stay	1	2	3	4	5
19.With the complete services provided	1	2	3	4	5
20. In the case of your future delivery or next baby, will you again use the health care facility?	Yes=1	No=2	No response=3		

Annex 2: EmOC Indicators (1)

EmOC Indicators	Acceptable Level
1. Availability of emergency obstetric care (EmOC): basic and comprehensive care facilities	There are at least five emergency obstetric care facilities (including at least one comprehensive facility) for every 500,000 population
2. Geographical distribution of EmOC facilities	All sub national areas have at least five emergency obstetric care facilities (including at least one comprehensive facility) for every 500,000 population
3. Proportion of all births in EmOC facilities*	Minimum acceptable level to be set locally
4. Meeting the need for emergency obstetric care: proportion of women with major direct obstetric complications who are treated in such facilities*	100% of women estimated to have major direct obstetric complications# are treated in emergency obstetric care facilities
5. Cesarean sections as a proportion of all births*	The estimated proportion of births by caesarean section in the population is not less than 5% or more than 15%
6. Direct obstetric case fatality rate*	The case fatality rate among women with direct obstetric complications in EmOC facilities is less than 1%
7. Intrapartum and very early neonatal death rate*	Standards to be determined
8. Proportion of maternal deaths due to indirect causes in EmOC facilities*	No standard can be set

* While these indicators focus on services provided in facilities that meet certain conditions (and therefore qualify as ‘emergency obstetric care facilities’), we strongly recommend that these indicators be calculated again with data from all maternity facilities in the area even if they do not qualify as emergency obstetric care facilities.

The proportion of major direct obstetric complications throughout pregnancy, delivery, and immediately postpartum is estimated to be 15% of expected births.

ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the College of Public Health and Medical Sciences, Jimma University in effect at the time of grant is forwarded as the result of this application.

Name of the student: Alemayehu Kumsa

Date. _____ Signature _____

APPROVAL OF THE FIRST ADVISOR

Name of the first advisor: _____

Date. _____ Signature _____

APPROVAL OF THE SECOND ADVISOR

Name of the Second advisor: _____

Date. _____ Signature _____