ENSIGN COLLEGE OF PUBLIC HEALTH

QUALITY IMPROVEMENT OF EMERGENCY OBSTETRIC AND NEWBORN CARE IN SELECTED HEALTHCARE FACILITIES AT LOWER MANYA KROBO MUNICIPALITY IN THE EASTERN REGION OF GHANA

BY

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DECLARATION

I hereby declare that this thesis has been the result of my own research, except references cited that have been duly acknowledged. It has never been submitted in part or full for any award of my intended degree.

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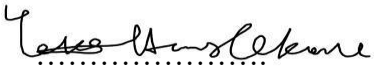

15th June,2020.

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DEDICATION

I dedicate this work to God almighty, and my mother and grandmother for believing in me and keeping my dreams alive.

ACKNOWLEDGEMENT

I thank the almighty GOD for HIS divine guidance, protection and inspiration, without whom am nothing. I also thank the America Association of Public Health Practice (AAPHA) for their grant to conduct this research work, I thank the Senior Management of United Nations Population Fund for giving me the opportunity to get a hands on experience on issues relating to maternal and neonatal health, to my supervisor, and all the faculty members of Ensign College of Public Health to whom am much thankful and grateful for the daily critiquing, correcting and helping me develop this thesis. I thank the management and staff of St. Martins Catholic Hospital, Atua Government Hospital and Akuse Government Hospital for giving me the necessary support and advice for conducting this research. To my close friends and family, I say Ayekoo (Well-done) for helping and supporting me in diverse ways for the completion of this work. I sincerely thank the authors and publishers of the literatures used for writing this script, without your hard work and dedication it would have been very difficult for me to produce and develop this thesis.

ABSTRACT

Background: Improving the quality of Emergency Obstetric and newborn care in health facilities is crucial to the survival of mothers and their babies, but across the world about 60-80 cases of maternal mortality were as a result of preventable diseases; bleeding, obstructed labour, hypertension complication in pregnancy and complications of unsafe abortion. About ninety-nine per cent of avoidable maternal deaths occurred in low- and middle-income countries the maternal mortality ratio is 240 per 100000 births whilst in high-income countries maternal mortality ratio is 16 per births.

Method: The study used a cross-sectional design that used quantitative method (checklist, assessment tool, and structured questionnaire) to gather data from record reviewing, healthcare providers and observing the healthcare facilities. A simple random sampling technique with proportional allocation done for the selection of about 271 records of pregnant women who had complications in the three selected healthcare facilities. The sample frame used was gotten from records on all obstetric complications in the healthcare facilities.

Specific Objectives: The specific objectives were to identify the obstetric complications presented at the selected healthcare facilities, determine the obstetric complications presented within the agegroups in the selected healthcare facilities and assess the emergency obstetric drugs, equipment, supplies and cadre of health workers available for the provision of EmOC services.

Results: St. Martins Catholic Hospital had about 38.81%, Akuse Government Hospital had 32.84% and Atua Government Hospital had 28.36% of healthcare workers providing EmONC services. Obstetric complications in the three healthcare facilities were; Fetal Distress (18.08%), Previous C/S in Labour (13.28%) Pre-eclampsia & Eclampsia (8.12%), Cephalopelvic Disproportion (6.64%), Breech Presentation in Labour (6.64%). Only one facility had

Ergometrine available and none of the 3 selected healthcare facilities had Infant Laryngoscope with spare bulb and batteries.

Conclusion: The study concludes that the three selected healthcare facilities provided both basic and comprehensive EmOC services and had qualified healthcare workers who provided these services for twenty-four hours in a day and Seven days in a week.

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LIST OF ABBREVIATIONS

EmOC	Emergency Obstetric Care
WHO	World Health Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
EmONC	Emergency Obstetric and Newborn Care
SDG	Sustainable Development Goals
USAID	United States Agency for International Development
TBA	Traditional Birth Attendant
GHS	Ghana Health Service
ARR	Annual Rate of Reduction
MMR	Maternal Mortality Ratio
CHPS	Community Based Health Planning and Service

CHAPTER ONE

INTRODUCTION

1.1 Background

Improving the quality of Emergency Obstetric and Newborn Care in health facilities is crucial to the survival of mothers and neonates but across the world about 60-80 cases of maternal mortality were as a result of preventable diseases; bleeding, obstructed labour, hypertension complication in pregnancy and complications of unsafe abortion (UNFPA 2006). Maternal mortality has been a difficult problem, even though there are ongoing efforts to curb this situation, about ninety-nine per cent of avoidable maternal deaths occur in low- and middleincome countries. Despite significant decrease in maternal mortality by forty-five per cent since 1990, eight hundred females die daily, before, during and after having a child from preventable causes. Vulnerable groups in a society are prone to death, so maternal health must be entwined with the improvements of healthcare for the woman, child and the newborn (WHO et al 2015). Yearly, about 189 million women get pregnant, 122 million end up with live birth whilst about 3 million end up with stillbirth. Also, the babies born to their mothers, about 15 million are preterm and amongst the preterm 1 million will die within one week after birth (USAID 2015). Those mostly susceptible to maternal mortality are adolescent girls; negative effects relating to childbirth and pregnancy are most prevalent in this group, which leads to an increase in maternal mortality ratio among adolescent girls. Women in the low-income part of the world have an increased number of pregnancies than those in the high-income countries high-income countries. Also, during the period of life in a woman, the vulnerability of a 15 year old woman to maternal death, is 1 in 3800 in high-income countries and 1 in 150 in low-income countries (WHO 2014).

Maternal and neonatal mortality can be associated with three factors; delay in receiving emergency care at the facility, delay in receiving skilled care by the pregnant woman and not making it on time to the health care facility to receive the emergency care (USAID et al 2016). In low-income countries, the maternal mortality ratio is 240 per 100000 births whilst in highincome countries, maternal mortality ratio is 16 per 100000 births. There is a huge disparity in mortality ratio between developing and high-income countries, with low-income countries having maternal mortality ratio of 1000 or 100000. Even within low-income countries, maternal mortality ratio differs according to one's socio-economic status and location; living in the rural and urban areas. (WHO 2014).

1.2 Problem Statement

In 2008, Ghana had about 342 deaths/100,000 live births; 2010 Ghana had 339 deaths/100,000 live births, 2015 Ghana had about 320 deaths/100,000 live births and 2017 Ghana had 308 deaths/100,000 live births of maternal mortality ratio (World Bank Group 2019). The SDG 3 target aims to globally reduce maternal mortality ratio to less than 70 per 100,000 live births by 2030 and also by 2030, all countries should aim to reduce preventable deaths of newborns and under 5 years of age to less than 12 per 1000 livebirths and 25 per 1000 livebirths respectively (World Health Organization 2020 a).

In 2018 at the Lower Manya Krobo Municipality, cases of maternal mortality were caused by Severe Anemia, Pulmonary Embolism, Hemorrhage, Amniotic fluid embolism, and Cerebral Hypoxia; thereby having a maternal mortality ratio of 143/100000 live births. Also, the neonatal death rate was 3/1000 live births, fresh still birth rate was 3/1000 live births, and macerated still birth rate was 3/1000 live births. Moreover, Traditional Birth Attendant (TBA) delivery rate was

5.4%; delivering about 234 births and adolescent pregnancy rate was 12.3% with about 432 cases (Lower Manya Krobo Health Directorate, 2018). Availability of quality, affordable health care is the main factor for ensuring the safety lives of pregnant and fertile women and children, with also their newborn babies. When this group of vulnerable people in the society is affected by death or ill health, it negatively effects their development and decline in their positive impact on the society (USAID 2015).

This research seeks to study the quality improvement of Emergency Obstetric and Newborn Care and to inform decision by policy makers on Emergency Obstetric and Newborn care in the municipality.

1.3 Significance of the Study

Delivering of EmOC services for pregnant women and during labour is a key intervention that would help to bring down maternal and infant morbidity and mortality with the goal of saving the lives of mothers and newborns (Kontoh, 2015). This study of the quality improvement of emergency obstetric and newborn care was conducted to analyze the quality improvement strategies at the selected emergency obstetric and newborn care facilities in Lower Manya Krobo Municipality.

1.4 Conceptual Framework

As shown in figure 1.0: Availability of Qualified Healthcare Workers for the Provision of EmOC Services; for pregnant women to receive quality EmOC services at the healthcare facility, there should be the availability of qualified healthcare workers that can manage any obstetric

complications at the healthcare facility. Examples of healthcare workers are; midwives, doctors, laboratory technicians.

Performing Basic or Comprehensive Signal Functions for EmOC Services; to ensure quality EmOC service delivery, healthcare facilities should be able to perform basic or comprehensive EmOC interventions; removal of retained product of conception, transfusing blood, providing parenteral antibiotics, performing Caesarean Section, neonatal resuscitation, etc.

Availability of Emergency Obstetric Drugs, Supplies and Equipment for EmOC Services; for quality EmOC services, the healthcare facilities should have the emergency obstetric drugs, supplies and equipment readily available for managing any obstetric complications at the healthcare facilities. Because without these drugs, equipment and supplies obstetric complications can never be managed.

Availability of EmOC Services 24 hours in a day and 7 days in a Week; availability of EmOC services 24 hours/7 days in a week is essential for the reduction and prevention of maternal mortality. Healthcare facilities providing EmOC services, must make sure those services are available to pregnant women 24 hours/7 days in a week.

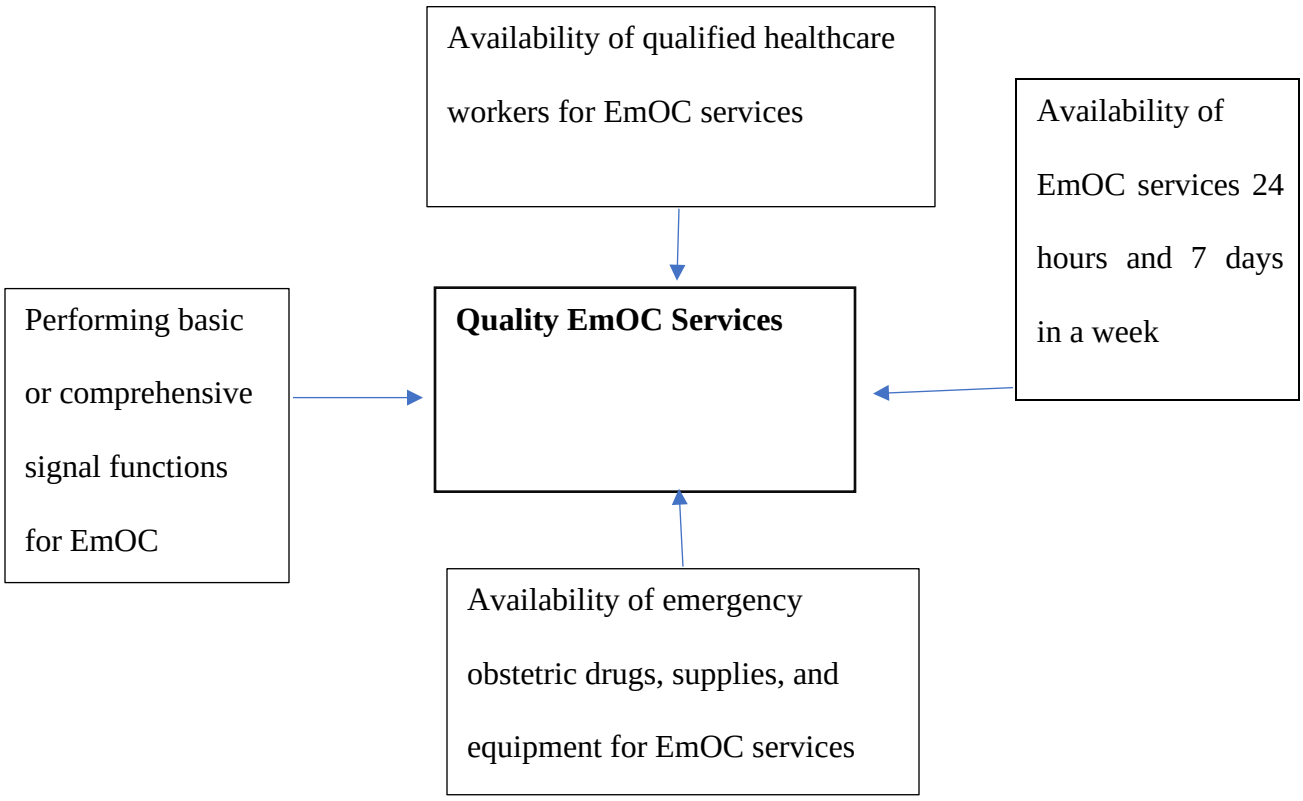

Figure 1.0 Conceptual Framework on Quality EmOC Services

1.5 Research Questions

To help meet the objectives of this study, the following questions have been developed;

1. What are the obstetric complications seen at the selected healthcare facilities?
2. What are the obstetric complications that presented within the age-groups at the selected healthcare facilities?
3. Do the Emergency Obstetric and Newborn facilities have the appropriate equipment, cadre of health workers and supplies at the selected healthcare facilities?

1.6 General Objective

The general objective of this study is to analyze the quality improvement strategies at the selected

Emergency Obstetric and Newborn Care facilities in Lower Manya Krobo Municipality

1.7 Specific Objectives:

The specific objectives of this study are to:

1. Identify the obstetric complications presented at the selected healthcare facilities
2. Determine the obstetric complications presented within the age-groups in the selected healthcare facilities
3. Assess the emergency obstetric drugs, equipment, supplies and cadre of health workers available for the provision of EmOC services

1.8 Profile of Study Area

There are twenty-six (26) municipalities and districts in the Lower Manya Krobo, which is at the Eastern Region of Ghana. It lies between latitude 6.05S and 6.30N and longitude 0008E and 0.20W. The Administrative Capital of the District is Odumase. The District covers an area of 1,476 km, constituting about 8.1% of the total land area within the Region (18,310 km). The major towns in the district include Odumase township (which incorporates Atua, Agormanya and Nuaso), Akuse and Kpong in the Lower Manya area. The District shares Boundaries with Upper Manya Krobo District to the north, to the south with DangmeWest and Yilo Krobo respectively, to the west with Yilo Krobo Municipal and to the east with Asuogyaman District. There are three hospitals at the municipality; which are Akuse Government Hospital, Atua Government Hospital

and St. Martin's Catholic Hospital. There are four (4) Health Centers, six (6) operational Community-Based Health Planning and Services (CHPS), five (5) functional Community-Based Health Planning and Services (CHPS) and two (2) clinics as seen in figure 2.0. The Lower Manya

Krobo District has an estimated population of 108,049 as at 24th January,2018 as shown in table 1.0.

Table 1.0 Population Distribution by Sub-District

COMMUNITY	**POPULATION**
ODUMASE (28.1%)	30,362
AGORMANYA (28.4%)	30,686
KPONG (23.2%)	25,067
ASITEY (5.4%)	5,835
OBORPA (5.9%)	6,375
TOTAL	**108,049**

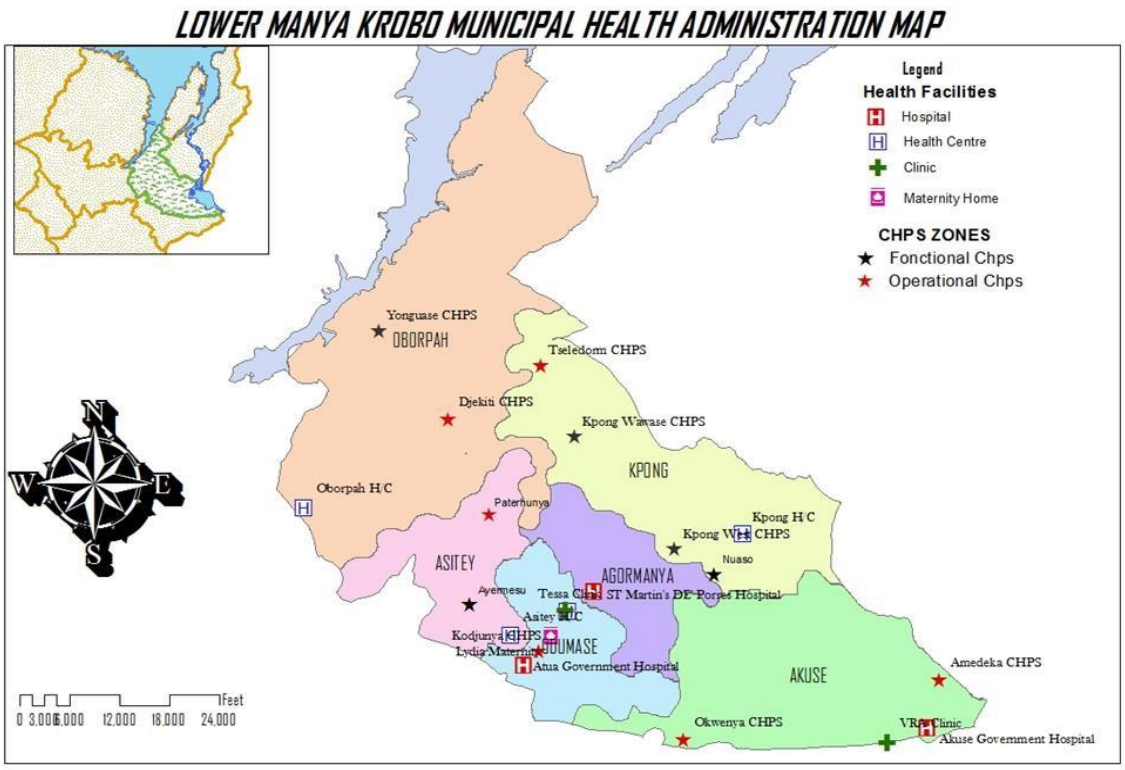

Figure 2.0 Lower Manya Krobo Municipal Health Administration Map

1.9 Scope of Study

"In high-income countries, virtually all women have at least four antenatal care visits, are attended by a skilled health worker during childbirth and receive postpartum care. In low-income countries, just over a third of all pregnant women have the recommended four antenatal care visits. Other factors that prevent women from receiving or seeking care during pregnancy and childbirth are: poverty, distance, lack of information, inadequate services, and cultural practices. To improve maternal health, barriers that limit access to quality maternal health services must be identified and addressed at all levels of the health system" (Regional Office in Africa 2020). This study brings into light the barriers preventing access to quality healthcare services at selected

communities in the Lower Manya Krobo Municipality and discuss innovative ways in which those barriers can be prevented.

1.10 Organization of Report

The Chapter one introduces the topic. It also discusses the background of the study, problem statement, justification of the study, research questions, objectives of the study, profile of study area, scope of the study and organization of the study.

Chapter two presents a review of some works done by other researchers on the topic. It reviews relevant literature on the study.

Chapter three deals with the research methods and design, techniques and tools for data collection.

Chapter four deals with results and analysis, chapter five discusses the results and analysis. Finally, chapter six presents the conclusion and recommendations of the study by summarizing the key findings and directing recommendations to appropriate stakeholders.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Maternal mortality is the death of a woman during pregnancy or around 42 days of eliminating the pregnancy, regardless of duration and location of the pregnancy, through any cause exacerbated by the pregnancy or its management, but not from accidental or incidental causes. (WHO 2020). Maternal health partners firmly back the aim of achieving maternal mortality decrement in the post 2015 development framework, with the objectives of ending all avoidable maternal deaths. To achieve these objectives, there should be acceleration in both efforts from the country and universal level, these are needed to bridge the gap in the differences in the maternal mortality between countries. By 2030, globally maternal mortality ratio should be less than 70/100000 live birth and at the national level not to be more than 140/100000 live births. To be able to meet up to the global goals, every country should be able to decrease their own maternal mortality ratio (WHO and HRP 2015). "Intensified action is called for in countries with the highest MMRs who will need to reduce their Annual Rate of Reduction and Maternal Mortality Ratio that is steeper than 5.5%. However, the secondary target is an important mechanism for reducing extremes of between-country inequity in global maternal survival" (WHO and HRP 2015 pp:6). Those countries with the lowest maternal mortality ratio, deem it a herculean task to decrease their baseline maternal mortality ratio. It is seen that when the numbers of maternal mortality are reduced, differences turn out to be statistically unreasonable. Even in those countries with reduced maternal mortality ratio, there are some groups of people that are mostly vulnerable to maternal mortality and being able to ensure maternal survive will be helpful to those people in that country (WHO and HRP 2015). In 2005, about 536,000 women

were deceased as a result of pregnancy and childbirth related. In low-income countries information on maternal mortality and causes are not regularly documented. Before a death could be attributed to be pregnancy related, the pregnancy status, the time of the death as a result of pregnancy must be noted down. This method of keeping information about maternal mortality is mostly missing in low-income countries, to that effect improvement of data collection on maternal mortality commenced involving WHO, UNICEF, UNFPA and World Bank. "This inter-agency collaboration pools resources and reviews methodologies to arrive at more precise and comprehensive global estimates of maternal mortality. The figures for 2005 are the most accurate yet and the first to estimate maternal mortality trends by an inter-agency process" (UNICEF 2008 pp:13). About 99 per cent of maternal mortality occurred in low-income countries; 265,000 maternal deaths occurred in sub-Saharan Africa and 187,000 maternal deaths occurred in South Asia. Amongst them these two regions had about 85 percent of maternal mortality in 2005, about 22 per cent was seen in India. The shift of maternal mortality proves that there is insufficient achievement in meeting the goals of the Millennium Development Goal 5 (MDG), which aimed to decrease the maternal mortality ratio by 75 per cent from 1990 to 2015. The global maternal mortality ratio was 430 per 100,000 live births in 1990 and 400 deaths per 100,000 live births in 2005. The global statistics on maternal mortality worldwide can overshadow the disparities seen among regions, most have successfully reduced maternal mortality and are building innovative approaches to further broaden the availability of maternal health services. In high-income countries the maternal mortality ratio between 1990 to 2005 was about 8 per 100,000 live births which is very low. Readily available and easily accessible to emergency obstetric care and renowned care from qualified health personnel have resulted to the decrement of maternal mortality. All the low-income countries, apart from sub-Saharan Africa

countries have decrement in their maternal mortality ratio between the year 1990 and 2005. This statistic is very disturbing because this region is mostly vulnerable to maternal mortality and the greatest number of maternal mortalities. The West and Central Africa has a huge maternal mortality ratio of 1,100 per 100,000 live births as seen in other low-income countries with 45 per 100,000 live births, with Sierra Leone being the highest with 2,100 maternal deaths per 100,000 live births (UNICEF 2008).

2.2 Neonatal Mortality

Neonatal Mortality is the death of a newborn during birth and the first 28 completed days of life. Recent statistics from the World Health Organization in 2004 indicated that; 3.7 million children died in the first 28 days of life during that year. The time of vulnerability to neonatal mortality is during the time of life after birth, which is known to be about 25 and 45 per cent when neonatal deaths occur. 2.8 million newborn deaths happened in the first week of life in 2004. Neonatal deaths occur in countries with very poor socio-economic status groups. The increment of neonatal mortality brings into light two key factors: the problem of reaching babies born at home with immediate and effective neonatal interventions and the success of countries being able to provide intervention such as, immunization, that have helped reduce post-natal deaths in lowincome-countries. This in turn has produced cheaper and very easy neonatal interventions.

Monitoring of neonatal mortality is done closely with the monitoring of maternal mortality. Decrement of neonatal mortality is seen in high-income countries, whilst increment in neonatal mortality is seen in low-income countries (UNICEF 2008).

Deaths in early months of newborns are avoidable, which constitute about 46 per cent of the sum of deaths in children under five years. As global reduction in neonatal mortality, most cases of

neonatal mortality occur during the early days when born, this makes issues relating to neonatal mortality very crucial. About 2.6 million children were deceased in the first months of life: Many died during the first week of life, about one million died in the first day and another one million died during six days after birth. Most neonatal deaths are as a result of complications of preterm birth, intrapartum conditions such as birth asphyxia or infections like pneumonia and sepsis (UNIGME ,2017). According to Darmstadt, et al 2005 with updates from UNICEF 2012; neonatal mortality could be averted through cost-effective interventions being applied in the following stages; (1) Preconception stage: Folic acid supplementation, family planning, prevention and management of sexually transmitted infections. (2) Antenatal stage: Syphilis screening and treatment, pre-eclampsia and eclampsia prevention, tetanus toxoid immunization, intermittent preventive treatment for malaria, detection and treatment of infections.

(3) Intrapartum (birth) Stage: Antibiotics medication for premature rapture of membrane, corticosteroid for preterm labor, diagnosing and treating of breech, monitoring of labor for any complications, and aseptic delivery practices.

(4) Postnatal Stage: Resuscitation of newborn baby, breastfeeding, prevention and management of hypothermia, community-based management of pneumonia and kangaroo mother care for low birth weight infants.

2.3 The Main Causes of Maternal and Neonatal Mortality and Morbidity

Causes of maternal mortality can be as a result of direct, indirect or unspecific causes:

A) Direct Causes of Maternal Mortality: What brings about maternal and newborn mortality is very familiar. Maternal mortality happens mostly from the third trimester to first week of birth with exclusion of newborn mortality from abortion (UNICEF 2008). The

vulnerability of mothers is high within the first two days after birth. Many of maternal deaths are due to obstetric complications such as post-partum hemorrhage, infections, eclampsia and prolonged and obstructed labour and complications of unsafe abortion. Almost all the direct causes of maternal mortality can be tackled if qualified healthcare personnel are readily available and important drugs, equipment and referral facilities are readily available and prepared (UNICEF 2008). According to the 2017 maternal health survey done in Ghana; there were about 27% direct causes of maternal deaths in Ghana (Ghana, 2017).

B) Indirect Cause of Maternal Mortality: Many of factors can increase the chance of maternal mortality but can also be precipitated by pregnancy and childbirth (UNICEF 2008). Attributing all maternal mortality causes to pregnancy might be difficult to prove due to poor diagnostic services in most countries. Evaluating the indirect causes of maternal mortality aids to point out the most suitable interventions techniques for improving maternal and newborn health (UNICEF 2008). Also, according to UNICEF 2008,

"Collaboration between condition-specific programme; such as those to address malaria or AIDS and maternal health initiatives may often be the most effective way to address some of these indirect causes, including those that are highly preventable or treatable, such as aneamia". In Ghana, 67% of maternal mortality was attributed to direct causes (Ghana, 2017).

C) Unspecific Maternal Mortality Causes: This is known as death of a pregnant woman in which there is no underlying cause. Ghana had about 6% maternal death which were attributed to unspecific causes (Ghana 2017).

2.4 Indicators of Emergency Obstetric Care:

Emergency obstetric care indicators are used to monitor the progress of stopping maternal mortality that could be prevented. These indicators are based on the notion that pregnant would need immediate treated when complications of pregnancy set in, based on that EMOC facilities must be:

A) Available and working
B) Be geographically and equitably distributed
C) Must be accessed by the pregnant women
D) Have to accessed by women with complications
E) Provide enough life-saving services
F) Provide good-quality care

From these indicators listed, the beginning one states that EmOC facilities services should be readily available and working. Being available refers to its services being reached out to pregnant women. Even if those services at the EmOC facilities are efficiently working and pregnant women with complications don't use it, that will still put them into danger. Also, these indicators monitor the progress of averting maternal mortality regarding the quality of healthcare services that is being delivered (WHO et al 2009). According to WHO et al 2009; "After all, many women die in hospital: some of them die because they were not admitted until their condition was critical; many others, however, die because they did not receive timely treatment at a health facility or because the treatment they received was inadequate". To better enhance maternal health obstacles that reduces access to quality maternal health services across all levels of the healthcare system must be addressed (Regional Office for Africa 2020). There has been some modification of the original six Emergency Obstetric Care Indicators which was given in

1997, then upgraded in 2006 as recommended by after technical consultations from experts, as seen below;

(1) Availability of emergency obstetric care (Both basic and comprehensive care facilities: There should at least five EmOC facilities (including at least one comprehensive facility) for every 500, 000 population.

(2) Geographic location of the Emoc care facility: For every 500,000 population there should be at least one comprehensive facility and about five EmOC facilities

(3) Proportion of all births in emergency obstetric care facilities: The least accepted level should be determined locally.

(4) Meeting the demand for emergency obstetric care (proportion of women who were treated at the facility because of direct complications as a result of pregnancy): 100% of women who had direct obstetric complications and were treated at the EmOC facility.

(5) Caesarean Section as a proportion of all births: The estimated proportion of birth as a result of Caesarean Section should at least 5% and at most 15 %

(6) Direct obstetric case fatality rate: The case fatality rate within women of direct obstetric complications in EmOC facilities should be less than 1%.

(7) Intrapartum and very early neonatal rate: Standards to be determined

(8) Proportion of maternal deaths due to indirect causes in emergency obstetric care facilities:

Standards cannot be set (WHO et al 2009).

2.5 Functions of Emergency Obstetric Care Facilities

The presence of Emergency Obstetric Care (EmOC) services is determined by the count of facilities that conductall the necessary work in correlation to the population size. When people working at those EmOC facilities have fulfilled the seven important components of EmOC services within 3 months before evaluation, that facility is considered to fully ready to conduct EmOC services. A common or basic EmOC facility is one that performs the seven functions, whilst a comprehensive EmOC is one that performs all the nine functions. Examples of the basic functions are; administer parenteral antibiotics, administer uterotonic drugs (i.e., parenteral oxytocin), administer parenteral anticonvulsants for preeclampsia and eclampsia (e.g. Magnesium Sulfate), manually removal of the placenta, removed retained products of conception (manual vacuum extraction, dilation and curettage), perform assisted vagina delivery (e.g. forceps delivery, vacuum extraction.), and perform basic neonatal resuscitation (e.g. with bag and mask). And also, for the comprehensive services, they perform the basic services with; performing surgery (e.g. caesarean section) and perform blood transfusion. All EmOC facilities should be able to provide the following services for direct obstetric complications like;

(A) Hemorrhage: In antepartum, blood transfusion is provided and surgery (e.g. caesarean section for placenta previa), for postpartum uterotonic drugs are given, blood transfusion is provided, manual removal of placenta is done, removal of retained products of conception, performing surgery like hysterectomy for uterine rupture.

(B) Prolonged or Obstructed Labour: Perform assisted vaginal delivery, perform surgery like caesarean section, administer uterotonic drugs and perform neonatal resuscitation.

(C) Postpartum sepsis: administer parenteral antibiotics, remove retained products and do surgery for pelvic abscess.

(D) Complication of abortion: In hemorrhage; do blood transfusion and remove retained products of conception. In sepsis; administer parenteral antibiotics and remove retained products of conception. In intra-abdominal injury; give parenteral antibiotics, give blood transfusion and perform surgery.

(E) Pre-eclampsia or eclampsia: Administer parenteral anti-convulsant, perform neonatal resuscitation and perform surgery (caesarean section).

(F) Ectopic Pregnancy: Provide blood for transfusion, and perform surgery.

(G) Raptured uterus: Perform surgery, provide blood for transfusion and administer parenteral antibiotics.

(H) Neonatal distress (intrapartum): Perform newborn resuscitation and perform surgery like caesarean section (WHO et al 2009).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the study design, study population, sample size determination and sampling procedure. It also takes a look at the data collecting tool and pre-testing, ethical consideration, study variables and study limitations.

3.2 Research Method and Design

A cross-sectional design and quantitative method was used for this study. The reason behind using this approach was to identify the obstetric complications, and determine if the healthcare facilities had the cadre of staff, equipment, drugs and supplies to deliver EMOC services.

3.3 Data Collection techniques and tools

Data was collected via record review using a checklist and an assessment tool for the healthcare facilities of all pregnant women who had complication, and structured questionnaires were given to healthcare providers. The assessment tool (a tool used for assessing preparedness for Emergency Obstetric Care) used was gotten from the Emergency Obstetric Care Handbook which was prepared by WHO, UNICEF and the Averting Maternal Death and Disability Program (AMDD) published in 2009 and Engender health emergency obstetric quality improvement assessment tool, which was modified and used for this study.

3.4 Study Population

The research included all pregnant women who had complications for the previous year, and selected healthcare facilities providing both basic and comprehensive EMOC services, in the Lower Manya Krobo municipality.

3.5 Study Variables.

The following were the variables that were investigated under the study:

1. Dependent variable – Quality Emergency Obstetric and Newborn Care
2. Independent variable(s) – Age, Obstetric Complication, Emergency Drugs, Equipment and Supplies, Cadre of Health workers and Performance of Signal Functions.

3.6 Sampling

Using the Cochran formula to calculate the sample size (Cochran,1977):$n = \frac{z}{2^{\times}{}_2 pq\ e}$

Where;

Sample Size (n)=?

The sampling Error (e) =5%

Critical Value (z) = 1.96

Prevalence of healthcare facilities which did not meet the EMOC criteria (P) = 80% or 0.8

(Kyei-Onanjiri, M., et al 2018)

Prevalence of healthcare facilities which meet the EMOC criteria (Q) = 1-P; 100-80= 20 or0.2

Therefore;

$n = \frac{(1.96)^2 \times 0.8 \times 0.2}{(0.05)^2} = 245.9 \approx 246.$

A 10% non-response rate of the sample size will be 24.6. The actual sample size will be 246 + 24.6 = 270.6 ≈ 271. Therefore, the sample size that was used in this research was 271 obstetric complication cases.

A simple random sampling technique was used in selecting the two hundred and seventy-one (271) obstetric complications that occurred in the year 2019 from the three selected healthcare facilities. The sample frame used was obtained from records on all obstetric complications in the healthcare facilities. Also, folders and the HAMS software were reviewed for this study.

Proportional Allocation

The three healthcare facilities that were selected for this study were; St. Martins Catholic Hospital, Atua Government Hospital and Akuse Government Hospital. In 2019; St. Martins Catholic Hospital had four hundred and eighty-five (485) obstetric emergency cases, Atua Government Hospital had two hundred and twenty-five (225) obstetric emergency cases and Akuse Government Hospital had seventy-four (74) obstetric emergency cases. The total number of obstetric complication cases in the three selected facilities was Seven Hundred and Eighty-four (784).

Using proportional allocation formula: $ns = \frac{Ns}{N} \times n$

Where; ns= Proportion of obstetric cases to be allocated for the selected healthcare facility

Ns= Total number of obstetric complication cases at the selected healthcare facility N= Total number of obstetric complications in the three selected healthcare facilities n= The sample size for this study

(1) For St. Martins Catholic Hospital: $\frac{485}{784} \times 271 = 168$

(2) For Atua Government Hospital: $\frac{225}{784} \times 271 = 78$

(3) For Akuse Government Hospital: $\frac{74}{784} \times 271 = 25$

3.7 Pre-Testing

A pilot study is a small-scale study conducted before the main study on a limited number of subjects from the same population as intended for the study to test methodology (Burns and Grove (2005). A pre-testing was done at the Kpong Health Center to evaluate clarity of the questionnaires and do necessary amendments where applicable to the final questionnaires. The pre-testing helped in finding out how feasible the study will be, how valid the data collection tool is and how possible it would be to process and analyze the data collected.

3.8 Data Handling

Data was collected using a structured questionnaire. Participants was informed of the purpose of the study by so doing, their consent was sought, and the questionnaire was administered to them to answer appropriately. Research assistants were trained to assist in collecting the data. Guidance was provided where necessary. The research instrument was given to the Research Supervisor for acceptance and to cross- check to see whether it is sufficiently comprehensive in seeking the proper range of responses and whether the questions have good content and face validity.

3.9 Data Analysis

Data was cleaned, coded and entered STATA® (version 14.0), a statistical package for data processing and analysis. Data was analyzed for both descriptive and inferential statistics using the STATA. Descriptive statistics was used to analyze the inputs and process of service delivery.

3.10 Ethical Considerations

A letter of approval was taken from Ensign College of Public Health and given to the Regional health directorate, Municipal health directorate and the Lower Manya Krobo Municipality to carry out the study in the area. A verbal and written consent was obtained from the study participants explaining the purpose of the study. Likewise, confidentiality and anonymity of the study was e assured. During the administration of questionnaires, participants who will decide not to partake in the exercise again will have the liberty to do so at any time. Information provided by participants on the questionnaires will be handled with strict confidentiality thus name or personal identification information will not be published in any report. Information submitted will not be shared with anybody who is not part of the study. There was no compensation for participating in this study.

3.11 Limitations of the Study

They were poor documentations on some obstetric complications and how they were treated and managed at the healthcare facilities. Also, some of the facilities stopped using folder to document client's condition and management, but have started using a software called the HAMS software. Most of the obstetric complications found on the software couldn't give details on how some obstetric complications were managed and treated. Gathering data from the HAMS software was

a challenge because most of the facilities only had few computers which were always being engaged by the health workers.

3.12 Result

This study is expected to aid healthcare facilities to innovatively improve on their Emergency Obstetric and Neonatal Care (EmONC) to prevent maternal and neonatal mortality. To educate women of child bearing age, pregnant women and women who have just given birth on the importance of the regular antenatal care (ANC) visit.

CHAPTER FOUR

RESULTS

4.1 Introduction

The general objective of this study is to analyze the quality improvement strategies at the selected Emergency Obstetric and Newborn Care facilities in Lower Manya Krobo Municipality. Two hundred and seventy-one (271) hospital records including folders and HAMS software were reviewed. Descriptive statistics involving charts, frequencies and percentages were used in the presentation of the data.

4.2 Socio-Demographic Characteristics of Health Workers

St. Martins Catholic Hospital had the highest number of healthcare workers (38.81%), followed by Akuse Government Hospital (32.84%), and then Atua Government Hospital (28.36%) as shown in table 1.1. All the facilities had midwives; 38.60%, 35.09%, and 26.32% for St. Martins, Akuse Government Hospital and Atua Government Hospital, respectively. About 66.67% of health workers in St.Martin Catholic Hospital and 33.33% of health workers in Atua Governement Hospital had 9 months or less experience in their current facilities. Also 35.90% of health workers from St Martins Catholic Hospital, 30.77% from Akuse Government Hospital, and 33.33% from Atua Government Hospital had about 1-5 years of experience, ., as seen in table 1.1. The three healthcare facilities also had Anaesthetists, and Laboratory Technician.

Table 4.1 Socio-Demographic Characteristics of Health Workers

Characteristic	St Martins Hospital N=26 (38.81%)	Akuse Government Hospital N=22 (32.84%)	Atua Government Hospital N=19 (28.36%)
Cadre			
Midwives	22(38.60%)	20(35.09%)	15(26.32)
Medical Officer	3(37.50%)	2(25.00%)	3(37.50%)
Principal Medical Officer	0(0.00%)	0(0.00%)	1(100%)
Specialist Surgeon	1(100%)	0(0.00%)	0(0.00%)
Age-group			
20-24 yrs	1(33.33%)	2(66.67%)	0(0.00%)
25-29 yrs	11(45.83%)	8(33.33%)	5(20.83%)
30-34 yrs	12(42.86%)	7(25.00%)	10(35.71%)
35-39 yrs	0(0.00%)	1(50.00%)	1(50.00%)
40 yrs and above	2(22.22%)	4(44.44%)	3(33.33%)

No. of Years at Current Facility			
9 months or less	4(66.67%)	0(0.00%)	2(33.33%)
1-5 years	14(35.90%)	12(30.77%)	13(33.33%)
6-10 years	6(40.00%)	7(46.67%)	2(13.33%)
11 years and above	2(28.57%)	3(42.86%)	2(28.57%)

4.3 Obstetric Complications

St Martins Catholic hospital had the most of obstetric emergency cases about 61.99%, Atua government hospital had 28.78% and Akuse government hospital had 9.23% as shown in figure 3.0. In all the facilities, Fetal Distress was the most common obstetric complication gotten which was about 18.08%, followed by Previous C/S in Labour 13.28%, Pre-eclampsia and eclampsia 8.12%, and Cephalopelvic Disproportion 6.64% and Breech presentation in labour 6.64%. Also, some women presented to the facilities with two complications; Cephalopelvic Disproportion + Severe Pre-eclampsia (1.11%), Prolong Labour + Fetal Distress (0.37%), Previous C/S in Labour + Contracted Pelvis (0.37%), Previous Myomectomy + Grand Multiparity (0.37%), Severe Preeclampsia + Unfavorable Cervix (0.37%), Malposition + Fetal Distress (0.37%), Perineal Tear + Birth Asphyxia (0.37%), Poor Progress of Labour + Fetal Distress (0.37%), Post Date + Failed Induction (0.37%), etc. as seen in table 1.2.

Table 4.2 Obstetric Complications in Selected Healthcare Facilities

Obstetric Complication	**N= 271**	**Percentage (100%)**
Big Baby	3	1.11%
Post Date + Failed Induction	1	0.37%
Previous C/S + Fetal Distress	1	0.37%
Previous C/S in labour	36	13.28%
Anaemia + Fetal Distress	1	0.37%
Hemorrhage	8	2.95%
Big Abdomen	10	3.69%
Big Abdomen + Cephalopelvic Disproportion	1	0.37%
Breech Presentation in Labour	18	6.64%
Breech Secondary to Cord Prolapse	1	0.37%
Cephalopelvic Disproportion	18	6.64%
Cervical Dystocia	1	0.37%
Compound Presentation in Labour	1	0.37%
Contracted Pelvis	2	0.74%
Cord Prolapse	1	0.37%
Deep Transverse Arrest	3	1.11%

Delayed First Stage + Fetal Distress	1	0.37%
Prolong Labour	15	5.54%
Eclampsia & Preeclampsia	22	8.12%
Failed Induction	7	2.58%
Fetal Distress	49	18.08%
Fetal Distress + Pre-eclampsia	1	0.37%
Fetal Distress + Prolong Labour	1	0.37%
Gestational HPT + Unstable Lie	1	0.37%
High Risk Pregnancy	1	0.37%
Hypertension	1	0.37%
Hypertonic Uterus	1	0.37%
Late Term Cyesis + Non-Reactive CIG	1	0.37%
Late Term Pregnancy	6	2.21%
Malposition	1	0.37%
Malposition + Fetal Distress	1	0.37%
Malpresentation of Fetus	1	0.37%
Meconium Stained Liquor	2	0.74%
Multi-Parity with Big Abdomen in Labour	1	0.37%
Non-reassuring Fetal Heart Rate	3	1.11%
Obstructed Labour	3	1.11%
PROM	1	0.37%
PROM + Pre-term Labour	1	0.37%
Pelvic Inadequacy	1	0.37%

Perineal Tear + Birth Asphysia	1	0.37%
Poor Progress of Labour	9	3.32%
Poor Progress of Labour + Fetal Distress	1	0.37%
Post Date + Big Baby	1	0.37%
Post Date + Fetal Distress	1	0.37%
Post Date + Big Abdomen	3	1.11%
Pre-eclampsia + Previous C/S	1	0.37%
Pregnancy Induced Hypertension	1	0.37%
Pregnancy Induced Hypertension + PROM	1	0.37%
Previous C/S + Big Baby	3	1.11%
Previous C/S + Breech Presentation	1	0.37%
Previous C/S + Contracted Pelvis	1	0.37%
Previous C/S + Grand Multip + Big Baby	1	0.37%
Previous C/S + Term PROM	2	0.74%
Previous C/S +Fetal Distress	1	0.37%
Previous C/S+ Poor Progress of Labour	1	0.37%
Previous Myomectony + Grand Multiparty	1	0.37%
Retained 2nd Twin	1	0.37%
Septic Incomplete Abortion	1	0.37%
Severe Oligohydramnios	1	0.37%
Severe Pre-eclampsia + Cephalopelvic Disproportion	3	1.11%
Severe Pre-eclampsia + Failed Induction	1	0.37%
Severe Pre-eclampsia + Fetal Distress	1	0.37%

Severe Pre-eclampsia + Unfavourable Cervix	1	0.37%
Thick Meconium Stained Liquor + Post-date	1	0.37%
Transverse Lie	1	0.37%
Transverse lie + Previous C/S	1	0.37%
Twin gestation + Transverse lie	1	0.37%

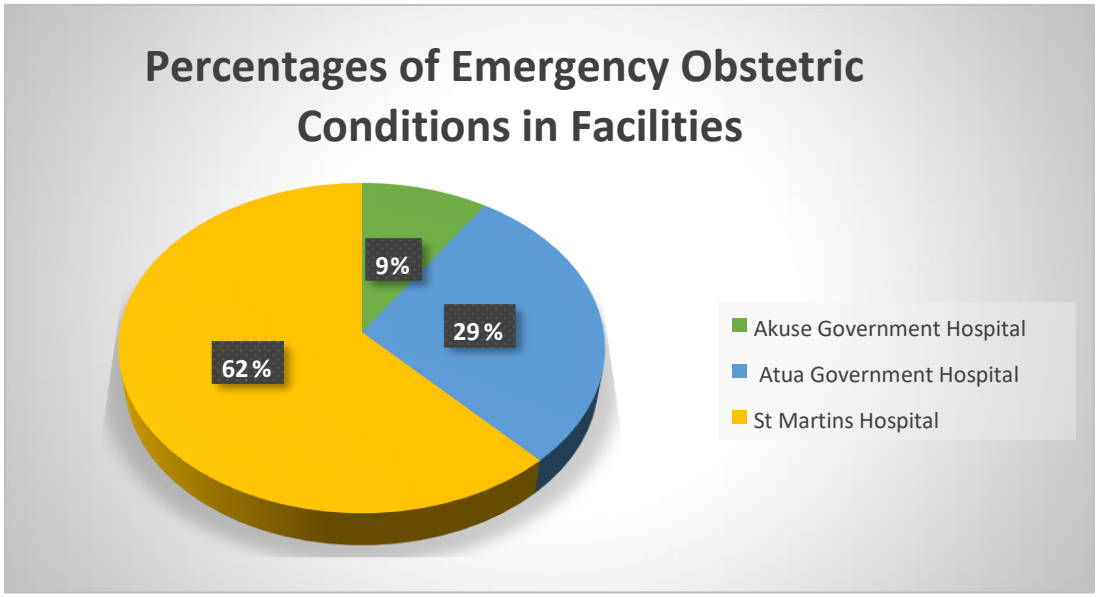

Figure 4.1 Percentages of Emergency Obstetric Conditions in Three Healthcare Facilities

4.4 Maternal Age-groups with Obstetric Complication

The maternal age-groups seen with Obstetric complications were; 15-19years, 20-24years, 2529years, 30-34years, 35-39years and 40 years and above as seen in figure 4.0. Within the ages of 15-19years, the most common obstetric complications seen were fetal heart distress (31.82%), and Pre-eclampsia and Eclampsia (18.19%) as seen in table 1.3. Amongst the ages of 20-24years, fetal distress (14%) and Breech presentation in labour (10%) were the most common as seen in table 1.4, within the age of 25-29years, previous C/S in labour (15.85%), fetal distress (15.85%), and Cephalopelvic disproportion (12.2%) were the most common as seen in table 1.5. In agegroup 30-34years, fetal distress (21.33%), Previous C/S in labour (14.67%) and Pre-eclampsia & Eclampsia (13.33%) as seen in table 1.6, Among age-group 35-39years obstetric complications common were Previous C/S in labour (27.27%), and fetal distress (12.12%) as seen in table 1.7. Also, in age-group 40 years and above the most common obstetric complications were Preeclampsia & Eclampsia (33.33%) and fetal distress (22.22%) as seen in

table 1.8. Also, Maternal age-group with the highest obstetric complications was 25-29years (30.26%), followed by 3034years (27.68%), 20-24years (18.45%), 35-39years (12.18%), 15-19years (8.12%), and 40years and above (3.32%) as shown in figure 3.0.

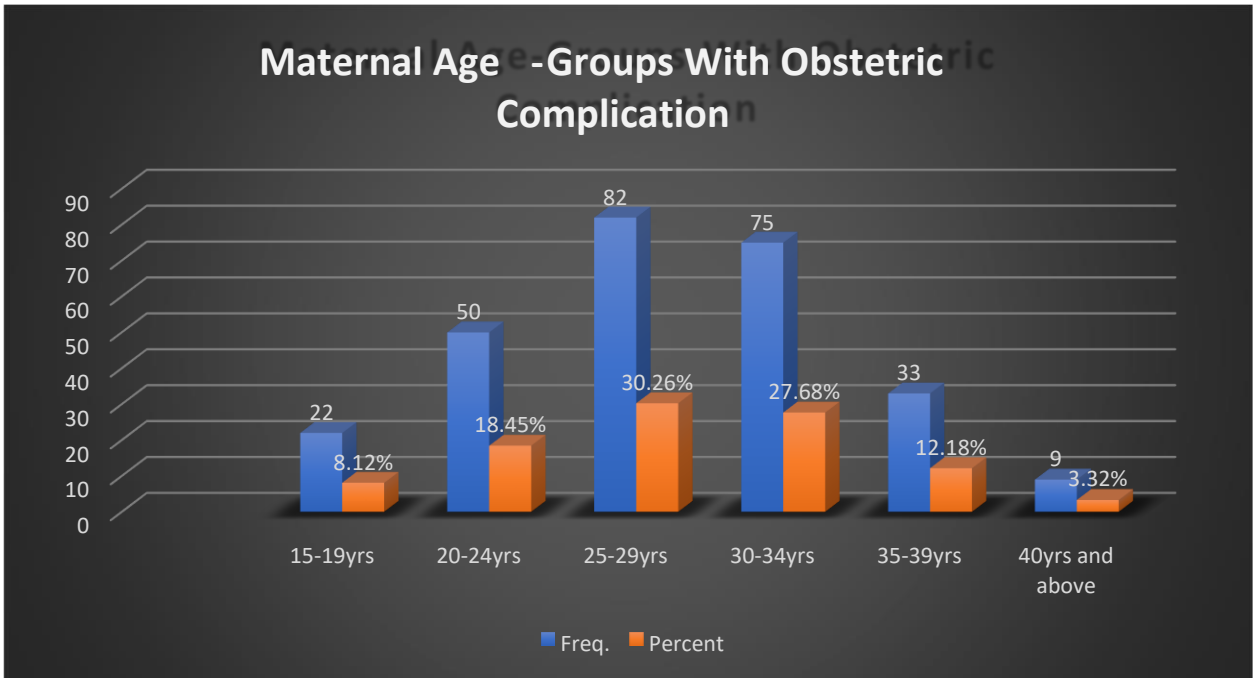

Figure 4.2 Percentages of Maternal Age-Groups with Obstetric Complication

Table 4.3 Obstetric Complications Within Age-group 15-19years

Obstetric Complication	N = 22	Percentage (100%)
Big Abdomen	2	9.09
Breech Presentation in Labour	3	13.64
Cephalopelvic Disproportion	1	4.55
Pre-eclampsia & Eclampsia	4	18.19
Fetal Distress	7	31.82
Hypertonic Uterus	1	4.55
Post Date + Big Baby	1	4.55
Prolong Labour	1	4.55
Septic Incomplete Abortion	1	4.55
Previous C/S in Labour	1	4.55

Table 4.4 Obstetric Complication in Age-group 20-24years

Obstetric Complication	**N =50**	**Percentage (100%)**
Previous C/S in Labour	2	4
Previous C/S + Fetal Distress	2	4
Aneamia + Fetal Distress	1	2
Big Baby	1	2
Heamorrhage	3	6
Breech Presentation in Labour	5	10
Cephalopelvic Disproportion	2	4
Compound Presentation	1	2
Contracted Pelvis	1	2
Cord Prolapse	1	2
Deep Transverse Arrest	1	2
Failed Induction	2	4
Fetal Distress	7	14
Fetal Distress + Prolong Labour	2	4
Late Term Cyesis +	1	2
Late Term Cyesis	2	4
Malposition + Fetal Distress	1	2
Multiparity with Breech Presentation	1	2
Non-reassuring Fetal Status	1	2
PROM	1	2
Poor Progress of Labour	3	6

Post Date	1	2
Post Date + Big Abdomen	2	4
Pre-eclampsia & Eclampsia	3	6
Pregnancy Induced Hypertension	1	2
Twin Gestation + Transverse Arrest	1	2
Prolong Labour	1	2

Table 4.5 Obstetric Complications within Age-group 25-29 years

Obstetric Complication	**N =82**	**Percentage (100%)**
Big Baby	1	1.22
Fetal Distress	13	15.85
Hemorrhage	3	3.66
Big Abdomen	3	3.66
Breech Presentation in Labour	5	6.1
Cephalopelvic Disproportion	10	12.2
Cervical Dystocia	1	1.22
Contracted pelvis	1	1.22
Deep Transverse Arrest	1	1.22
Prolong Labour	8	9.76
Failed Induction	1	1.22
Gestational Hypertension +	1	1.22
Malposition	1	1.22
Meconium Stained Liquor	2	2.44
Non-reassuring Fetal Heart Rate	1	1.22
PROM + Pre-term Labour	1	1.22
Pelvic Inadequacy Syndrome	1	1.22
Poor Progress of Labour	4	4.88
Post Date	1	1.22
Pre-eclampsia & Eclampsia	4	4.88
Previous C/S in Labour	13	15.85

Previous C/S + Big Abdomen	1	1.22
Previous C/S + Continuous	1	1.22
Previous Myomectomy	1	1.22
Thick Meconium Stained Liquor	1	1.22
Transverse Lie + Previous C/S	1	1.22
Pre-eclampsia + Previous C/S	1	1.22

Table 4.6 Obstetric Complications within Age-group 30-34 years

Obstetric Complication	**N=75**	**Percentage (100%)**
Haemorrhage	1	1.33
Big Abdomen	3	4.00
Big Abdomen + Cephalopelvic Disproportion	1	1.33
Big Baby	1	1.33
Breech Presentation in Labour	3	4.00
Cephalopelvic Disproportion	4	5.33
Deep Transverse Arrest	1	1.33
Prolonged Labour	4	5.33
Eclampsia + Pre-eclampsia	10	13.33
Failed Induction	3	4.00
Fetal Distress	16	21.33

Malpresentation	1	1.33
Obstructed Labour	3	4.00
Perineal Tear + Birth Asphyxia	1	1.33
Poor Progress of Labour	2	2.67
Post Date	2	2.67
Post Date + Fetal Distress	1	1.33
Previous C/S in labour	11	14.67
Previous C/S + Big Abdomen	2	2.67
Previous C/S + Term Gestation	1	1.33
Previous C/S + Poor Progress of Labour	1	1.33
Retained 2nd Twin	1	1.33
Severe Oligohydramnios	1	1.33
Transverse Lie	1	1.33

Table 4.7 Obstetric Complication Within Age-group 35-39years

Obstetric Complication	**N = 33**	**Percentage (100%)**
Post Date + Failed Induction	1	3.03
Big Abdomen	2	6.06
Breech Presentation in Labour	3	9.09
Cephalopelvic Disproportion	1	3.03
Failed Induction	1	3.03
Fetal Distress	4	12.12
Hypertension	1	3.03
Non-reassuring feta heart rate	1	3.03
Poor progress of labour	1	3.03
Eclampsia & Pre-eclampsia	3	9.09
Pregnancy Induced Hypertension	1	3.03
Previous C/S in Labour	9	27.27
Previous C/S + Breech Presentation	1	3.03
Previous C/S + Grand-multiparity	1	3.03
Previous C/S + Term Pregnancy	1	3.03
Prolong labour	2	6.06

Table 4.8 Obstetric Complication in Age-group 40 years and above

Obstetric Complication	N = 9	Percentages (100%)
Cephalopelvic Disproportion	1	11.11
Fetal Distress	2	22.22
High Risk Pregnancy	1	11.11
Hemorrhage	1	11.11
Post Date + Big Abdomen	1	11.11
Pre-eclampsia & Eclampsia	3	33.33

4.5 EmOC Interventions Provided in the Three Healthcare Facilities

All the three facilities provided both basic and comprehensive EMOC services 24 hours in a day and 7 days in a week as seen in table 1.9. Furthermore, 100% of obstetric complications at the facilities did not have any indications for providing Assisted Vagina Delivery Services to clients, 100% of obstetric complications at the facilities had an indication for providing parenteral antibiotics, and uterotonics. About 98.52% of obstetric complication had an indication for Caesarean Section, 99.28% of obstetric complications presented at the facilities had indications for manual removal of placenta, 91.67% of obstetric complications had no indication for providing anti-convulsant for pre-eclampsia and eclampsia. About 99.28% of obstetric complications had no indication for the removal of retained products of conception, 99.64 of obstetric complications did not have any indication for providing Newborn Resuscitation, and

also 96.38% of obstetric complications did not have any indication for providing blood transfusion services to clients.

Table 4.9 EmOC Interventions in the Three Healthcare Facilities

	EmOC Intervention	**Healthcare Facilities N=3**
Basic EmOC	Parenteral Antibiotic	3
	Parenteral Oxytocic	3
	Administering Magnesium Sulphate (MgS04)	3
	Manual Removal of Placenta	3
	Removal of Retained Product of Conception	3
	Assisted Vagina Delivery	3
	Perform basic neonatal resuscitation	3
Comprehensive EmOC	Blood Transfusion	3
(Including all of the above)	Caesarean Section	3

4.6 Availability of Emergency Obstetric Drugs, Equipment and Supplies

All the 3 healthcare facilities had most of the emergency obstetric drugs, but only St. Martins Catholic hospital had Ergometrine as shown in table 2.0. The Antibiotics injections seen at the three facilities were; Ceftriaxone, Cefuroxime, Gentamycin, Ampicillin, Amoxicillin + Clavulanic Acid, Metronidazole, and Benzylpenicillin. All three facilities have most of the equipment and supplies, but not all had Infant Laryngoscope with spare bulb and batteries as seen in table 2.1.

Emergency Obstetric Drugs	**Healthcare facilities N=3**
Antibiotics injection	3
Oxytocin injection	3
Diazepam injection	3
Adrenaline	3
Misoprostol	3
Ringer lactate	3
Dextrose	3
Normal Saline	3
Dexamethasone	3
Mannitol	3
Hydralazine	3
Labetalol	3
Ergometrine	1
Diazepam	3
Phenobarbitone	3
Methyldopa	3
Atropine	3
Ketamine	3
Valium	3

Table 4.8 Obstetric Equipment and Supply

Equipment and Supply	Healthcare facilities (N=3)
Artery forceps	3
Sponge forceps	3
Dissecting forceps	3
Cord-cutting scissors	3
Cord ties	3
Episiotomy scissors	3
Straight stich scissors	3
Gloves	3
Long gloves	3
Plastic sheeting	3
Gauze swabs	3
Flexible cannulae	3
Mucus extractor	3
Ambu (ventilator) bag	3
Suction catheter	3
Endotracheal tubes	3
Infant face masks, sizes 0,1,2	3
Infant laryngoscope with spare bulb and batteries	0
Disposable uncuffed tracheal tubes	3

Vacuum aspirators/syringes	3
Suction aspirator (operated by foot or electrically)	3
Mucus trap for suction	3

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This part of the research discusses the results gathered from the three selected healthcare facilities on analyzing the quality improvement strategies at the selected Emergency Obstetric and Newborn

Care facilities in Lower Manya Krobo Municipality

5.2 Availability of Qualified Health Workers

The first obstacle in the availability of EmOC services 24h/day, 7 days/week in most countries is the non-availability of healthcare workers: i.e. midwives, anaesthetists, practitioner who can do surgery and laboratory technician (WHO et al 2009). From table 1.1 it was seen that all the three healthcare facilities had all the cadre of health workers available for the provision of EMOC services 24hours per day and 7 days per week.

5.3 Obstetric Complications in the three Healthcare Facilities

The most common causes of maternal mortality are; Haemorrhage, Postpartum sepsis, preeclampsia and eclampsia, unsafe abortion, and complications from delivering. Most of the causes of these maternal deaths are entirely avoidable and can be managed, the causes of maternal death could be present before pregnancy but is made severe during the pregnancy (World Health Organization 2020 b). One of the objectives was to identify the obstetric complications presented at the three facilities., The evidence generated showed that fetal distress (18.08%), Previous C/S in Labour (13.28%), Pre-eclampsia and eclampsia (8.12%), and

Cephalopelvic Disproportion (6.64%) and Breech presentation in Labour (6.64%) had the highest number of percentages respectively. Also, some of the mothers presented with two obstetric complications simultaneously; Cephalopelvic Disproportion + Severe Pre-eclampsia (1.11%), Prolong Labour + Fetal Distress (0.37%), Previous C/S in Labour + Contracted Pelvis (0.37%), as seen in Table 1.2.

Obstetric complications are higher amongst adolescents between the ages of 10-19 years as compared to women aged 20-24 years (World Health Organization 2020 b). Women who are between the ages of 35-44 years and 45 years and above are more likely to experience obstetric complications compared to women below the age of 35 years (Grotegut, et al 2014). From figure 3.0; it was seen that women between age-group 25-29years had obstetric complications of about 30.26% morethan any other age-groups. Women aged between the age 45 years and above have a greater chance of having these obstetric complications; Caesarean delivery, gestational diabetes, pre-eclampsia and pregnancy associated hypertensive disorders, multiple gestation, preterm labor, placental abruptio, and fetal growth restriction (Grotegut, et al 2014). As seen in the findings of this study; 100% of women aged between 40years and above had Caesarean delivery, and also the most common obstetric complications seen in this age-group were Preeclampsia and Eclampsia and fetal distress with 33.33% and 22.22% respectively. The rest of the complications seen in this age-group were Cephalopelvic Disproportion, High Risk Pregnancy, Heamorrhage and Post Date + Big Abdomen as shown in table 1.8.

5.4 Provision of EmOC Interventions in the Three Facilities

In improving the accessibility of EmOC, maternal morbidity and direct maternal mortality can be decreased significantly with the right interventions (Kyei-Onanjiri, et al. ,2018). To ensure equity

and access, 100% of subnational areas is mandated to have the least acceptable numbers of EmOC facilities or minimum of five facilities, which should include at least a facility that gives comprehensive services per 500,000 population (WHO et al., 2009). From the results it was seen that all the three healthcare facilities; St Martins Catholic Hospital, Atua Government Hospital and Akuse Government Hospital provided both Basic and Comprehensive EmONC services 24 hours in a day and 7 days in a week, to a population of about 108,049. This has met the standard stipulated for the availability of EmONC services in subnational areas.

A key method for evaluating the availability or effectiveness of obstetric services is to examine their ability to respond to maternal health emergencies or give EmOC interventions (KyeiOnanjiri, et al., 2018). In the three hospitals; 100% of obstetric complications had no indication for providing Assisted Vagina Delivery, 100% of obstetric complications had indications for giving parenteral antibiotics, and uterotonics. 98.52% of obstetric complication had an indication for Caesarean Section, 99.28% of obstetric complications had indications for manual removal of placenta, 91.67% had no indication for the administering Anti-convulsant for pre-eclampsia and eclampsia, 99.28% of obstetric complications had no indication for the removal of retained products of conception, 99.64 of obstetric complications did not have any indication for providing Newborn Resuscitation, and also 96.38% of obstetric complications did not have indication for blood transfusion. This indicates that EmOC interventions were performed in the three healthcare facilities.

5.5 Availability of Emergency Obstetric Drugs, Equipment and Supplies

Important medicine and supplies are one of the six fundamentals for health system building as suggested by the World Health Organization. Inability to meet the demands of essential medicines and supplies have a bad effect on solving any health problem, including maternal and new born health issues. Inability to access or unavailability of important medicines and supplies is an obstacle in ensuring quality emergency obstetric and newborn care (Pembe et al 2019). Averting those causes of maternal mortality means that there should be the availability of the necessary drugs, equipment and supplies. With the evidence generated from this work as seen from table 2.0 and table 2.1: all the three healthcare facilities had most of the emergency drugs and supplies for averting the causes of maternal mortality. But St Martins Catholic hospital was the only facility that had Ergometrine. Also, with the availability of equipment, it was seen that all the three facilities had most of the equipment, but did not have the Infant Laryngoscope with Spare Bulb and Batteries.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

This study was to analyze the quality improvement strategies at the selected Emergency Obstetric and Newborn Care facilities in Lower Manya Krobo Municipality in the Eastern Region of Ghana.

The conclusion and recommendations are presented below:

6.1.1 Availability of Healthcare Workers

The study showed that there is availability of qualified health workers in all the three facilities who provide EmOC services twenty-four hours in a day and Seven days in a week.

6.1.2 Obstetric Complications in the Three Healthcare Facilities

The most common obstetric complications identified in all the three health care facilities were; fetal distress, Previous C/S in Labour, Pre-eclampsia and eclampsia, and Cephalopelvic Disproportion and Breech presentation in Labour. Also, most women presented with two obstetric complications like; Cephalopelvic Disproportion + Severe Pre-eclampsia, Prolong Labour + Fetal Distress, Previous C/S in Labour + Contracted Pelvis, etc. The study shows that women between the age-group 25-29years had the highest number of obstetric complications than any other age-group.

6.1.3 Provision of EmOC Interventions in the three Healthcare Facilities

It was seen that all the three healthcare facilities provided both basic and comprehensive EmOC interventions to a population of about 108,049. Also, they were no indications for the provision of Assisted Vagina Delivery even in obstetric complications that required Assisted Vagina Delivery, such as prolonged Labour; Caesarean section services was provided.

6.1.4 Availability of Emergency Obstetric Drugs, Equipment and Supplies

All the three facilities had the most of the emergency drugs, supplies and equipment but some lacked Ergometrine and all did not have Infant Laryngoscope with spare bulb and batteries.

6.2 Recommendations

The following recommendations were made for consideration by the major stakeholders.

6.2.1 Ghana Health Service and Christian Health Association of Ghana

For the improvement of Emergency Obstetric and Newborn care received in the three healthcare facilities providing both basic and comprehensive healthcare services, Ghana Health Service and the Christian Health Association of Ghana should ensure that there is availability of Infant Laryngoscope with spare bulb and batteries. This equipment is very vital for tracheal intubation and cardiopulmonary resuscitation of newborns in cases such as Neonatal Asphyxia.

6.2.2 Lower Manya Krobo Municipal Health Directorate

The health directorate should ensure that workshops and seminars are held or organized in all the three healthcare facilities to train all the health workers involved in the provision of EmOC services on the indications for the provision of Assisted Vagina Delivery.

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APPENDICES

Appendix I: Questionnaire on Quality Improvement of Emergency Obstetric and Newborn Care in Selected Communities at Lower Manya Krobo Municipality

Respondent's ID #: ……. Date:/……. /……...

Name of interviewer…….…….……...

INTRODUCTION

Dear Sir/Madam,

My name is ……I am a Student at Ensign College of Public Health, Kpong. I am conducting a research on the factors that associated with anaemia in pregnancy in this facility an academic work which could be used for a database in policy formulation. I would be grateful if you could spare some time to answer this questionnaire. You are hereby assured of anonymity and that any information provided will be treated with the utmost confidentiality. If at any point you feel reluctant to participate you have the right to drop out without any offense or hindrance. Thank you.

Identification

Facility name	**District name (or other subnational area)**	**Region name (or other subnational area)**

Date of data collection			**Interviewer**
Day	Month	Year	Name

Adapt the following lists of options to the local situation.

Diagnosis:

Type of facility:(circle-one)

1. National hospital 2. Regional hospital 3. District hospital 4. Maternity 5. Health 6.

centre Clinic 7. Other: specify_____
Type of operating agency: (circle one) 1. 2. 3. Nongovernmental Government Private organization 4. Religious mission 5. Other: specify_____

EmOC signal functions

Answer the following questions about EmOC signal functions by reviewing facility registers, through observation and if necessary, interviewing health workers in the maternity ward and other departments. Record whether the function has been performed in the past 3 months, and if not, why it has not been performed.

Consider all of the following when determining whether a particular signal function was performed:

- Are staff at the facility trained to provide the service?
- Are the requisite supplies and equipment present? Is the equipment functioning?
- Were there no cases for which the use of a particular signal function was indicated?
- Are the cadres of staff working at the facility authorized to perform the service?

Performance of signal functions

Item	Performed in past 3 months?	If not performed in past 3 months, why?
(a) Administer parenteral antibiotics	❑ 0. No ❑ 1. Yes	❑ 1. Training issues ✈ 2. Supplies, equipment, drugs issue ✈ 3. Management issue ✈ 4. Policy issues ✈ 5. No indication
(b) Administer uterotonic drugs (e.g. parenteral oxytocin, ergometrin,	❑ 0. No ❑ 1. Yes	❑ 1. Training issues ❑ 2. Supplies, equipment, drugs issue

misoprostol)		✈ 3. Management issue ✈ 4. Policy issues ✈ 5. No indication
(c) Administer parenteral anticonvulsants for pre-eclampsia and eclampsia (e.g. magnesium sulfate)	❑ 0. No ❑ 1. Yes	❑ 1. Training issues ❑ 2. Supplies, equipment, drugs issue ✈ 3. Management issue ✈ 4. Policy issues ✈ 5. No indication
(d) Perform manual removal of placenta	❑ 0. No ❑ 1. Yes	❑ 1. Training issues ❑ 2. Supplies, equipment, drugs issue

		✈ 3. Management issue ✈ 4. Policy issues ✈ 5. No indication
(e) Perform removal of retained products (e.g. manual vacuum aspiration, dilation and curettage)	❑ 0. No ❑ 1. Yes	❑ 1. Training issues ❑ 2. Supplies, equipment, drugs issue ✈ 3. Management issue ✈ 4. Policy issues ✈ 5. No indication
(f) Perform assisted vaginal delivery (e.g. vacuum extraction, forceps delivery)	❑ 0. No ❑ 1. Yes	❑ 1. Training issues ❑ 2. Supplies, equipment, drugs issue ✈ 3. Management issue ✈ 4. Policy issues ✈ 5. No indication

Item	Performed in past 3 months?	If not performed in past 3 months, why?
(g) Perform newborn resuscitation (e.g. with bag and mask)	❑ 0. No ❑ 1. Yes	❑ 1. Training issues ✈ 2. Supplies, equipment, drugs issue ✈ 3. Management issue ✈ 4. Policy issues ✈ 5. No indication
(h) Perform blood transfusion	❑ 0. No ❑ 1. Yes	❑ 1. Training issues ✈ 2. Supplies, equipment, drugs issue ✈ 3. Management issue ✈ 4. Policy issues ✈ 5. No indication
(i) Perform surgery	❑ 0. No	❑ 1. Training issues

(e.g. caesarean section)	❑ 1. Yes	✈ 2. Supplies, equipment, drugs issue ✈ 3. Management issue ✈ 4. Policy issues ✈ 5. No indication

Appendix II: Observation Checklist for the Availability of Emergency Obstetric Drugs, Equipment, and Supplies

- ☐ Antibiotics injection
- ☐ Oxytocin injection
- ☐ Diazepam injection
- ☐ Adrenaline
- ☐ Misoprostol
- ☐ Ringer lactate
- ☐ Dextrose
- ☐ Normal Saline
- ☐ Dexamethasone
- ☐ Mannitol
- ☐ Hydralazine
- ☐ Labetalol
- ☐ Ergometrine

- Diazepam
- Phenobarbitone
- Methyldopa
- Atropine
- Artery forceps
- Sponge forceps
- Dissecting forceps
- Cord-cutting scissors
- Cord ties
- Episiotomy scissors
- Straight stich scissors
- Gloves
- Long gloves
- Plastic sheeting
- Gauze swabs
- Flexible cannulae
- Mucus extractor
- Ambu (ventilator) bag
- Suction catheter
- Endotracheal tubes
- Infant face masks, sizes 0,1,2
- Infant laryngoscope with spare bulb and batteries

- Disposable uncuffed tracheal tubes
- Vacuum aspirators/syringes
- Suction aspirator (operated by foot or electrically)
- Mucus trap for suction