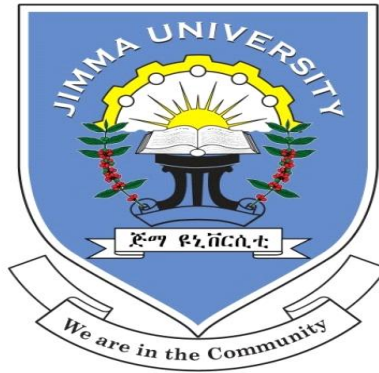**ASSESSMENT OFUNMET OBSTETRIC NEED IN EMERGENCY OBSTETRIC SERVICES IN TARCHA GENERAL HOSPITAL, DAWRO ZONE, SOUTH WEST ETHIOPIA.**

BY: ABDUSELAM MOHAMMED

A THESIS SUBMITTED TO RESEARCH AND POST GRADUATE COORDINATING OFFICE, COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCES, JIMMA UNIVERSITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF SCIENCE (MSC) IN INTEGRATED EMERGENCY OBSTETRICS AND GYNECOLOGY AND GENERAL SURGERY

AUGUST, 2014

JIMMA, ETHIOPIA

ASSESSMENT OF UNMET OBSTETRIC NEED IN EMERGENCY OBSTETRIC SERVICES, A TWO YEARS RETROSPECTIVE HOSPITAL BASED STUDY IN TARCH GENERAL HOSPITAL, DAWRO ZONE, SOUTH WEST ETHIOPIA.

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Abstract

Introduction: Most maternal deaths are avoidable if women have access to emergency obstetric care (EmOC) facilities.There is limited evidence about unmet need for emergency obstetric care facilities in rural Ethiopia.This study aims at assessing the coverage of obstetric care according to the Unmet Obstetric Need (UON) concept by obtaining information on indications for, and outcomes of, major obstetric interventions.

Objective: To assess unmet obstetric need in Emergency Obstetric services in Tarcha General Hospital, Dawro zone, SNNPR, south-west Ethiopia.

Methodology: A two years facility based Cross-sectional retrospective study was conducted from April- June 2014 at Tarcha General Hospital south-west Ethiopia. Data were collected using structured questioners by trained data collectors from Patient medical records. Data collected included the obstetric intervention, indication, mother's origin, and maternal and perinatal outcome. The collected data was analyzed using SPSS for windows version 16.0. Descriptive statistics was run to explore the data, Chi-square test, binary logistic regression, 95% CI and P-value <0.05 were used to examine association between dependent and independent variables. The study used a threshold of 2% major obstetric interventions for absolute major indications needed per expected birth to calculate the unmet-obstetric-need-indicator and the deficits of life saving interventions.

RESULTS: During the two years study period, a total of 302 major obstetric interventions (MOI) were conducted and caesarean sections took the largest 245(81.5%)followed by laparotomies for ruptured uterus8.3% and 6.6% hysterectomies. Significant more laparotomies and hysterectomies were done for mothers coming from rural than urban areas (p=0.049 and p=0.005 respectively) .The Crude cesarean sections rate per 100 births was 0.6%which is below the minimum UN 5%-15%. The number of women with AMI was 238 where majority were cephalo-pelvic disproportion (CPD) 91(38.2%) followed by malpresentation 69 (29%) and uterine rupture 40(16.8%). The number of MOI done without AMI was 74 where majority were done for foetal distress 42(65.6%). The expected number of major obstetric interventions for absolute maternal indications per expected number of births is 0.8% which is below the minimum benchmark of 2%. The high proportion 64 (21.2%) of negative maternal outcomes in terms of morbidity22.2% and mortality2.65%, as well as the high perinatal mortality of 25.8% (still birth 18.2%, dying within 24 hours 5.6%, dying after 24 hours 2%). Higher maternal and perinatal mortality was observed for mothers coming from rural areas**.** The mothers who come from rural areas have 3.5 times chance to develop complications than come from urban areas. (AOR=3.501, 95%CI=1.548, 7.914)

Conclusion and recommendation: Based on the 2% threshold, with an overall level of major obstetric interventions for absolute maternal indications of 0.8% and a caesarean section rate of 0.6%and high proportion of negative maternal and perinatal outcomes has significant unmet obstetric need with a considerable rural-urban disparity. Therefore estimating the amount of 'unmet need for major obstetric interventions' provide the information necessary for planning and prioritising the development of services;and lead to action for the reduction of maternal mortality at local level by changing certain attitudes, mobilising resources and more effectively adapting professional practices to the needs of patients.

Words used: Unmet Obstetric Needs, Major Obstetric Intervention (MOI), Absolute Maternal Indication (AMI), non Absolute Maternal Indication (non AMI), Caesarean Section (C/S), Emergency Obstetric services.

Acknowledgement

First and foremost I am very thankful to my advisor Mr.Kalkedan Hassan and Mr.Geremew Muleta for their assistance, constructive comments and suggestions throughout the thesis development. I would like to thanks HMIS department, administration and all staff of Tarcha General Hospital for their willingness and cooperation to conducting my thesis.

I would like to extend my heartfelt gratitude to all my best friends for their material support, comment and advice .At last but not the list I want to thank Jimma University for giving me this chance of educative opportunity.

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ACRONYMS

AMI- Absolute Maternal Indications
ANC- Antenatal Care
BOC- Basic Obstetric Care
CBR- Crude Birth Rate
CDR- Crude Death Rate
CIA- Central Intelligence Agency
COC- Comprehensive Obstetric Care
CPR- Contraceptive Prevalence Rate
CSA- Central Statistics Authority
C/S- Caesarean Section
DHS- Demographic Health Survey
EB- Expected Birth
EmOC- Emergency Obstetric Care
FHU- Family health Unit
HF- Health Facilities
IMR- Infant Mortality Rate
LE- Life Expectancy
MMR- Maternal Mortality Ratio
MOH- Ministry of Health (FMOH- Federal MOH)
MOI- Major Obstetric Interventions
MON- Met Obstetric Needs
MPS- Making Pregnancy Safer
OL- Obstructed Labor
RR- Reference Ratio
TFR-Total Fertility Rate
UON- Unmet Obstetric Need
UONN- Unmet Obstetric Need Network
WHO- World Health Organization

Chapter one

1. INTRODUCTION

1.1 Background

The health of mothers and children is central to global and national concerns, and improvements in maternal and child survival are two important Millennium Development Goals. The fifth Millennium Development Goal (MDG) set for 2015 aims to improve maternal health through a reduction of the maternal mortality ratio (MMR) by three quarters. [1]

According to World Health Statistics 2009 released by the World Health Organization (WHO): every year some 536 000 women die of complications during pregnancy or childbirth globally; 99% of them being in developing countries, where 85% of the population lives. The global maternal mortality ratio of 400 maternal deaths per 100 000 live births in 2005 has barely changed since 1990. More than 50% of all maternal deaths were in only six countries in 2008 (India, Nigeria, Pakistan, Afghanistan, Ethiopia, and the Democratic Republic of the Congo). Each year in Africa 30 million women become pregnant, and about 250,000 of them die from pregnancy-related causes, while nearly half die around the time of childbirth and during the first week after birth, mainly of causes directly related to childbirth. [2]

In Ethiopia, the maternal mortality ratio is high with estimates 676 maternal deaths per 100,000 live births, the TFR is estimated to be 4.8 and CPR is 32%. The proportion of women attending ANC is 34% with wide variation in Rural (26%) and Urban (74%) respectively. Trained worker assists only 25% of the deliveries home births are almost twice as common in rural areas (95%) as in urban areas (50 %.). [4]

Women die from a wide range of complications in pregnancy, childbirth or the postpartum period. Most of these complications develop because of their pregnant status and some because pregnancy aggravated an existing disease. The five major global causes of maternal death are: severe bleeding (mostly bleeding postpartum), infections (also mostly soon after delivery), unsafe induced abortion, hypertensive disorders in pregnancy (eclampsia) and obstructed labour. Globally, about 80% of maternal deaths are due to these causes. Hemorrhage alone accounts for one third of all maternal deaths in Africa, yet many of these

deaths are preventable. Among the indirect causes (20%) of maternal death are diseases that complicate pregnancy or are aggravated by pregnancy, such as malaria, anaemia and heart disease. [2, 3]

Most maternal deaths are avoidable if women have access to emergency obstetric care (EmOC). About 15 percent of all pregnant women have childbirth complications that require emergency obstetric care (EmOC), yet few are able to access such services.[5] Developing countries should therefore not expect maternal mortality to decline significantly without functioning and accessible EmOC. This calls for the need to provide information to decision makers on why women are dying, where and what can be done to improve equitable access to services that are critical to the survival of women. [6] The Unmet Obstetric Need (UON) concept takes this idea further by including all major obstetric interventions and then stratifying them according to indications.

1.2 Statement of the problem

Most pregnancies and births are uneventful with good maternal and perinatal outcome, however, approximately 15% of all pregnant women develop a potentially life-threatening complication that calls for skilled care and some will require a major obstetrical intervention to survive. Evidence-based interventions during labor and delivery can make the difference between life and death for women and their infants. [7]

One way of reducing maternal mortality is by improving the availability, accessibility, quality and use of services for the treatment of complications that arise during pregnancy and childbirth. These services are collectively known as Emergency Obstetric Care (EmOC).
Emergency obstetric care (EmOC) is the term used to describe the elements of obstetric care needed for the management of normal and complicated pregnancy, delivery and the postpartum period. [8, 9]

The obstetric need is expressed in terms of health problems, which necessitate an intervention, by the health care system. The concept of need integrates the epidemiological and mathematical value. The sum of incidence of pathologies (obstetric emergencies and complications) is taken as an indicator of obstetric need. Among indications for intervention some are more essential to the survival of the mother (and the child) than others. These are called "absolute maternal indications (AMI)"; and it is on this basis that the indicator of obstetric need is constructed. It is necessary, if the indicator is confined to major obstetric interventions for absolute maternal indications (MOI/AMI), to select these in such a way as to leave least room for discussion and in a way that is most relevant to the planning of the minimum interventions required. [6, 10]

The absolute maternal indications [AMI] severe ante partum hemorrhage due to placenta praevia or abruptio placenta; abnormal presentation (transverse lie or shoulder presentation, face with persistent mentoposterior position or brow presentation); major feto-pelvic disproportion (e.g. mechanical cephalo-pelvic disproportion, small pelvis including pre-rupture and rupture of uterus); and uncontrollable postpartum hemorrhage. [8]

The major obstetric interventions [MOI] for absolute maternal indications comprise Caesareans, laparatomies, hysterectomies, internal versions, craniotomies or embryotomies and symphysiotomy which may be carried out to avoid a caesarean in a case of cephalo-pelvic disproportion. [8]

Unmet obstetric need [UON] is an estimate of the number of women needing a major obstetric intervention for life-threatening complications who did not have access to appropriate care. The concept of unmet obstetric need is the difference between the number of women who need obstetric surgery and the number of women who are in fact covered by health services.This indicator is particularly appropriate for identifying geographical or social inequity in access to hospital care. [9]

The measurement of unmet need for major obstetric interventions makes it possible to provide data on the situation of obstetric services in a particular geographical area. These measurements can be used for the planning and follow-up of the development of health services and provide a very concrete starting-point for dialogues on health policy and strategies at local, regional or national level. From an operational point of view, unmet need for major obstetric interventions are expressed in terms of the number of women who should have had a surgical intervention; and it is thus possible to estimate the need for interventions in obstetric emergencies without the need to carry out extensive and costly studies in the population. This is influenced by the institutional delivery rate which should be taken into account while quantifying the deficit. Estimates made in this way are useful in comparing the availability of obstetric techniques in different geographical areas, identifying regions where the needs are greatest, and thus defining more effectively the expenditure required to ensure the development of services. Those responsible for health planning can also use unmet need for major obstetric interventions to follow up the improvement of health development and its impact on maternal mortality.[10]

Studies done in Ethiopia have addressed the barriers to Obstetric service utilization, preference of place of delivery, quality of family planning services; post abortion care, ANC attendance etc… These have provided indirect information on obstetric services and the level of utilization.[11] There is limited study on direct way of informing policy on the deficits of Obstetric needs through MOI for AMI.

One main focus for making pregnancy safer in Ethiopia is proper provision of EmOC through both development of infrastructure and ensuring optimum functionality. This study therefore attempts to identify deficits in MOI for AMI in comparison to the existing need (Do those who need EmOC services actually receive them?). The information will also highlight where exactly to focus in planning interventions. Strategies to reduce Maternal Mortality in the country require such kind information for decision-making.

CHAPTER TWO

   2. LITERATURE REVIEW

 2.1 ESSENTIAL OBSTETRIC SERVICES

 Essential Obstetric Care (EOC) is the key strategy to obtain rapid improvements in safe motherhood. Essential Obstetric Care encompasses a wide range of interventions. These include a set of major surgical and technical interventions that may be required to treat a number of conditions that directly threaten the life of the mother during labour.   [1, 9]

The two components of Essential Obstetric Care (EOC) are the Basic Emergency Obstetric Care (BEOC) that is (performance of life saving obstetric functions including parental antibiotics, oxytocic drugs, sedatives for eclampsia, manual removal of retained products and basic neonatal life support) and the Comprehensive Essential Obstetric Care (CEOC) all those in BEOC plus obstetric surgery, anesthesia and blood transfusion. [8]

The World Health Organization(WHO), United Nations Children's Fund(UNICEF) and the UN Population Fund (UNFPA) recommended the minimum acceptable level of EmOC services: For every 500,000 population, there should be at least four basic and one comprehensive EmOC facilities; Minimum level for amount of EmOC services is also met in sub-national areas; At least 15% of all births in the population take place in EmOC facilities;100% of women estimated to have obstetric complications are treated in EmOC facilities; As a proportion of all births in the population, Cesarean sections account for not less than 5% nor more than 15%;The case fatality rate among women with obstetric complications in EmOC facilities Is less than 1%.[5,8]

A retrospective study at the Gamo Gofa Zone, south-west Ethiopia in the period between July 2009 and June 2010 shows: there were three basic and two comprehensive emergency obstetric care qualifying facilities for the 1,740,885 people living in Gamo Gofa. Based on a population of 1.7 million people, there should be 14 basic and four comprehensive emergency obstetric care (EmOC) facilities in the Zone. Our study found that only three basic and two comprehensive EmOC service qualifying facilities serve this large population which is below the

UN's minimum recommendation. The utilization of the existing facilities for delivery was also low, which is clearly inadequate to reduce maternal deaths to the MDG target. [13]

In addition to the availability of services; the functionality and utilization are important aspects of the strategy. Assessment of utilization of essential obstetric services (EOS) in north Shoa and Gondar has indicated that institutional delivery is very low in the region. Different reasons were identified regarding underutilization of obstetric services. The studies indicate that most women deliver at home. In urban areas there exists a different scenario. In the capital Addis Ababa the institutional delivery rate is 78.5%, which is much higher, compared to the regions. Obstetric services are provided by both private and public hospitals and clinics. The functionality of the existing infrastructure in terms of the requirement has not been studied. [14]

2.2 THE UON

The Unmet Obstetric Needs (UON) for emergency obstetric services have been evaluated and identified in different countries. A group in the Antwerp University, Belgium first developed it. The method was implemented in countries with high ratios of maternal mortality. It was then adopted by WHO as one of the process indicators of obstetric services. There is an Unmet Obstetric Need Network (UONN) working with different partner organizations and countries highly affected by maternal mortality. [15]

The concept of unmet obstetric need (UON) refers to the discrepancy between what the health care system should do to deal with the obstetric problems in a given population and the care it actually delivers. Operationally, UON is expressed in terms of women who should have benefited from an obstetric intervention, but for whom this intervention did not take place. [16]

It is possible to consider only those interventions that are performed for absolute maternal indications (AMI) such as severe ante-partum hemorrhage requiring surgical intervention; foeto-pelvic disproportion, including pre-rupture and uterine rupture; shoulder or transverse lie and brow presentation. It is then possible to make low end estimates of the frequency of such indications for major obstetric interventions (i.e. the amount of need that must be covered).

This can be done either by reviewing the indications of MOI in areas without problem of access; or by extrapolating from few populations based studies with data on indications for MOI. If a suitable and realistic rate chosen as a reference, it becomes possible to estimate UON by comparing observed MOI and AMI, without resorting to major investments in survey operations. Low- end estimate of these ranges between 1% and 2% of expected deliveries. The discrepancies between observed and expected rates of MOI/AMI can be used not only as a direct indicator of maternal mortality, but also as one indicator of failures of health care system to provide adequate delivery care. [8, 9, 15]

A facility based study at Addis Ababa, Ethiopia shows total of 666 MOI were conducted and Caesarean section took the largest share 531(80.5%). The C/S rate per 100 births was 5.3%. The number of women with AMI was 367 where majority had Obstructed Labour 145(39.5%) The number of MOI done without AMI was 354 where majority were done for previous C/S 143 (40.4%) and fetal distress 127(35.9%).Nearly 946 births which needed major obstetric intervention in Addis Ababa during the period of data collection (July17-September 17, 2006) did not receive it. In other words **the deficit of MOI/AMI per 100 births is 9.46**.Nearly 9 out of 100 births which needed major obstetric intervention in Addis Ababa during the period of data collection did not receive it. In other words the deficit of MOI/AMI per 100 births is 9.46%. [17]

According to retrospective study done in Tanga Region, Tanzania from 2000-2002 shows 1,260 complicated deliveries were analysed. The percentage of major obstetric interventions carried out in response to an absolute maternal indication was only 71%; most major obstetric interventions (97%) were caesarean sections. The most frequent indication was cephalo-pelvic-disproportion (51%). The proportion of major obstetric interventions for absolute maternal indications performed amongst women living in urban areas was 1.8% of all deliveries, while in rural areas it was only 0.7%. The high proportion (8.3%) of negative maternal outcomes in terms of morbidity and mortality, as well as the high perinatal mortality of 9.1% (still birth 6.9%, dying within 24 hours 1.7%, dying after 24 hours 0.5%) raise concern about the quality of care being provided.[18]

According to retrospective facility based crossectional study in Malindi District, Kenya shows Unmet needs indicate that 22 (11%) women in 2008 and 11 (6%) in 2009 who required a life saving intervention failed to get it. It means that these women died. The UON deficits compared to a benchmark of 1.4% were more in the rural (0.8%) than urban areas (2.1%). The inequities in coverage of EmOC services and unmet needs indicate that women in rural areas face higher risks of dying from obstetric complications. This may point to conditions contributing to lack of improvements in maternal survival in Kenya. The findings provide evidence for raising awareness and initiating dialogue with decision makers on the need to mobilise resources to improve coverage in obstetric care in underserved areas. [19]

Measuring the rates of MOI for AMI is theoretically simple, and limiting calculations to a group of indications for which an incidence can be estimated makes it easy to calculate deficits. In practice, however, there can be several difficulties. It is not always easy to obtain reliable figures on the expected births per area. It may be even more difficult to obtain reliable numerator, i.e. A complete inventory of MOI performed for AMI. The common type of bias in this type of study is information bias. There is variation in diagnosis from one to other facility. The AMI should therefore be specified and one should also limit the range of MOI. The major sources of information for such studies are delivery books and operation theatre records.

3.3 Significance of the Study
This proposal aims providing information on the assessment of Unmet Obstetric Needs in Emergency Obstetric Services that plays a vital role in reducing maternal morbidity and mortality. Even though there are few studies carried out on Emergency Obstetric care in Ethiopia, there has not been a single study in this study area. Therefore, at the end of this study, precise & reliable data on gaps and deficits in MOI for AMI in comparison to the existing need and inventory of Tercha hospital which can be helpful for governmental, nongovernmental, the hospital administrators and professionals for future planning of appropriate strategies and also be used by program implementers as an input towards improving quality of obstetric care and with their ultimate goal of reducing maternal mortality. Furthermore, the findings can also be used for researchers on further study.

3.4Conceptual frame work

The Concept of unmet obstetric need is an estimate of the number of women needing a major obstetric intervention for life-threatening complications who did not have access to appropriate care.

| Unmet Need for obstetric care | = | Number of Problems Expected in a population and a specific period | Number of Problems adequately dealt with in specified population and period | − |

Indicators

| Deficit in Major Obstetric interventions for Absolute Maternal Indications | = | Major Obstetric Interventions for Absolute Maternal Indications to be performed | − | Major Obstetric Interventions for Absolute Maternal Indications actually performed |
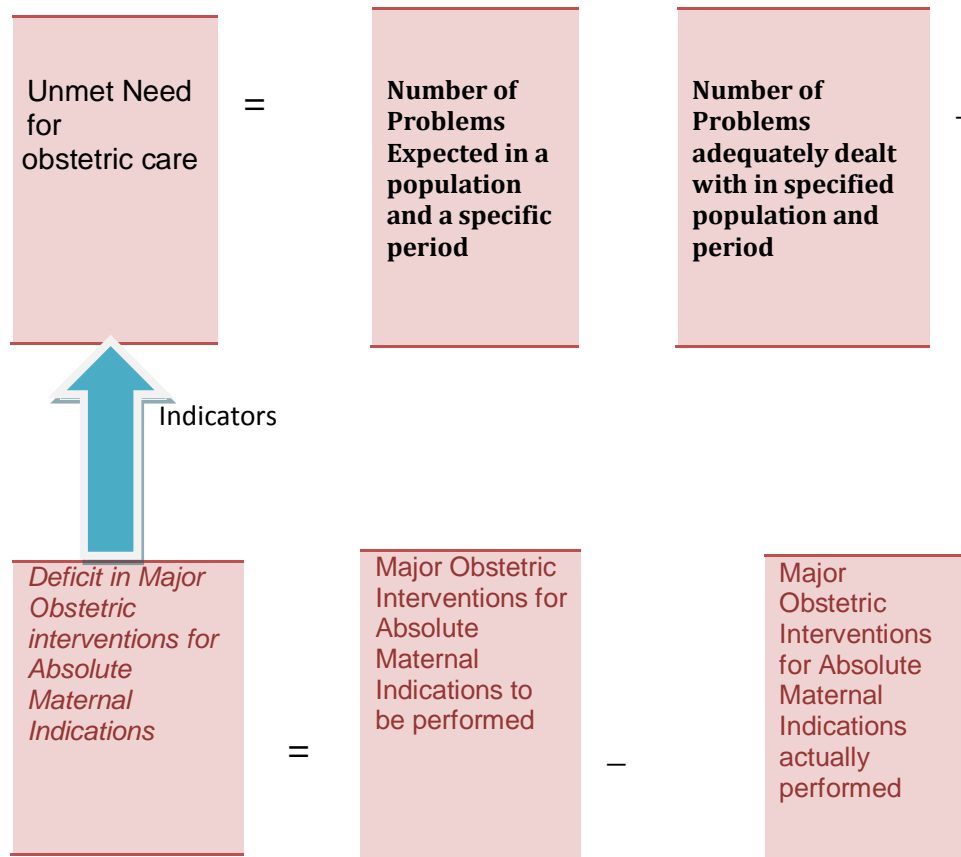
Fig.1Diagram of conceptual framework of unmet obstetric need

CHAPTER THREE: OBJECTIVE

3.1 General objective

-To assess unmet obstetric needs (UON) in Emergency Obstetric services in Tarcha General Hospital from January, 2012-January, 2014

3.2Specific objectives

-To measure unmet obstetric needs (UON) among women attending Tarcha hospital for

delivery

-To measure the differences in provision of MOI for AMI and non AMI in Tarcha hospital for

delivery

 -To assess maternal and perinatal outcome in relation to a MOI in the Tarcha General Hospital

CHAPTER FOUR: METHODS AND MATEREIALS

4.1 The Study area

The Tarcha General Hospital is located south west of Addis Ababa 489km along the Jimma road, 498km along the wolayta road and 282km far from Hawasa which is capital city of SNNPRS in the Southern region of Ethiopia. The zonal climate is temperature ranges from15.1-27.5oc, annual rain fall 120-1800ml and 500m -2820m above sea level. The service has been operative since 1995E.C. The service is owned by MOH. Dawro Zone has total population 573,077 & 4436km2 area i.e. 129 inhabitants per square kilometer. The aim of the Hospital is to support those living in rural areas having poor access to health care services. The total number of population in the catchment area is 850,000. Out of this the number of women in the reproductive age group (15-45year) is 131808 and the expected number of deliveries per year is 20,289. There are 18 Health Centers, 175 health posts, 7 private clinics, and 6 rural drug venders from 5 woredas and tarcha town using the Hospital as referral center. The nearest Hospitals are jimma university specialized Hospital in jimma, 145km away, and wolayta referal Hospital, 117km away, Arba minch referral hospital , 236km away , Hawasa referral hospital, 282km away.

The Hospital has 86 beds. In addition, 1 Labor Beds and 2 Delivery Beds that are often used as overflow beds. Normal deliveries return home within 24 hours or stay in the Postnatal Room when necessary. The obstetric/gynecology post operative cases go to the obs/gyn. Ward. Maternity and Gynecological services are the main surgical procedures done. Elective and emergency surgical services are performed. There are, 1 obstetrician/gynecologist, 1 surgeon, 1ophthalmologiest, 5 GPs, 3 Health officer, 3 pharmacists, 5 druggists, 55 nurses, 4 laboratory technologiest, 5 lab techncians, 10 midwifery, 3 anesthetist, 3 emergency anesthesia trainers, 2 radiographer & 54 administrative staffs.

The Hospital provides Medical treatment, ophthalmic treatment, Phsycatric treatment, major and minor operation, inpatient services, MCH, control of HIV, laboratory, X-ray and ultrasound, drug and pharmacy, training services and physiotherapy.(HMIS department of the hospital)

4.2 Study period

The Study was conducted from January, 2014 to April, 2014 on cases managed between 01/01/2012-01/01/2014.

4.3 Study design

Hospital based cross-sectional retrospective study design was conducted on assessment of unmet obstetric needs (UON) in Emergency Obstetric services in Tarcha General Hospital.

4.4 Population

4.4.1 Source population

All mother charts delivered at Tercha General Hospital from 01/01/ 2012-01/01/2014.

4.4.2 Study population

All mother charts that have AMI and all mother charts who have received MOI in Tercha general Hospital from 01/01/ 2012-01/01/2014

4.5 Inclusion& Exclusion criteria

Inclusion:

- ➢ All MOI including CS, hysterectomy, lap. for repair of uterine rupture, destructive delivery
- ➢ All AMI and non-AMI
- ➢ Maternal and perinatal outcomes following MOIs

Exclusion:

- ➢ Mothers with vacuum and forceps delivery
- ➢ MOIs which lack full information

4.6Study Variables

Independent variables- Age, residence, parity, marital status, Address, Distance from hospital, Antenatal follow up, associated obstetric problem, maternal complication,possiblecauseofdeath

Dependent variables-

1. Any mother with AMI who received MOI
2. Maternal and perinatal out come in relation to MOI

4.7Data collection and measurement

The information was gathered from hospital records. These were theatre registries, delivery books/ obstetric records and other relevant documents, by check list questionnaires using trained data collectors.

4.7Data Collection Procedure and pre-test

The data of the study were collected using UON-questionnaire from hospital records

Pre- test

Before the actual data collection, the questionnaire was tested on 5% of the total study population which was before study period of this study. Then possible modification was made on the checklists using the findings of the pre-test.

4.8 Data processing and analysis

The collected data was checked for its completeness, entered and exported to SPSS 16.0 Database program for analysis after edition. Frequency distributions of both dependent and independent variables were worked out and the association between independent and dependent variables was measured and tested using chi square. The analysis for comparability reasons partly follows the scheme given by the UON-network. The UON-network aims at putting light at the rural/urban d/c of the interventions and their respective indication. Therefore most of the tables list the distribution according to place of living: urban (</=10km), rural (>10km).The missing data for the distance b/n mother's home village and the hospital was completed with help of detailed maps.

4.9 Ethical considerations

Letter of ethical clearance was obtained from Research Ethical Committee of Jimma University, Verbal consent from hospital administrators. Records were returned back to record office after the data collection.

4.10 Data quality assurance

To keep the quality of data detail trainings was given to data collectors, day to day activities during data collection; supervised and evaluated errors was corrected by the investigator before the following day activity. Detail trainings were given for data collectors. Good quality health professionals were involved in data collection.

4.11 Data Dissemination

The result of the study will be submitted to the collage of public health and medical science of Jimma University, Tercha General Hospital and other responsible bodies. The result will be presented during thesis defense in the collage of public health and in different seminars, meeting, conferences and workshops. Moreover, efforts will be done to publish the findings of the study and disseminated through different journals and scientific publications.

4.12 OPERATIONAL DEFINITIONS

1. **Abruptio Placenta**: Premature detachment of the placenta that results in blood clot behind the placenta.

2. **Absolute Maternal Indications**: Indications arising from pregnant mothers that necessitate major obstetric interventions to salvage the mothers lives.

3. **Comprehensive obstetric care**: emergency obstetric care plus performance of surgery (C-section…) and performance of blood transfusion.

4. **Destructive Delivery**: A method of delivery done on a dead fetus. When the approach is through the skull it is called *Craniotomy*, and when the approach is through the viscera it is called *Embryotomy*.

5. **Eclampsia**: Loss of consciousness and convulsion in an otherwise healthy pregnant woman with elevated blood pressure, body swelling and protein in urine.

6. **Ectopic pregnancy**: Conception outside the uterus.

7. **Emergency basic obstetric care (EmOC)**: comprises of services like administration of parentral antibiotics, parentral oxytocic drugs, parentral anticonvulsants for pregnancy induced hypertension, removal of retained products, performance of manual removal of placenta, assisted vaginal delivery.

8. **Essential obstetric services**: clean and safe delivery with clean umbilical cord care.

9. **Parity**: number of deliveries a woman underwent.

10. **Placenta Praevia**: A placenta implanted near the outlet of the uterus, so that at the time of delivery the placenta precedes the baby.

11. **Preeclampsia**: A condition in pregnancy characterized by abrupt hypertension, large amounts of the Protein in the urine and swelling of the hands, feet, and face.

12. **Symphysiotomy**: A procedure done to avoid C-section during an obstructed labour by widening the pelvic diameter through dissection of the symphysis pubis.

V. Results

During the two years study period, a total302 major obstetric interventions (MOIs) conducted out of 1284 deliveries. The documentation was found to be almost complete when compared with the data recorded in the hospital theatre books and delivery registration books.

5.1 Demographic Pattern

Table 1 shows the socio-demographic profile of mothers attended the hospital during the past two years. Age distribution ranged from 15 to 40years with mean age 25.7 ±6.05. Larger proportion of mothers who attended the hospital for delivery were under the age category of 21-35 years 203 (67.2%) followed by =<20 years 79(26.2%). Based on the address from patients charts, the distance from living area to the Hospital in KM was analyzed and 214(70.9%) cases more than 10KM far from the Hospital and 88(29.1%) cases within 10KM of radius from Hospital .The ethnicity of majority of cases were Dawro 222(73.5%) followed by wolyta31 (10.3%), Amhara 18(6.0%), Oromo 14(4.6%), konta 11(3.6%) and other 6(2.0%).293(97%) married and 9(3%) unmarried.

Table-1: Socio-demographic characteristic of mother with MOI in TGH from April 1,2012-April 30,2014GC.

Maternal age in years	Frequencies	%
=<20	79	26,2
21-35	203	67.2
>35	20	6.6
Distance from hospital in KM		
>10 KM	214	70.9
<10 KM	88	29.1
Marital Status		
Married	293	97
Single	9	3
Place of Delivery		
Tarcha hospital	295	97.7
home	4	1.3
Other institution	3	1

5.2 Obstetrics profile

Among 302 patient with MOI majority of mother were between Para I-IV 118(39.1%) followed by primipara 97(32.1%) and 87(28.8%) above Para IV. Among participants of this study 200(62.2%) of the mothers have history of ANC follow up at least once, 94(31.1%) of patient hadn't ANC follow up and 8(2.6%) unknown. Many of the women 295(97.7%) delivered in this institution, while 7(2.7%) delivered at home. Among the mothers who had specific illness and risk at the present pregnancy 156(55.3%), majority had anemia 95 (60.8%) followed by malaria 24(15.4%), HIV7 (4.5%) Preeclampsia9 (5.7%) and multiple pregnancy 7(4.5%) as shown on table 2 below.

variables	Frequency	Percent
parity		
primi	115	39.1
para2-4	125	41.4
para >=4	59	19.5
ANC follow up		
YES	200	66.2
NO	94	31.1
Missing	8	2.6
Present OB.Hx		
Anemia	95	60.8
PROM	24	15.4
malaria	13	8.3
preeclampsia	9	5.7
HIV	7	4.5
Multiple gestation	7	4.5
Total	156	51.7

Table 2- Obstetrics profile of MOIs in TGH from April 2012-April 2014GC

5.3 Distribution of Major Obstetric Intervention's inTarcha General Hospital

The presented analysis for comparability reasons partly follows the scheme given by the UON-network. The UON-network aims at putting light at the rural/urban difference of the interventions and their respective indication. Therefore most of the tables list the distribution according to place of living: urban (</=10km), rural (>10km).

Table 3: Distribution of Major Obstetric Intervention according to place, the mother was living

MOI		Urban Area </=10km		Rural Area >10km		Total		Chi-square	p-value
		N	%	N	%	N	%		
CS	Yes	81	92	164	76.6	245	81.1	9.671	0.002
	No	7	8	50	23.4	57	18.9		
Lap. For repair of Uterus	Yes	3	3.4	22	10.3	25	8.3	3.878	0.049
	No	85	96.6	192	89.7	277	91.7		
Hysterectomy	Yes	2	2.3	18	8.4	20	6.6	3.800	0.051
	No	86	97.7	196	91.6	282	93.4		
Destructive Operation	Yes	2	2.3	10	4.7	12	4.0	0.941	0.332
	No	86	97.7	204	95.3	290	96		

The predominant MOI was a CS 245(81%) followed by laparotomy for repair of uterus 25(8.3%). Hysterectomy counted for20 (6.6%) of all MOIs and a destructive delivery was performed in 12(4%) of the cases. *Caesarean sections* were performed more often in urban areas81 (92%) and in rural areas164 (76.6%). These differences were statistically significant (p <0.002). The crude CS-rate, regardless of indication was 0.6% per expected birth in the whole of Dawro Zone during the study period.

There were also differences in the percentage of *laparotomies for repair of ruptured uterus* and *hysterectomies* done in urban and rural areas. In urban areas the proportion of laparotomy for repair of uterus was 3.4% and for hysterectomy 2.3% whereas in rural areas laparotomy for repair of uterus accounted for 10.3% of all interventions and hysterectomy for 8.4%. The urban/rural differences were statistically significant for laparotomy for repair of uterus (p=0.049) and for hysterectomy (p=0.051).
A total of 20 hysterectomies were reported during the study period. In 15 cases (75%) a ruptured uterus was the reason for the hysterectomy and 5 cases (25%)the intervention was performed because of hemorrhages (three a placenta accreta and two PPH).

There was 12(4%) destructive Operation performed during study period for indication of obstructed labor with died fetus, 2(2.3%) cases for who come from urban areas and 10cases (4.7%) for rural areas but the urban/rural differences was not statistically significant.

5.4Distribution of Indications for Major Obstetric Interventions

The number of women with AMI was 238 where majority cephalo-pelvic disproportion (CPD) 91(38.2%) followed by malpresentation 69 (29%), uterine rupture 40(16.8%) and major placenta previa 22(9.2%) and failed induction 12(5%). The number of MOI done without AMI was 64(21.2%) where majority were done for foetal distress 42(65.6% and previous c/s scar 11(17.2%).

Table 4: Distribution of indications in urban and rural area

Absolute Maternal Indications (AMIs)		Urban Area </=10km		Rural Area >10km		Total		Chi-squared	p-value
		N	%	N	%	N	%		
CPD	Yes	16	18.2	75	35	91	30.1	8.425	0.004
	No	72	72.8	139	65	211	69.9		
Malpresentation	Yes	21	23.9	48	22.4	69	22.8	0.073	0.787
	No	67	76.1	166	77.6	233	77.2		
Uterine rupture	Yes	4	4.5	36	16.8	40	13.2	8.179	0.004
	No	84	95.5	178	83.2	262	86.8		
APH	Yes	5	5.7	17	7.9	22	7.3	0.472	0.0.492
	No	83	94.3	197	92.1	280	92.7		
2 or more CS	Yes	8	9.1	3	1.4	11	3.6	10.504	0.001
	No	80	90.9	211	98.6	291	96.4		
PPH	Yes	1	1.1	4	1.9	5	1.7	0.206	0.650
	No	87	98.9	210	98.1	297	98.3		
Non-Absolute Maternal Indications (Non-AMIs)									
Fetal distress	Ye s	23	26.1	19	8.9	42	13.9	15.512	0.000
	No	65	73.9	195	75	260	86.1		
Failed induction	Yes	6	6.8	6	2.8	12	4	2.634	0.105
	No	82	93.2	208	97.2	290	96		
Other	Yes	4	4.5	6	2.8	10	3.3	0.591	0.442
	No	84	95.5	208	97.2	292	96.7		

The predominant Absolute Maternal Indication was CPD91 (38.2%).There were differences could be observed in the distribution of CPD when analyzed by urban16cases (18.2%) and rural75cases (35%). The difference was statistically significant ($\chi2$=8.425, p=0.0004).

The indication rupture of uterus was 3.73 times more common for mothers from rural areas. The difference was statistically significant ($\chi2$=8.179, p=0.005). For two or more previous CS the opposite was found. This indication was 2.6 times more often listed when the mother came from urban areas. Also, malpresentation was mentioned slightly more often for urban mothers, but the difference was not significant.

Uterus rupture was the main indication in 40cases (13.2%) of all MOIs. There was a major difference between the urban and rural group of women. This indication was reported in only 4.5% of the total MOIs for urban mothers compared to 16.8% for rural mothers. The difference was statistically significant (p=0.005). Very few MOIs only 5cases (1.7%) were done because of ***postpartum hemorrhage (PPH)***.

Ante partum hemorrhage (APH) was the indication for 22cases(7.3%) of all MOIs. The distribution of MOIs for ***APH*** among the urban 5cases (5.7%) and rural17 (7.9%) but the difference was not statistically significant .

The number of MOI done without AMI was 64cases (21.2%) where majority were done for ***Fetal distress*** *42cases (13.9%) of all indications and 65.6% non-AMIs. This indication was* significantly higher among urban mothers 26.1% and rural mothers 8.9%and difference was statistically significant (p=0.000). Also, failed induction was mentioned slightly more often for urban mothers, but the difference was not significant.
Others were mentioned as Non-AMI (3.3% of all interventions).there was no significant difference between urban and rural. The most often given reason were the Hypertensive disorders 2cases, breech presentation 4cases, cord prolaps2cases and bad obstetric history 2cases.

5.5 Perinatal outcome

Out of the 302 reported deliveries resulting in a MOI regardless of the indication, 224(74.2%) babies were born and discharged alive , 59(19.5%) of the babies were still born. A further 19(6.3%) were born alive but died within 24 hours of delivery. The overall perinatal mortality in the group of mothers having undergone a MOI during the study period was 258 per 1000 live births.

Important differences could be found in the rate of stillborn babies in relation to the intervention the mother had undergone. A laparotomy for a ruptured uterus was the most fatal maternal complication. In 96% of the patients, where the mother underwent a laparotomy for a ruptured uterus, the child died. A similarly high death rate was found for hysterectomy (75%). In contrast to this, the perinatal mortality for CS was only 11% and only 3.3% of babies were born dead when the mother had undergone a CS for different reasons. However, rural/urban differences could be obtained for child survival. 12children died during/after the 88 intervention where the mother came from an urban areas (13.6%) but 66 out 214 (30.8%) for rural areas.

Perinatal outcome **Perinatal outcome**		COR(95%CI)	p-value	AOR of 95% CI	p-value
Alive (per100)	Dead (per 100)				
Maternal Age					
71(89.9)	8(10.1)	.113(.036,.353)**	0.000	.444(.087,2.267)	0.329
143(70.4)	60(29.6)	.420(.166,1.066)*	0.066	.890(.314,2.524)	0.826
10(50)	10(50)	1		1	
Distance from hospital in km					
148(69.2)	66(30.8)	2.824(1.439,5.544)**	0.003	2.066(1.002,4.260)*	0.049
76(86.4)	12(13.6)	1		1	
Parity					
86(88.7)	11(11.3)	.137(.064,.292)**	0.000	.285(.087,.933)*	0.039
93(78.8)	25(21.2)	.288(.157,.530) **	0.000	.403(.207,.794)**	0.009
45(51.7)	42(48.3)	1		1	
ANC follow up					
162(81)	38(19)	.378(.219,.652) **	0.000	.444(.243,.803)**	0.007
58(61.7)	36(38.3)	1		1	

Table 5: Binary logistic analyses for selected variables and fetal outcome of MOIs at TGH from April1, 2012 to April 30, 2014 (n=302)

5.6Maternal outcome

Regarding the maternal outcome of the 302 reported MOI 238 (74.2%) survived the intervention with no adverse effects,67 (22.2%) women developed a complication such as hemorrhage29, sepsis20, wound site infection12, anesthetic complication6, severe, post operative malaria 7,obstetric fistula3 whereas 8(2.6%) women died .Three woman was referred, but it was not possible to follow up the outcome.

The case fatality rate in relation to a MOI was 2.65%.The causes incriminated were sepsis 5(62.5%) and haemorrhage3 (37.5%). There was differences distribution of maternal deaths after a MOI in relation to the indication and rural/urban. 2.3% (7 out of 302) of mother from rural areas died after a MOI but only 0.3% (1 out of 302) of mothers from urban areas.

A hysterectomy for a ruptured uterus had the highest case fatality rate for the mother4cases out 8 followed by laparotomy for a ruptured uterus 3cases out of 8.only 1 cases died after CS for APH.

	Maternal Outcomes		COR of 95% CI	P value	AOR of 95% CI	P value
	Recovered (per100)	Complicated (per100)				
Maternal Age						
<=20	64(81)	15(19)	.234(0.083,.664)**	0.006	.244(.053.1.120*	0.070
21-35	150(73.9)	53(26.1)	.353(.139,.896)*	0.028	.541(.185,1.579)	0.261
>35	10(50)	10(50)	1		1	
Distance from hospital in km						
>10km	144(67.3)	70(32.7)	4.861(2.226,10.614)**	0.000	3.501(1.548,7.914)**	0.003
<10km	80(90.9)	8(9.1)	1		1	
parity						
Primi(para 1)	76(78.4)	21(21.6)	.411(.215,.783)*	0.007	1.167(.397.3.430)	0.779
Multipara(p2-4)	96(81.4)	22(18.6)	.340(.181,.640)**	0.001	.586(.282,1.217)	0.152
Grand mp(>= p5)	52(59.8)	35(40.2)	1		1	
ANC follow up						
Attended	166(83)	34(17)	.277(.159,.480)**	0.000	.323(.181,.577)**	0.000

Table 6: Binary logistic analyses for selected variables and maternal outcome of MOIs at TGH from April1, 2012 to April 30, 2014   (n=302

Binary logistic analysis was done to show the association between perinatal and maternal outcome and other independent variables. The above table 4 shows that Distance from hospital have significant statistical association with perinatal outcome at CI 95% (p >0.046). Also, ANC follow up have significant statistical association with perinatal outcome (p=0.008). Mothers whose have ANC follow up have 22.3% less likely chance to have fetal loss when compared with mothers no history of ANC follow up.

When the association between the maternal outcome and independent variables assessed, the results revealed that there was significant statistical association between maternal outcome and distance from hospital [p-value=0.002]. The mother who come from urban (<10km from hospital) have 27.2% less likely chance to develop complications than when compared with mother who come from rural area (>10km from hospital). (COR0.272, 95%CI 0.121-0.609). There was also highly significant statistical association in maternal outcome and ANC follow up [p-value=0.000] Mothers who have not attended ANC follow up have 3times chance to develop complications than mothers who attended ANC follow up. (COR 3.064, 95%CI1.720-5.458).

5.8 The Unmet Obstetric Need-indicator

To calculate the unmet obstetric need all MOIs done for AMIs were taken in consideration. A total of 238 MOIs for AMI were carried out during the study period.

QUANTIFICATION OF UON

The indicator of unmet need for major obstetric interventions for a given population in a

Given period is calculated as follows:

Unmet obstetric need = (BE x RR) – (number of MOI/AMI),

BE = number of births expected in the period under study,

RR = reference ratio of MOI for AMI, and

Number of MOI/AMI = number of major obstetric interventions for

Absolute maternal indications carried out in the same population

during the same period

EB =40114 (Expected birth; this is taken from the estimate for Dawro zone obtained from health indicator of Ethiopia 2011EC to be 20057 for two years assuming no seasonality it will be 40114),rural EB=34098,urban EB=6016

The RR (reference ratio) is estimated to be 1.4% (95%CI, 1.27–1.52) (benchmark the median for five sub-Saharan African countries, Haiti, Morocco and Pakistan (http://www.uonn.org/uonn/pdf/engintc00.pdf).)

MOI/AMI= 238 (Major Obstetric Intervention actually performed for Absolute Maternal Indication in the same population in the same period).

The UON is therefore 40114*1.4% -238 =323cases or 57.6% relative Need %

For urban 6016*1.4%-55=29cases or 34.5% relative Need %

For rural 34098*1.4%-183=294cases or 61.6% relative Need %

Nearly 323births which needed major obstetric intervention in study area during the period of data collection (April2012-April, 2014) did not receive it

This analysis follows the schema proposed by the UON-network that tries to consider rural/urban differences in the study areas. The table 5 shows substantial differences in the reached number of MOIs per AMIs between urban(.9%) and rural areas(0.5%) but in overall no urban or rural areas achieved a minimum requirement of 2% expected MOIs for AMIs as a cut-off value.

There is a considerable discrepancy when the expected and actual MOI for AMI are compared to whether the woman comes from an area classified as rural or urban. The low level of MOI for AMI (0.5%) amongst the rural population points to major unmet obstetric need there.

Table 7: Comparison between Actual MOI for AMI in relation to Urban or Rural Residence

	Exp. Birth (EB) 2 years	Estimated Needs for MOIs/AMIs (1.4% of EB)	Met Need (Actual MOIs/ AMIs)	Unmet Need (Deficit in absolute figure)	Actual % MOIs/ AMIs for EB	Unmet Need (Relative Need %)
Urban (<10km)	6016	84	55	29	0.9	34.5
Rural(>10km)	34098	477	183	294	0.5	61.6
Total	40114	561	238	323	0.8	57.6

6. Discussion

This study was carried out to estimate the unmet obstetric need and possible maternal and perinatal outcome of major obstetric interventions in Tarcha General Hospital, south-west Ethiopia.

The analysis showed that the method has the potential for estimating the unmet obstetric need. Even in a resource-poor setting with poor reporting the data necessary to calculate the UON-indicator is available though routine hospital registers. However, as the evolution of the study shows, the major bottle-necks for the use of the data lie in the data analysis and interpretation.

The result shows that there was the major unmet obstetric need in Dawro zone, 297cases (58%) of mother with life threatening obstetric complications(AMIs) was not get intervention and this was interpreted as the number of women who should have benefited from a life saving intervention but actually did not, meaning that they probably died or suffered very severe complications. [6]

The findings show an overall of major obstetric interventions for AMI rate of 0.8% which is below a minimum requirement UN range of 1% up to 2% expected MOIs for AMIs of UON-indictor. This study is similar with other UON studies in sub-Saharan Africa [3, 9].

There is an important gap regarding the availability of services when urban and rural areas are compared. In the group of women living in areas classified as urban, and thus residing within 10 km of the hospital, the 55 MOIs for AMIs represent 0.9% of all deliveries and 183 MOIs for AMIs in rural women represent only 0.5% of all deliveries. The comparable figures for Benin, Burkina Faso, Mali and Niger ranged from 1.4 to 0.8 in urban areas and 0.9 to 0.15 in rural areas [6, 10]

Among the MOI conducted Caesarean section took the largest share (81.5%) of MOIs and 19% of all institution deliveries. *Caesarean sections* were performed more often in urban areas81 (92%) and in rural areas164 (76.6%). These differences were statistically significant (p <0.002). The most common intervention in all the studies published by the UON-network is CS. Between 79.6% of all MOIs (Niger) and 97.8% of all MOIs (Pakistan) are CSs.[6,9,10]. The crude CS-rate, regardless of indication was 0.6% per expected birth in the whole of DAWRO Zone during the study period is below the UN range of 5% to 15%. Using the UN guidelines as reference caesarean sections were far below what is regarded as adequate in order to reduce maternal deaths (. These results agree with earlier research conducted in rural, Ethiopia, as well as in other developing countries [13, 14]. The possible reasons for these findings could be because people live far away from adequately functioning institutions or because of social and cultural restrictions for women to use health institutions during deliveries

The second most often intervention carried out is laparotomy for ruptured uterus 25cases (8.3%) of all MOIs. This intervention accounted for between 0.8% (Pakistan) and 14.8% (Burkina Faso) of all MOIs (UON-network, 2004a).

The commonest AMI in this study was Obstructed Labor accounting for 39.5% which is one of the five commonest causes of maternal death in the world. [8, 9] Nearly half of the MOI were done for non AMI mainly for Previous C/S and foetal distress. The UON study done in Burkina also showed foetal distress to be the commonest non-AMI.[8, 9, 10, 15]

The study in TGH showed a perinatal mortality in relation to a MOI of 258 per 1000 births and a stillbirth-rate of 195 per 1000births and early neonatal death 63 per 1000 births. The main obstetrical risk factors were ruptured uterus, APH, CPD and malpresentations. Stillbirth and early neonatal mortality have also been assessed in other UON-studies. The overall stillbirth rate in relation to a MOI was between 30 per 1000 (in Pakistan) and 240 per 1000 births (in Benin). The early perinatal mortality in relation to a MOI ranged from 30 per 1000 births (in Pakistan) to 410 per 1000 (in Benin) [9, 10, 15]. In this study the rate was 2 times higher for rural than for urban mothers.

The mothers that suffered from complication after delivery accounted for 25.8%% whereby majority of the causes were sepsis and hemorrhage. The case fatality rate was 2.65% which was higher than the upper limit set by the UN i.e. 1%.This is comparable with ratios found in other hospital studies in Tanzania.[16,18]

There was differences distribution of maternal deaths after a MOI in relation to the indication and rural/urban. 2.3% (7 out of 302) of mother from rural areas died after a MOI but only 0.3% (1 out of 302) of mothers from urban areas.In our study higher maternal mortality was found for interventions done for relation to uterine ruptur7out of 8 and only one for APH. This trend has also been described in other UON-studies: uterus rupture is a major reason of hospital deaths in mothers coming from rural areas whereas hemorrhages, APH, PPH are predominant in urban mothers [9, 10, 18]. The major barriers described were as follows: an under-estimation of the severity of the complications, a bad experience with the health-care system, a lack of transportation and prolonged transportation [13, 16]. Moreover, large parts of the population in our study area live in remote mountainous areas, far away from the health institutions.

VII. Conclusion and Recommendations

Conclusion

Based on the 2% threshold, with an overall level of major obstetric interventions for absolute maternal indications of 0.8% and a caesarean section rate of 0.6%and high proportion of negative maternal and perinatal outcomes has significant unmet obstetric need with a considerable rural-urban disparity. The low level of MOI for AMI (0.5%) amongst the rural population points to major unmet obstetric need there. The UON-indicator showed to be useful to monitor access to emergency obstetric care and perinatal and maternal mortality using data available through the routine hospital information system. Therefore estimating the amount of 'unmet need for major obstetric interventions' provide the information necessary for planning and prioritizing the development of services; and lead to action for the reduction of maternal mortality at local level by changing certain attitudes, mobilizing resources and more effectively adapting professional practices to the needs of patients.

Recommendation
For Governmental bodies, NGOs and other responsible bodies:
- If indeed policy and decision makers in countries with high maternal mortality like Ethiopia are committed to the statement that "no woman should die while giving birth", there is need to improve equitable access to life saving interventions for women in underserved areas.
- Similar studies should be conducted at all zones in the country
- To set up primary hospitals for every 100,000 of the population,
- Refreshment training for health professionals
- Upgrading of peripheral heath services with transportation facilities
- Posting of skilled professionals in rural area

For Tarcha General Hospital:
- Waiting area should be built
- ICU and blood bank should be established
- Early recognition of complication

For Health Center/ Health post:
- Timely referral of high risk patients to higher centers for early admission in labor ward and quality follow up.
- Proper ANC and early identification of the high risk groups
- Give health educations for community working for

Strength and limitation of the study
Strength of the study

- ☞ Unique in its nature because it is the first research done on IO in the study area
- ☞ Data were collected by trained data collectors
- ☞ It has quantified the Unmet Obstetric Needs

Limitation of Study:

- ☞ As my study was retrospective, associated psychological and other long term post operative complication which are associated with the surgery was not included
- ☞ The study was conducted in the hospital where majority of the deliveries (home and deliveries in other health facilities) were excluded
- ☞ The data relied on the diagnoses whose accuracy was assumed on records

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QUESTIONNAIRES

1. Admission Number –

2. Date of admission: dd/mm/yy –

3. Date of discharge: dd/mm/yy_

4. Residence   1. Rural   2.Urban

5. Education level

    1. None   2. < 6 grade   3. 6-12 grade   4. 12 +

6. Maternal age _____

7. Marital status   1. Single   2. Married

8. Parity 1) primiparae 2) Para II-IV 3) Para $\geq$ IV

9. Ethnicity: 1) Dawro 2) Wolyta 3) Amhara 4) Oromo 5) Hadiya 6) others

10. Distance from hospital_____kms.

11. ANC Follow-up   1.Yes 2. No

12. Place of delivery   1.Home   2. This Institution   3. Other Institution   4. Other

13. Present Obstetric History

    13. 1. Anemia   1. Yes   2. No

    13. 2. Preeclampsia   1. Yes   2. No

    13. 3. Diabetes   1. Yes   2. No

    13. 4. Heart disease   1. Yes 2. No

    13. 5. Multiple gestation 1. Yes 2. No

    13.6. Malaria 1. Yes 2. No

    13. 7. HIV 1. Yes 2. No

    13. 8. Other (Specify) 1. Yes 2. No

14. Major Obstetric Intervention

    14.1. C/S 1. Yes 2. No

    14.2. Hysterectomy 1. Yes 2. No

    14.3. Laparatomy for ectopic 1. Yes 2. No

    14.4. Destructive delivery 1. Yes 2. No

    14.5. Version and Extraction 1. Yes   2. No

    14.6. Symphysiotomy   1. Yes   2. No

    14.7. Blood transfusion 1. Yes 2. No

    14.8. Manual extraction of Placenta 1. Yes 2. No

    14.9. Curretage   1. Yes   2. No

15. Indication

    15.1. OL 1. Yes 2. No

    15.2. APH for Placenta Previa 1. Yes 2. No

    15.3. APH for Abruptio 1. Yes 2. No

    15.4. PPH 1. Yes 2. No

    15.5. Preeclampsia 1. Yes 2. No

    15.6. Eclampsia 1. Yes 2. No

    15.7. Antecedent C/S 1. Yes 2. No

    15.8. Peurpeural Infection 1. Yes 2. No

    15.9. Foetal distress 1. Yes 2. No

    15.10. Other 1. Yes 2. No

    15.11. Not recorded 1. Yes 2. No

16. Results for the newborn

    16.1. Born alive and discharged alive

    16.2. Born alive and died within 24 hours

    16.3. Still Born

    16.4. Not recorded

17. Condition of mother at discharge

    17.1. Recovered

    17.2. Complicated but alive

    17.3. Referred to other health formation

    17.4. Died (go to Questions 19,20)

18. Type of Immediate (5 days) complication
    18.1 Haemorrhage
    18.2 Sepsis
    18.3 Wound Dehiscence
    18.4 Perforation
    18.5 Anaesthesia Complication
    18.6 Other (Specify)

19. When did the mother die?

    19.1. Before intervention

    19.2. During Intervention

    19.3. After intervention

    19.4. Not recorded

20. Cause of maternal death

    20.1. Pregnancy induced hypertension

    20.2. Hemorrhage

    20.3. Infection

    20.4. Other

    20.5. Unknown

Hospital information

1	Material resources	code
1.1	# maternity beds	
1.2	# gynecology and obstetric beds	
1.3	Total # of beds	
1.4	# operating theatres	
1.5	# operating theatres reserved for obstetrics	
1.6	# functional vacuum extractors (electronic)	
1.7	# functional forceps	
1.8	# Ambulances	
2	Human Resource	
2.1	Medical	
2.1.1	# gynecologists	
2.1.2	# surgeons	
2.1.3	# general practitioner	
2.2	Paramedical	
2.2.1	# Midwives with state diploma	
2.2.2	# Midwives with certificate	
2.2.3	# other paramedical	
3	Activity of hospital per year	
3.1	# Admission to maternity unit	
3.2	Total # deliveries	
3.3	Total # still births	
3.4	Total # maternal deaths	
3.5	Total # C/S	
3.6	Total # uterine rupture	