

**EFFECTIVENESS OF MIDWIVES IN REDUCING MATERNAL MORTALITY
RATES IN THARAKA DISTRICT, KENYA**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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BY

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DECLARATION

This thesis is my original work and has not been presented to any other university for an award of any other degree.

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DEDICATION

This research is dedicated to my mum and my late father for instilling the virtue of hard work in me.

With heartfelt gratitude to my loving husband Albano Mugambi and sons, Antony Nyaga, Claude Mwaria and Vincent Mutua,

You inspired me to the end.

Thank you.

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ABSTRACT

Introduction: Midwives have the ability to effectively reduce maternal mortality using competencies and proficiency in midwifery skills. The purpose of this study was to investigate effectiveness of midwives in reducing maternal mortality in order to give insight into the current practices in obstetric care in Tharaka District, Kenya.

Study Objective: This study was to determine the effectiveness of midwives in reducing maternal mortality in Tharaka District. The study focused on quality of care practices, knowledge, institutional and patient characteristics as well as midwives' attitude.

Methodology: A cross-sectional descriptive study was carried out in the public and faith based health facilities that provide maternity services in Tharaka District. Facilities were selected by multistage sampling. Purposive sampling of the midwives (N= 48) was done. Ethical clearance was obtained from the Kenyatta National Hospital Standards and Ethics Committee, the Ministry of Education Science and Technology, and the District Medical Officer of health Tharaka. Midwives gave a written consent to participate in the study. A structured self-administered questionnaire was used. Quantitative data was analyzed using SPSS version 16. Descriptive statistics and Chi square were used to bring out relationships between study variables. Eight Key Informants were interviewed to obtain in-depth information. Content analysis was done for qualitative data.

Results: Few midwives 4(9.1%) listed the correct components of a partograph. There is no positive correlation between respondents experience and competence in plotting a partograph (p value = 0.229). Midwives are not well prepared in handling critical obstetric activities like severe preeclampsia 9 (20.5%), eclampsia 9 (20.5%). Poor transport, lack of referral facilities and low economic status of patients contributed to delay in accessing care.

Conclusions: The results revealed moderate performance rating in knowledge and clinical competencies among midwives in Tharaka District. Midwives indicated need for coaching in very critical skills that have an immediate impact on maternal outcome.

Recommendations: There is need to carry out an observational study to evaluate the specific midwifery skills that have a direct influence on maternal mortality in Tharaka District. These will reveal the gaps in midwives' competencies that require updating in order to enhance effectiveness.

LIST OF ABBREVIATIONS

AMTSL-----	Active Management of Third Stage of Labour
CEmOC-----	Comprehensive Emergency Obstetric Care
CPD-----	Continuous Professional development
DPHN-----	District Public Health Nurse
EOC -----	Essential Obstetric Care
EmOC-----	Emergency Obstetric Care
FHR-----	Fetal Heart Rate
GOK-----	Government of Kenya
ICM-----	International Confederation of Midwives
ICN-----	International Council of Nurses
IMF-----	International Monetary Fund
IQR-----	-Interquatile Range
KECHN-----	Kenya Enrolled Community Nurse
KEM-----	Kenya Enrolled Midwife
KDHS-----	Kenya Demographic and Health Survey
KRCHN-----	Kenya Registered Community Health Nurse
KRN/M-----	Kenya Registered Nurse/ Midwife
MDGs -----	Millennium Development Goals
MOH-----	Medical Officer of Health
MM-----	Maternal Mortality
MMR-----	Maternal Mortality Rate
RH-----	Reproductive Health
RHC-----	Reproductive Health Care

RHCS-----Reproductive health Care Services
RHCPs-----Reproductive Health Care Programs
RHSP-----Reproductive Health Strategic Plan
SBA-----Skilled Birth Attendant
SMI-----Safe Motherhood Initiative
UNFPA-----United Nations Population Fund
WHO-----World Health Organization

OPERATIONAL DEFINITIONS

Effectiveness- this relates to the degree to which midwives utilize the available resources to provide care to women of reproductive age to improve their health and reduce maternal deaths.

Emergency obstetric care— this is care provided to women whenever complications like antepartum and postpartum hemorrhage, eclampsia, ruptured uterus occur. It should be available for twenty four hours a day.

Essential obstetric care— the basic reproductive health care that every woman should receive whenever they seek assistance from a health worker. This includes making correct diagnosis, and timely intervention using parenteral antibiotics and oxytocic drugs.

Midwife- a person who has undergone a prescribed period of training in a recognized training institution has been awarded a certificate and has been registered or enrolled by the respective regulatory body. Midwives may enter the profession through direct training, or may initially be trained as nurses and later undergo a specialized course in midwifery.

Partograph- It is a tool used by midwives and obstetricians to monitor a woman's progress in labour and the condition of the fetus to facilitate quick, effective decision making on appropriate intervention.

Skilled birth attendance- delivery supervised and completed by a trained professional midwife/nurse with competence in midwifery skills.

CHAPTER ONE

1.0 Background Information

Nurses and midwives comprise the greatest proportion of health system workforce globally (Morin and Yan, 2006). They make significant contributions to the delivery of health care in acute and primary health care settings. As the largest group of health care providers they are the first point of contact for individuals and communities most in need (Yan, 2009).

Maternal deaths are attributed to direct and indirect causes (WHO, 2005). Risk factors associated with indirect causes require to be addressed in order to effectively reduce the high death rates. Reducing maternal mortality by two thirds by 2015 is one of the Millennium Development Goals (MDGs) (WHO, 2000). The indicators of success are the number of deliveries attended by Skilled Birth Attendants (SBA) and overall reduction of Maternal Mortality Ratio (MMR) which was approximated to be over 530 deaths per 100,000 live births (WHO, 2005), with 60% occurring 24-48 hours of delivery when women are less likely to receive care (MOH, 2006).

Midwives as frontline health providers play a pivotal role in reducing maternal mortalities and morbidities (Chamberlin, Mcdonagh, lolonde, Arulkumanaran, 2003). Their scientific role is to provide professional services to pregnant women through out the maternity cycle by ensuring a normal pregnancy, safe delivery and normal puerperium (Thompson, 2003). Midwives practising within the set standards in Essential Obstetric Care (EOC) facilities can effectively reduce Maternal Mortality (Thompson, 2003).

The political will to prioritize, mobilize and allocate adequate resources to Reproductive Health Programs (RHPs) will lead to realization of reduction in maternal mortality in the specific countries (Fauveau and Bernis 2006).

A modified Irvine's (1998) Role Effectiveness Model formed the framework for determining midwives' effectiveness in their role of providing care to reduce maternal deaths in Tharaka District.

1.1 Problem Statement

Tharaka District, in Eastern Province has few (48) midwives who provide midwifery and nursing care in the district. Marimanti District Hospital has 12, Kibung'a sub-district 2, Chiakariga Health Centre 3, Tunyai dispensary 3, Mukothima 6, St. Orsola Matiri Mission 22

midwives. Twenty-four hour provision of basic obstetric care is not possible with such staff establishment. Since patients are aware of few midwifery staff, they are discouraged to visit the facilities due to long waiting hours. This may result in underutilization of the health services. High workload in busy facilities leads to fatigue and reduced output leading to ineffective care. Insufficient and, or poor documentation for measuring maternal mortality may be a problem in understaffed facilities (Ross et al. 2006).

There is no public hospital that has a surgical theatre to offer comprehensive reproductive health services in Tharaka District. St. Orsola Mission Hospital is the only hospital that provides Comprehensive Obstetric Care services. To perform proficiently and effectively in their role of reducing maternal mortality, midwives require up to date knowledge of current best practices in Essential Obstetric Care (EOC). They should also have adequate supplies, equipments and transport, and these should be available, accessible and acceptable to them (Dileep, Mavalankar and Rosenfield, 2005).

Making observations and appropriate interpretation of a partograph in order to effect timely interventions may be inadequate when a midwife has many patients to care for.

The referral system when need arises becomes difficult with few nurses and is compounded by lack of transport in the rural facilities as the district has one functional ambulance.

The distances between health facilities are vast with poor road network and lack of public service vehicles.

There is no fertility and maternal mortality rates data available for the district. The fertility rate for Meru South district before the split of Tharaka district was 4.8 per 100,000 births (KDHS, 2003) and the report indicated an upward trend in population demographics.

The district has no tarmac roads and the main mode of transport is by Land Rovers and pick Ups. This makes transport difficult even for patients seeking health care in health facilities. To cope with this state, patients visit health facilities on market days when transport is convenient and cost effective as the visit to the hospital is combined with shopping. It therefore poses difficulties to mothers in labour who are bound to attend the health facilities any time labour starts. This may result to increased home births and birth of babies before arrival to the health facilities with no skilled birth attendants and the consequent risks.

1.2 Study Questions

1. What are the demographic characteristics of midwives in Tharaka district?
2. Do midwives in Tharaka district have knowledge on the use of partograph?
3. Do midwives in Tharaka district have the skills necessary to handle obstetric emergencies?
4. Do the facilities in Tharaka district have resources to provide essential obstetric care?
5. What patients' characteristics affect the care they receive?
6. How does midwives' attitude influence the care they provide to women in labour?

1.3 Main Objective

To determine midwives' effectiveness in reducing maternal mortality in Tharaka District.

1.4 Specific Objective

1. To determine midwives' demographic characteristics.
2. To assess midwives' knowledge on utilization of the partograph.
3. To determine midwives' skills in handling obstetric emergencies.
4. To assess availability of resources in the institutions for provision of essential obstetric care.
5. To determine what patients' factors affect the care they receive when in labour.
6. To describe how midwives' attitudes influence the care they provide to women in labor.

1.5 Theoretical Model

Irvine's Nursing Role Effectiveness Model provided a Theoretical Framework to guide evaluation of the nurses' contribution to outcomes of nursing care (Irvine et al. 1998). As guided by the Model the structure components included nurses', patients' and organizational' variables. Nurse variables included professional characteristics such as experience and skills which were noted to influence the quality of nursing care.

The study looked at the midwives' characteristics and their independent role in reducing maternal mortality. The patients' characteristics and how they affect their care were also studied.

Irvine et al. (1998) acknowledge institutional factors as important in achieving effective outcomes. The availability of resources was investigated since the midwife requires them to perform her roles effectively. These included equipments and supplies as well as the transport and referral system from a basic to a comprehensive obstetric facility.

Knowledge of, or lack, of current practices can affect the way information is gathered. (Irvine et al. 2002). It was necessary to study knowledge on utilization of a partograph by midwives. Glyn and Masse (1979) in their model of measuring maternity services explained that Maternal Mortality (MM) does not always indicate effectiveness of a service; that whereas inventory of institutions is important, effectiveness should be in the actual service provided during practice.

The model was modified to include the main concepts that formed the variables in the conceptual framework. To actualize the concepts an operational framework was developed with more specific variables of the study.

1.6 Study Variables

Informed by the Theoretical model and based on the study objectives the following variables were identified:

1.6.1 Independent variables

1.6.1.1 Demographic Factors

- Age
- Gender
- Professional qualifications

1.6.1.2. Nursing Independent Role

- Nursing Care
- Education
- Documentation
- Research
- Infection prevention

1.6.1.3. Institution Factors

- Personnel

- Transport
- Technology

1.6.1.4. Patient Factors

- Diagnosis
- Parity
- Arrival time at the facility

1.6.2. Dependent variables

1.6.2.1. Knowledge

- Essential obstetric care
- Emergency Obstetric Care
- Partograph

1.6.2.2. Attitude

- Caring
- Respect
- Empathy

1.6.2.3. Skills

- Use of Partograph
- Delivery
- Monitoring labour
- Emergency care
- Referral system

1.7 Confounding Factors

- Midwives working in other departments.
- Lack of maternal death audits in the district.

Since midwives have other skills (as most of them are community nurses and have general nursing) to enable them function in other departments it was possible for some to be working in many departments at the same time. This was controlled for by involving those who had at least worked for three months in maternity.

Knowledge, quality and competence in specific aspects of care were assessed to determine midwives' effectiveness in reducing maternal mortality as opposed to investigating maternal mortality ratios.

1.8 Conceptual Framework

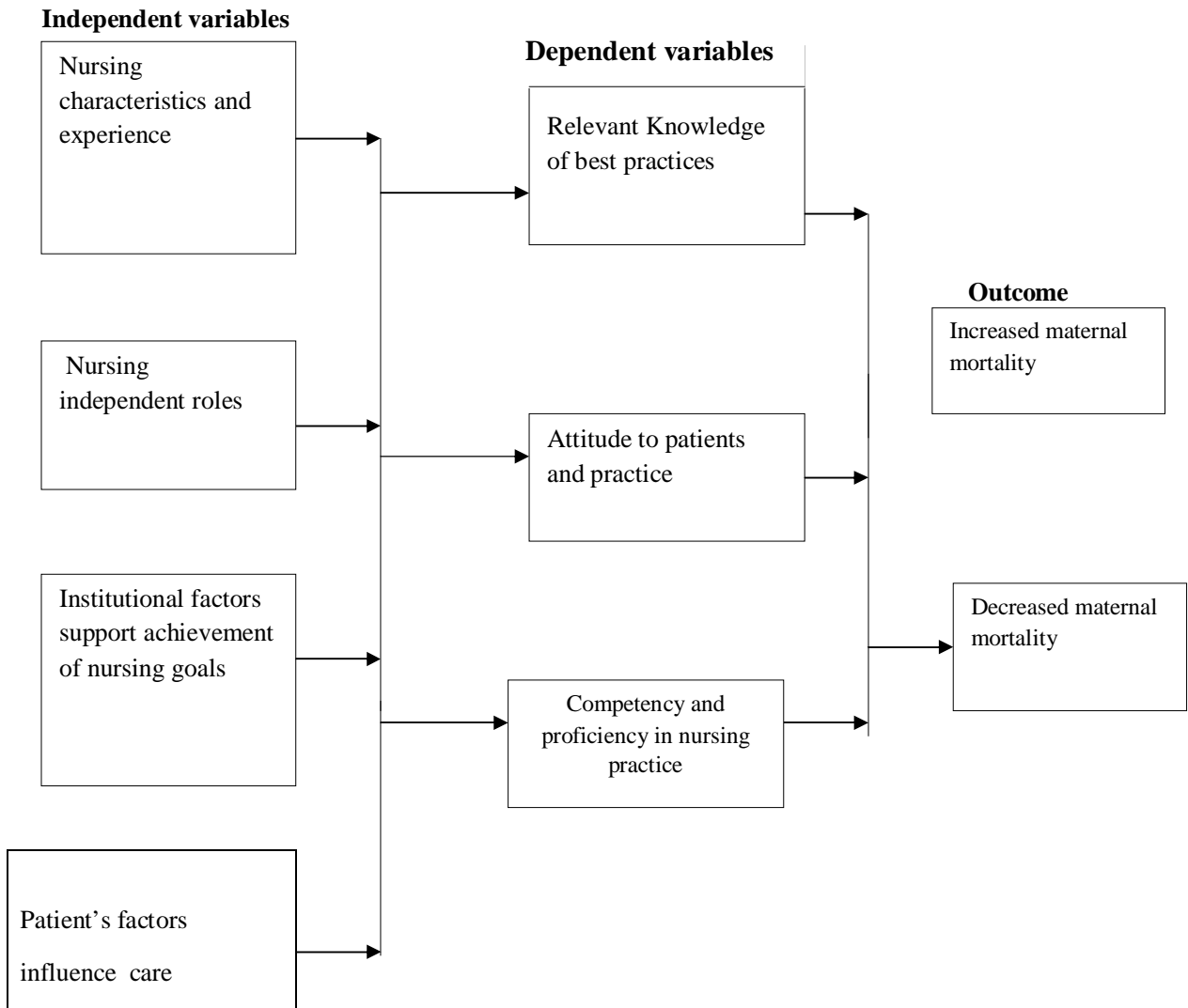


Figure 1.1 Conceptual Framework (Modified Irvine's Model)

1.9 Operational Framework

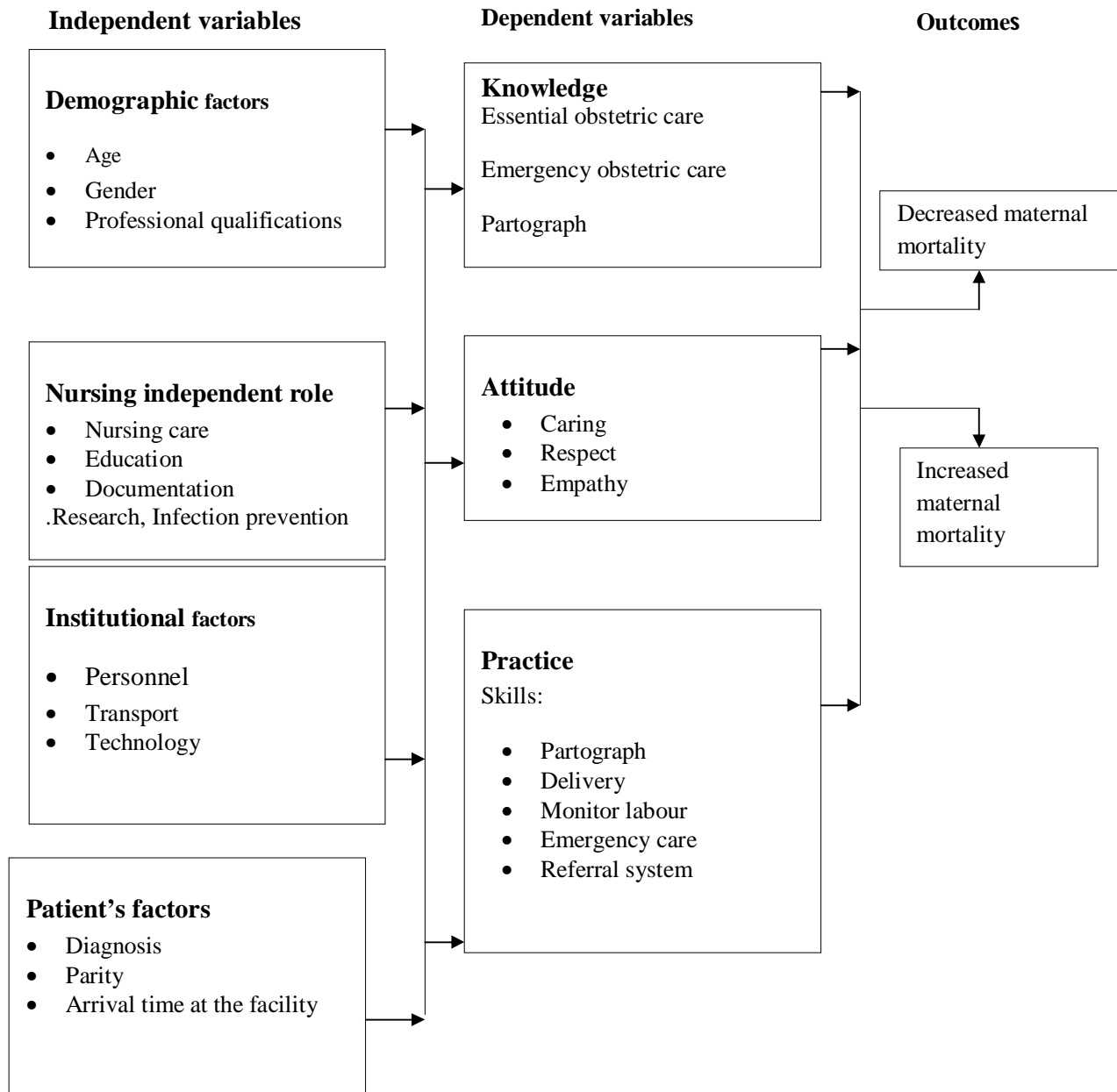


Figure 1.2 Operational Framework

1.10 Purpose of the Study

The study was undertaken to determine the effectiveness of midwives in their role of reducing maternal mortality rates in Tharaka District.

1.11 Study Justification

No woman should die while giving life. Quality care by the midwives who are the key health workers in rural areas may reduce maternal mortality. Some or all the delays that cause maternal mortality may be existing in Tharaka District. These include delay to make decision by the patient, delay to access health facility and delay to receive appropriate care from the health workers. This implies that some women in Tharaka may deliver at home without supervision from a skilled birth attendant due to lack of transport and poor roads that cause delays to access care which puts the life of the woman and her baby at risk.

Midwives require adequate knowledge and competence in improving the quality of services to avert maternal deaths.

Quality of care is affected by the midwife-patient ratios and patients' factors like their levels of acuity and time of arrival at the facility. The time taken to make a decision on care also determines the outcome. Due to inadequate staffing ratios, strict monitoring of labour using the partograph to enable midwives institute interventions timely is uncertain (Christian and Ibeb, 2008). Since the tool is important in monitoring labour it was important to determine midwives' ability to utilize the partograph to help them make timely decisions.

It was important to determine how midwives' attitude affects their care as positive attitude to work and commitment leads to positive outcomes and encourages patients to make use of the facilities for their benefit.

No similar study had been conducted in the district before. The results will provide database for further planning. This study is also consistent with one of the goals of The Ministry of Health Reproductive Health Strategic Plan (RHSP) (1997) on enhancing the scope and quality of Reproductive Health programs (to conduct research on suitable modalities for provision of services to the vulnerable groups), in this case, women.

Obstetric emergencies are unpredictable. When they occur, most or all can be treated. In light of this background this study will focus on midwives' role during intrapartum period.

1.12 Benefits of the Study

The results will form a baseline data for subsequent evaluation and actions. Programs to improve care will be guided by the results and recommendations. Investing in maternal health strengthens the capacity of health system since many of these investments (improving human

resources, upgrading infrastructure, strengthening logistic systems for supplies of equipments) benefit other health components as well (WHO and World Bank, 2006). Actual care costs will be saved when complications are prevented (WHO and World Bank, 2006).

Improving maternal health boosts labour supply and productive capacity of women resulting in improved household income and economic wellbeing of families and communities. Reduction of maternal mortality will lead to reduced number of orphans.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.0 Introduction

In the literature review, the trends are reviewed to compare Kenya's interventions in reducing maternal mortality. The role of the nurse as required by the profession and the clients provides the basis for the evaluation of the extent to which they are effective. To effectively achieve their role of reducing maternal mortality in Tharaka, the standards within which midwives are required to operate are reviewed in order to ascertain to how well they are able to meet them. The recommended interventions are reviewed to enhance the understanding of the framework within which successful outcomes will be documented. Adequate resources are required and should be available, accessible and acceptable. These relate not only to the physical resources and infrastructure but also to the knowledge of the EOC as well as their preparedness to provide EmOC 24 hours. Midwives' knowledge and use of a partograph is reviewed as the tool used to monitor progress of labour and to guide decision making towards timely interventions.

2.1 Trends in Reducing Maternal Mortality Rates

WHO and World Bank (2006) Report, states that more than 500,000 women die during pregnancy, childbirth or in the six weeks after delivery. Ninety nine percent of these deaths occur in the developing regions with sub-Saharan Africa and Asia accounting for 86% of the maternal deaths.

According to WHO (2005), globally, maternal mortality decreased by 1/100 annually between 1990 and 2005- far below the 5.5% annual improvement needed to reach the target for MDGs. Northern Africa, Latin America, and the Caribbean reduced MMR by 1/3 during this period. The report also states that progress in Sub-Saharan Africa was negligible and concludes that accelerated improvements in all dimensions of RHC leading to better obstetric care are required in all regions.

The improvements should focus on avoiding 'The Three delays' (Barnes et al.1998). The authors used 'Three Delays' model to examine maternal mortality, and reported that improvements which focus on reducing the delays will have great impact in reducing maternal mortality. According to Christian and Ibeb (2008), the delays were attributed to

unavailability of blood, electricity, sterilized instruments, ambulance, late arrival of experienced theatre staff and unhealthy hospital policy. The delay intervals ranged from 30 minutes to 5-8 plus or minus 1.5 hours.

In Kenya, the trend is a replica of the global situation. A needs assessment and costing report (GOK, 2005) revealed that the proportion of mothers assisted by skilled health professionals had declined from 51% in 1989 to 45% in 1993 and to 42% in 2003. The report further states that only 15% of health facilities are able to provide basic obstetric care while only 9% are equipped to provide Comprehensive Emergency Obstetric Care (CEmOC). The targets set in the RHS plan 1998-2010, are yet to be achieved. The challenges that need to be addressed are: dealing with direct causes of maternal mortality; addressing provider attitudes in order to encourage more women to deliver in the health facilities and sustainable availability of required supplies and equipment.

UNICEF, Kenya (2006) has been in the forefront in supporting programs that improve the maternal health with specific emphasis on effective ways of implementing and institutionalizing maternal death notification and maternal death review (MDR).

In their study on maternal mortality in rural district, Rogo et al. (2001) identified problems of understaffing, lack of equipments and essential drugs and supplies as well as low standards of quality of care and record keeping. In addition, Zirabi et al. (2009) found inadequacies in obstetric skills and supervision among health providers.

2.2 The Role of Midwives in Reducing Maternal Deaths

The International definition of a midwife according to Fraser et al. (2006 pg 5) states that “a midwife is a person who, having been regularly admitted to a midwifery educational program, duly recognized in the country in which it is located, has successfully completed the prescribed course of studies in midwifery and has acquired the requisite qualifications to be registered and/or legally licensed to practice midwifery.” It is all encompassing and stipulates the roles whose ultimate goal is improvement of women’s health and reduction of maternal deaths (Fraser et al. 2006).

Midwives’ roles include care, teaching and counseling to women during pregnancy, labour and postpartum period, conducting deliveries on their own responsibly and caring for the newborn and infant. The care includes preventive measures, detection of abnormal conditions and treatment and timely referral of complicated cases. (Fraser et al. 2006).

Evidence suggests that the role of midwives in reducing maternal deaths is vital. The decline in maternal deaths in Sweden for instance was attributed to highly competent midwives who attended home deliveries (Hogberg, 2004). The continuous care and support during labour from caregivers decreased the likelihood of operative vaginal delivery as well as caeserian section and asphyxia of the baby.

Monitoring and evaluation of care is important for effective care. Management and supervision should be done at the intervention site (Jamisse et al. 2004).

Expanding professional roles, provision of supplies and equipments are among the strategies for reducing MM (Dileep, malalankav and Rosenfield, 2005). Emerging trends in midwifery care place increased demand on knowledge base and proficiency in clinical practice.

Expanding midwifery care to the community; training and deploying appropriately skilled health personnel such as midwives; ensuring a continuum of care connected to effective referral links supported by adequate supplies, equipment, drugs and transportation will enable nurses to effectively reduce MM (Thompson, 2003). Community midwifery promises success in increasing the number of women attended by skilled birth attendants in Kenya as stated by Mwangi and Warren, (2008). In their study retired midwives were recruited to provide reproductive health services to the community starting with western province and the study is being duplicated in other provinces.

2.3 Knowledge of Essential Obstetric Care

There is need to train midwives to proficiency in skills needed to manage normal (uncomplicated) pregnancies and in the identification, management and referral of complications in women and newborns. The elements of EOC are a prerequisite to improved maternal outcomes (Ziraba et al. 2009).

According to the UNFPA (2002), basic functions of EOC facilities include administration of parenteral antibiotics, oxytocic drugs, sedatives/anticonvulsants, antihypertensives; manual removal of the placenta; assisted vaginal delivery (vacuum). These should be available in all facilities. In addition comprehensive functions include blood transfusion and caeserian section services.

Management of normal labour requires having all the necessary equipments, use of partograph, adequate nutrition and fluids, ambulation, support companion, emotional support, pain relief, comfort, information and infection prevention (Ziraba et al. 2009).

Active management of 3rd stage of labour (AMTSL) entails use of syntocinon within a minute after the delivery of the baby and immediate delivery of the placenta by controlled cord traction; examination of the birth canal for tears and repair if necessary; examination, weighing, disposing of the placenta appropriately; (Fraser et al. 2006). While optimists contend that there is no need for haste if there is no active bleeding especially if the woman has had a normal labour without need for induction or acceleration with synthetic hormones or instrumental delivery, The joint statement of the International Confederation of Midwives and Federation of Obstetricians and Gynaecologists (2003) recommends AMTSL as half of women die from severe bleeding within 24 hours of delivery (Fernandez 2006, Pillitteri 2007)

2.4 Midwives' Preparedness for Emergency Obstetric Care

Adequate emergency preparedness for the midwifery team requires knowledge of the clinical situations (antepartum heamorrhage, cord prolapse, eclampsia, uterine rupture, and postpartum heamorrhage), their diagnosis and treatments; the relevant drugs and their use, administration and side effects; emergency equipments and how they function. The team should practice infection prevention at all times (MOH, 2006).

Emergency Obstetric Care is promoted as the primary strategy to save women's lives in developing countries (Sloan et al. 2009). In their study on the effectiveness of training in Live Saving Skills, detection of life threatening obstetric conditions was observed to increase among the health workers who were trained in such skills.

Midwives in Kenya are trained comprehensively at a diploma level as Registered Community Health Nurses (KRCHNs). They function in different settings. According to the Nursing Council of Kenya Strategic Plan 2005-2010 (NCK, 2005) all nurses will have been upgraded to a diploma level by the year 2010 to improve their knowledge and skills and improve quality of care. While this may take longer to be realized, NCK advocates update courses for all nurses through a retention system where nurses should renew their licenses every three years. They should have undergone 60 hours of continuous professional development to be renewed and this keeps nurses ablest with emerging trends.

Christian and Ibeb (2008) in their study noted that maternal deaths were substantially reduced when a high proportion of births were attended by health professionals. They pointed that it was however not sufficient to state that attendance by professionals will drastically reduce maternal deaths, but it is necessary to consider their preparedness to cope with Obstetric Emergencies. The authors assert that investing in more and better skilled health planners, managers and service providers are required.

Fawole et al. (2008) put into perspective the value and need for continuous professional development (CPD) when they compared performance of those who had received training and the auxiliary. Their study revealed improved performance on those who had received additional updates in use of partograph than their counterparts who had not received similar updates.

2.5 Knowledge and Utilization of Partograph

A partograph is a graphic presentation of a woman's progress in labour, including the foetal and maternal condition (Christian and Ibeb, 2008). The events of labour are plotted against time in hours. It guides the midwife to make timely decisions that favour outcome of labour. According to Christian and Ibeb (2008) the observations are an early warning system that assists in decision making on early transfer and interventions in the hospital.

The main components of the partograph that a midwife should be familiar with include: patient's information, (name; age, gravidity, parity, time of admission and duration of rupture of membranes); maternal condition (vital signs, amount of urine output and drugs given) and foetal condition (foetal heart rate (FHR) observed $\frac{1}{2}$ hourly). The normal FHR is 120-160 beats per minute (Fraser et al. 2006). The state of the amniotic fluid and membranes is also observed as clear or meconium stained. Meconium staining of liquor in cephalic presentation may indicate foetal compromise. Cervical dilatation is assessed 4 hourly and recorded (Pillitteri, 2007). Four centimeters dilatation is termed active phase and is plotted on the alert line. Uterine contractions are a useful index as the increase in frequency, intensity and duration enhance foetal head descent hence cervical dilatation and are assessed half hourly and the number and duration in ten minutes recorded (Fraser et al. 2006).

A study on knowledge and utilization of partograph among obstetric care givers indicates that only 37.3% of respondents could mention one component of partograph; partographs were utilized mainly in tertiary health facilities; although affordable, it was not used commonly to

monitor labor; the knowledge about the function of the alert and action line was poor; and found lack of knowledge in utilization of the partograph (Fawole, et al. 2008). Deficiencies regarding knowledge about normal characteristics during labour were noted (Fawole, et al. 2008) and that knowledge on the frequency and duration of contractions was poor. As an important tool midwives require adequate knowledge of the components of a partograph and to be proficient in its application (Christian and Ibeb, 2008).

2.6 Midwives' Attitude towards Reduction of Maternal Mortality.

Positive attitude by midwives encourages patients to use health services. Noddings (2005) states that caring involves being receptive and attentive to the patient. She adds that the caregiver is open to what the cared-for is saying and might be experiencing, and is able to reflect upon it. Lanre-Abass (2008) reported problems of service quality, including unfriendly staff attitudes to patients.

Cham, et al. (2005) in their study observed that poor provider attitude, fear and punishment by health care workers delayed patients in seeking care for example if they did not have an antenatal card. They noted that even educated women may not have access to healthcare either due to the problem of poor attitude of health care providers or that of proximity to quality health care facility.

2.7 Patients' Factors that Influence Care

Patients' factors that affect the care they receive are related to decision making. Delay in seeking care may be because the patient underestimates the severity of the complication especially if the previous pregnancy was uncomplicated, cultural beliefs and previous experiences with the health system (Cham et al. 2005). The authors add that patients delay to make decisions due to social and economic reasons where they may not have money to pay hospital charges and to pay for transport. They may have the money but vehicles may be lacking or the roads may be poor.

Sundari (2002) pointed that bad experiences with the health system will lead to reluctance or non-utilization of services and non compliance to a referral hospital.

2.8 Institutional Factors

The fact that health facilities physically exist in the sense of bricks and mortar do not necessarily mean that they are functional. Many hospitals are poorly equipped and lack

essential supplies and qualified staff. According to Cham et al. (2005) health facilities experience decaying infrastructures, chronic shortages of essential drugs and the well-known "out-of-stock: syndrome" as well as midwives with inadequate skills. They further observed that in some hospitals, equipment such as sphygmomanometers, thermometers, weighing scales, delivery kits, waste bins and mucus extractors are unavailable. Many do not have regular supply of electricity because they cannot maintain a standby generator. Some do not even have a regular water supply and thus require their patients to provide their own water.

User charges coming at a time of spreading deepening poverty have become a great barrier to access for many Nigerian women who are not educated, and hence economically disempowered. Getting money for treatment was the problem most commonly reported by Nigerian women of all backgrounds (Cham et al. 2005).

Shortcomings in teamwork among health personnel contribute to ineffective communication and interruption of care for patients (WHO 1999); and failure to adhere to institutional protocols as reasons for low quality of care.

Delays in receiving prompt and appropriate care at the hospital is attributed to lack of blood transfusion and basic medical supplies and poor management of staff availability (Sundari, 2002).

2.9 Summary of Literature Review

Literature review confirms that midwives can effectively reduce maternal mortality. To achieve this, they require adequate knowledge and proficiency in the midwifery skills including EOC skills. Resources to achieve good outcomes should be available, while it is important to monitor and evaluate the impact of the care midwives provide. Empowering the midwives will improve women's health and ultimately maternal morbidity and mortality.

CHAPTER THREE

3.0 STUDY METHODOLOGY

3.1 Study Design

A cross sectional qualitative and quantitative descriptive study was undertaken to determine the effectiveness of midwives in their role of reducing Maternal Mortality in Tharaka district.

3.2 Study Area

The study was conducted in Tharaka district in Eastern Province, Kenya between 31st July and 15th August, 2009. Study participants were drawn from Marimanti District hospital, kibung'a sub district hospital, Chiakariga health centre, Tunyai dispensary, St. Orsola Matiri Mission hospital and Mukothima Catholic dispensary. These are the facilities that provide delivery services in the district.

Tharaka District is one of the districts in Eastern Province. It has an estimated area of 1561 square kilometers. Its location in relation to the neighbouring districts: to the East-Mwingi, to the South- Mbeere, to the South-west- Meru South, Maara and Imenti South; to West- Imenti central, Imenti North and Tigania west; to the North-west- Tigania East and to the North-Igembe South.

It has one constituency (Tharaka) and 7 administrative divisions: (Tharaka North, South, Central; Tunyai, Turima, Nkondi and Mukothima), 21 locations and 45 sub-locations.

The district has not had any census conducted as it was carved from Meru South district in 2004 but the population projection for the year 2008 is 132,000 people.

It is a semi-arid district with average temperatures of above 28⁰c round the year. The district experiences unreliable rainfall in most parts. The main economic activity is subsistence farming consisting of millet, sorghum, green grams, cowpeas and pigeon peas and drought resistant maize breeds. Cotton is grown as a cash crop to a small extent. Pastrolism is also practiced.

3.3 Study Population

The population under study included registered and enrolled midwives who provide maternity services in the government and non-government health facilities in the district.

Twenty one midwives in government facilities and 27 midwives in the nongovernmental (faith based) institutions provide maternity services.

3.4 Inclusion Criteria

All midwives who had been providing maternity services for at least three months before the study period and were working in maternity at the time of the study were recruited. All midwives were explained the purpose of the study by the principal researcher or the research assistants. Those who voluntarily gave an informed written consent and were on duty at the time of data collection were included in the study. The DPHN and his deputy who coordinate maternal health services in the district and the officers in-charge of the facilities in the study area were the main key informants.

3.5 Exclusion Criteria

Midwives working in health facilities that do not offer maternity services were excluded. Those who had not been involved in the provision of maternity services for at least three months before the study and midwives who declined to give informed consent were excluded. Midwives who were not on duty or on leave during the data collection period were also excluded from the study.

3.6 Sample Size Determination

The sample size determination formula according to Mugenda and Mugenda, (2003) was used because the formula provides for sampling of a population greater than and less than 10,000.

$$n = \frac{Z^2 pq}{d^2}$$

Where:

n= the desired sample size (if the target population is > 10,000).

z = the standard normal deviate at the required confidence interval.

P = the proportion in the target population estimated to have the characteristics being measured. There was no estimate available of the proportion in the target population. Since

no estimate was available in the literature, Fisher et al. (1998 as cited by Mugenda & Mugenda) recommendation of 50% was used.

$$q = 1-p$$

d = the level of statistical significance set.

Thus:

$$n = \frac{(1.96)^2 (0.5) (0.5)}{(0.05)^2}$$

$$n = 384.$$

Since the population of midwives of 48 was less than 10,000, the alternative formula was used as follows:

$$nf = \frac{n}{1 + (n/N)}$$

Where:

nf = the desired sample size (when the population is < 10,000).

n = the desired sample size (when the population is > 10,000).

N = the estimate of the population size (the district has a total of 48 who offer maternity services).

Therefore:

$$\begin{aligned} nf &= 384 / (1 + 384/48) \\ &= 42.6 \\ &= 43 \end{aligned}$$

Since the study population was small, all midwives were to be included in the study. This comprised of 48 midwives. Only 45 of them completed the structured questionnaire. There were 8 key informants.

3.7 Sampling Interval

Sample interval (n) = Total study population

Sample size

= Total number of consenting midwives

Sample size

The district has 48 midwives who provide maternity services. The sampling interval was:

n= 48

43

n=1.11

Estimated sample interval is approximately 1. Therefore all eligible midwives who consented were included in the study.

3.8 Sampling Method

The lists of midwives per facility were obtained from the District Medical Officer of Health Tharaka. Since the study population was small (48), purposive sampling was used. The sample size available during the study period was 45 midwives. One midwife declined to participate in the study. Two midwives were on leave during the data collection period. All the midwives on duty in the facilities that provide maternity services were explained the purpose of the study by the researcher and any questions they had were answered. Those who had been working in maternity for at least three months were recruited to the study upon giving a written informed consent. The questionnaires were given to the participants and collected on the same day and checked for completeness.

Key informants included the DPHN and his deputy, the Marimanti district hospital nursing officer in-charge, the clinical officer in charge of Kibung'a sub district hospital and the officers in charge of Chiakariga health centre St. Orsola Matiri mission hospital and Mukothima health centre. After being explained the purpose of the study they gave a written consent to participate in the study. They were interviewed by the principal researcher.

3.9 Study Instruments

A self-administered structured questionnaire consisting of open- and closed-ended questions and a Key Informants' Guide were used to collect data. Questionnaires had a facility code from 1-6 (the number of health facilities from which the study participants were drawn) and serial code to ensure confidentiality and accountability. All the consenting midwives were given the questionnaires to complete. The research assistants collected the filled questionnaires and checked them for completeness and stored them safely pending data analysis.

Informants' interview guide was used to obtain in-depth information on the midwives role in reducing maternal deaths from the key people identified. The findings were grouped into themes that were coded for further analysis.

3.10 Pretesting the Study Instruments

A statistician reviewed the tool which was pre-tested for completeness and clarity at Kajuki dispensary, a facility offering EOC in the neighbouring Meru South district. The facility has similar characteristics as the health facilities in Tharaka District. Five midwives filled the questionnaires. This represents 10 percent of the actual population recommended for pre-testing the questionnaire to ensure validity (Czaja and Blair, 2005). The findings were used to improve the study instruments to ensure validity and reliability. This information did not form part of the study data.

3.11 Recruitment and Training of Research Assistants

Two male research assistants (KRCHNs) were identified with assistance from the nursing officer Marimanti Hospital among the midwives in Tharaka District. It was convenient for male nurses to ride motorbikes in order to administer the questionnaires in different facilities. The research assistants were trained on the purpose of the study; the objectives, how to use the study instruments and how to check the questionnaire for completeness to ensure accurate data collection. Instructions were clarified as the research assistants evaluated the instruments to identify any ambiguities and biases.

3.12 Data Collection, Cleaning and Entry

Data collection was conducted by the principal researcher and two research assistants in the months of July-August. Self administered questionnaires were given to consenting midwives after explanation of the objectives of the study. They completed them and gave to the

principal researcher or the research assistants. The principal researcher booked appointments with two key informants as they were not available on the first day the researcher visited their facilities. In-depth information about the care provided by midwives was obtained from Key Informants who included the Nursing Officers in-charge, DPHN and deputy and the officers in-charge of the selected facilities. The principal researcher interviewed them by posing the questions and prompting them to give more information.

Data accuracy and completeness were verified as the questionnaires were collected to avoid loss. One questionnaire was incomplete and was discarded thus 44 were ready for analysis.

Data was coded according to the main attributes and entered into Excel and imported to SPSS program to enable statistical analysis.

3.13 Data Analysis and Presentation

Forty four questionnaires were analyzed. Data was coded to cover the main variables in the study. Data was analyzed using descriptive statistics such as percentages, means, median, Interquartile Range (IR) and presented in frequency distribution tables, graphs and pie charts. Statistic Program for Social Sciences (SPSS) version 16 was used. To bring out relationships chi-square and exact t-test were used.

Qualitative data analysis was done by content analysis. The researcher read through the information and identified various data categories and relationships. Themes were identified and coding was done manually. These were then subjected to further analysis using both descriptive and statistical methods. They were also used to validate the findings of quantitative data.

3.14 Ethical Considerations

Permission to conduct the study was obtained from The Kenyatta National Hospital (KNH) and University of Nairobi Research Standards and Ethics Committee (Ref. KNH/UON-ERC/A/265). Permit was also obtained from The Council for Science and Technology (NCST/5/002/R/637/5). Authority to collect data was obtained from the District Commissioner (THA/ED.12/11 VOL.1/17), The District Education Officer and District Medical Officer of Health Tharaka District. Each participant was explained the purpose of the study, expected benefits and assured of confidentiality by not indicating their names on the questionnaire. They were also not obliged to answer any questions they were not comfortable

with. They were free to withdraw from the study at will. All their concerns were addressed. Midwives voluntarily gave informed written consent to participate in the study.

3.15 Study Limitations

One midwife declined to participate in the study while two others were on leave. These represent 3(6.25 percent). No delivery services were being offered at Gatunga Catholic Dispensary where 4 midwives were anticipated to participate in the study hence were excluded. Three midwives were on leave during the data collection period.

Self-rating of the midwives' competence in plotting the partograph and performing specific midwifery skills could not be verified as this was not an observational study. This may lead to underrating or overrating of the competence.

CHAPTER FOUR

4.0 RESEARCH RESULTS

This chapter reports the study findings based on quantitative and qualitative data obtained from 44 nurses and 8 key informants who included the officers in-charge of the health facilities that constituted the study area, the District Public Health Nurse and the Deputy. Forty five questionnaires were distributed and collected from the midwives accounting for 100 percent response rate. However, 44 questionnaires were analyzed. The results are given per the study objectives.

SECTION A: DEMOGRAPHIC FACTORS

4.1 Sample Characteristics

4.1.1 Respondents' gender distribution. n=44

Out of the 44 respondents, 21(48 percent) were males while 23 (52 percent) were females (Figure 4. 1). This shows a paradigm shift from the female dominated practice to gender balance representation.

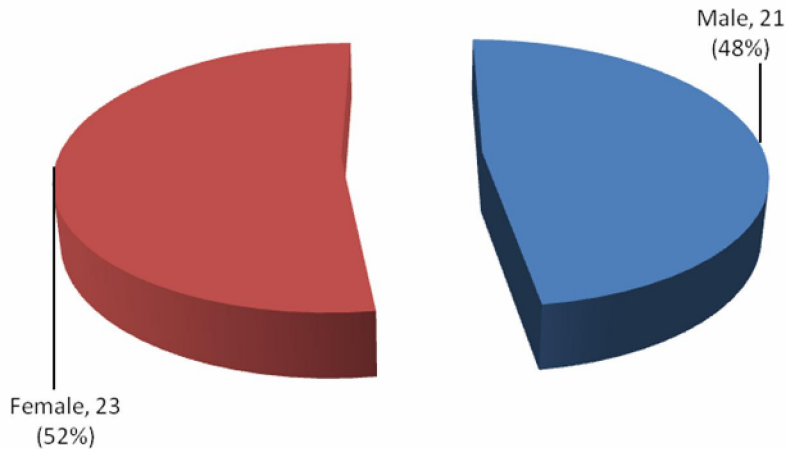


Figure 4.1: Gender distribution of respondents. (n = 44)

4.1.2 Age Distribution of Respondents

A bimodal age distribution is depicted (figure 4.2) with a peak in age groups 25-30, 15(34.1 percent) and 46-50, 8(18.2 percent). This shows that most of the midwives have worked for at

least 4 years and are expected to have experience and competence in their practice. This has implication for human resource management so that balancing is done to avoid shortages in the event of retirement. (Mean=36.9±2.8yrs, median=34yrs, mode=30yrs, std. dev.=9.6yrs, min=24yrs, max=55yrs and range=31yrs.)

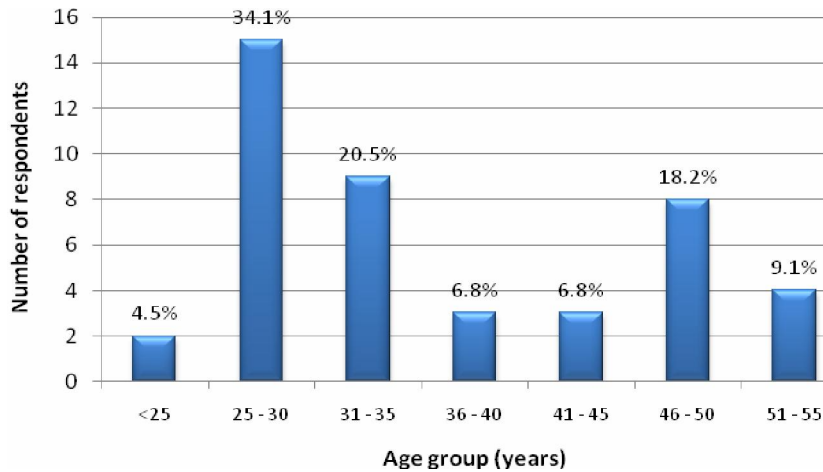


Figure 4.2: Age Distribution of Respondents (years) (n=44)

4.1.3. Education level of the respondents

There are no graduate midwives deployed to work in Tharaka district as 41 (93 percent) have attained form 4 as the highest education level (figure 4.3). Data from the key informants who are the in-charges of the health facilities also revealed that six of them had attained form four and diploma in midwifery.

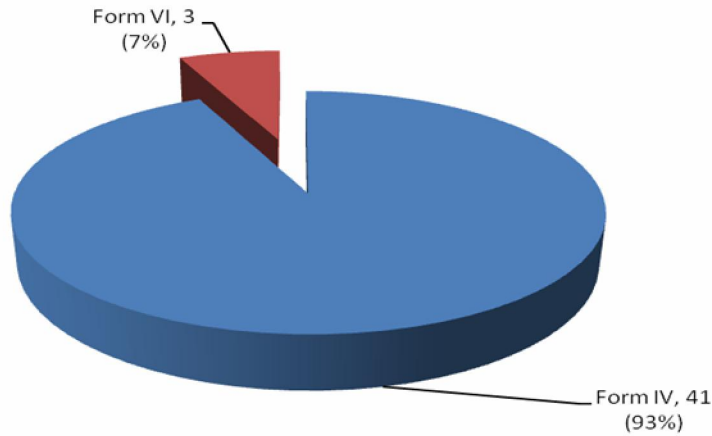


Figure 4. 3: Education level of the Respondents n=44

4.1.4 Midwives Professional Qualifications n=44

Thirty two (72.7 percent) midwives were Kenya Enrolled Community nurses (KECHN) while 10 (22.7 percent) were Registered community health nurses (KRCHN) and 1 (2.3 percent) was a Registered nurse/ midwife (KRN/M) (figure. 4.4). This shows that midwives have other skills that enable them to provide integrated services in the facility.

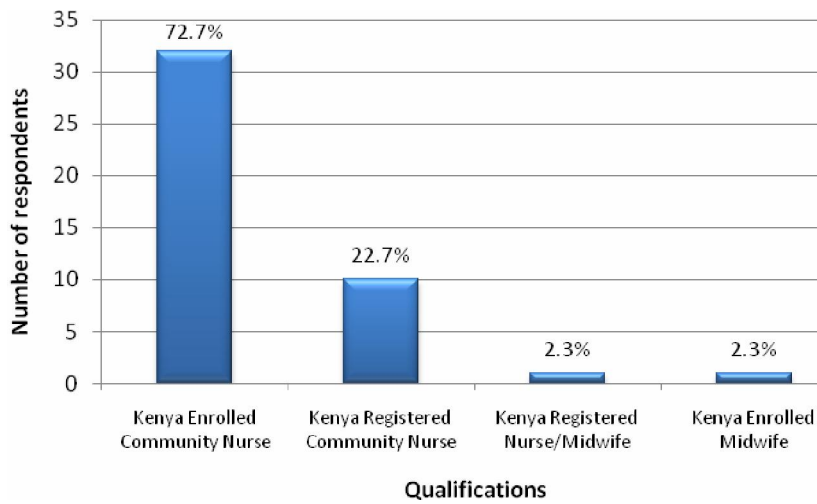


Figure 4. 4: Nursing professional qualifications

4.1.5 Additional Professional Qualifications

The most commonly attended professional development courses were PMTCT (19), IMCI (7), Active management of third stage of labour (5) and adult ARV (4), Essential Obstetric Care (1), Focused Antenatal Care (1). 11(25 percent) midwives had no additional courses which imply a gap in updates. It was noted that many midwives had not undertaken updates in obstetric care courses like in partographs despite the many times the partograph has been reviewed.

4.1.6 Duration of Active Midwifery Practice

Majority of the participants 22(52.3 percent) had between 1-5 years of experience in active midwifery practice (figure.4. 5) hence are expected to be quite knowledgeable and proficient in practice in all aspects of midwifery.

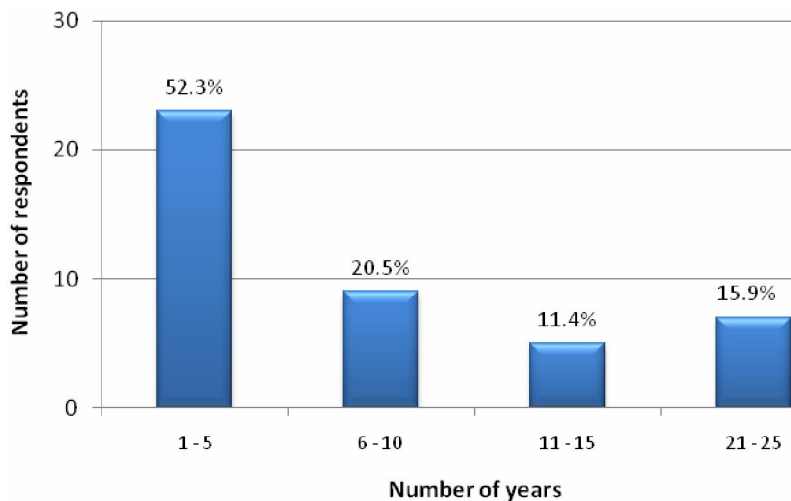


Figure 4.5: Duration of midwifery practice n=44

4.1.7. Total Years of Experience in Midwifery.

Participants have had approximately 4 (median) years of experience in midwifery practice and approximately 36 months (median) in that facility. (Mean=57.3±14.6months, median=36months, mode=36months, std. dev=49.5months, min=10months, max=254months and range=244months) (Table 4.1).

Table 4.1: Years of experience in midwifery practice and in the current facility

	N	Median(IQR)	Mean(SD)	Mode
Years of experience in midwifery practice	44	4 (2,11)	8.2(8.1)	2
Number of months worked in this facility	44	36 (22,63)	49(50.3)	36

4.1.8 Nursing modality

Team nursing was the commonest nursing modality practised with 33 (75 percent) and primary nursing 4(9.1 percent). Team nursing enhances continuity of care as reflected by all the Key Informants who indicated the other team members who midwives interact with. The team members include doctors, laboratory technicians, clinical officers, drivers, and supportive staff. These team members facilitate midwives' achievement of their goals of care in various ways.

SECTION B: NURSING INDEPENDENT ROLE

4.2. Midwives' Rating of the Quality of Care in the Facilities

Thirty two (72.7 percent) midwives are able to effectively make initial assessment of a woman in labour, an important skill in making initial diagnosis (Table 4.2). Over 38 (80 percent) midwives offer health education on better birth initiatives. This shows a high degree of communication between midwives and their patients despite the overwhelming work reported by Key Informants 3 (37.5 percent) who felt that their workload may reduce the time for communicating with clients.

Eighteen (40.9 percent) midwives do not effectively document labour progress. These included 4 females; 2 midwives were aged (25-30), 1 (36-40) and 1 (46-50). The four midwives were KECHNs and 3 had 1-5 years experience. On cross tabulation the age for respondents was statistically significant ($p=.011$) at age (25-30).

Eighteen (40.9%) midwives had high rating of ability to conduct research. Twelve midwives rated themselves low. Among them, 10 were females and two were males. All were KECHNs, 7 had 1-5 years of midwifery experience. Their age categories were: 3 (31-35), 1(36-40), 3 (41-45) 3(46-50) and 2 (51-55). The relationship between age and ability to

conduct research was significant ($p=0.0001$). The results revealed that the older the midwife the better the ability to conduct research.

Table 4.2: Rating of quality of care n=44

Nursing services	N	Lowest (1) %	Low (2)%	Neutral (3) %	High (4) %	Highest (5)%	Response average
Monitoring of mother in labour	44	0 (0.0)	0 (0.0)	4 (9.1)	14 (31.8)	26 (59.1)	4.50
Initial assessment of a woman in labour	44	0 (0.0)	1 (2.3)	0 (0.0)	11 (25.0)	32 (72.7)	4.68
Health education on birth initiatives	44	1 (2.3)	0 (0.0)	5 (11.4)	11 (25.0)	27 (61.4)	4.43
Nursing documentation of progress in labour	44	0 (0.0)	4 (9.1)	13 (29.5)	11 (25.0)	16 (36.4)	3.89
Ability to conduct research	44	6 (13.6)	6 (13.6)	14 (31.8)	13 (29.5)	5 (11.4)	3.11
Ability to make appropriate obstetric care interventions	44	0 (0.0)	1 (2.3)	4 (9.1)	28 (63.6)	11 (25.0)	4.11
Maintaining infection control practices	44	1 (2.3)	1 (2.3)	2 (4.5)	28 (63.6)	12 (27.3)	4.10
Overall response	44	1 (2.6)	2 (4.2)	6 (13.6)	17 (37.7)	18 (41.9)	4.12

SECTION C: KNOWLEDGE AND USE OF PARTOGRAPH

4.3.1 Utilization of Partograph

Most facilities have partographs and 41 (93.3%) midwives use it to monitor labour while 6.7 percent do not use the partograph. Those who do not use represent one public health centre. The use of partograph in monitoring labour was statistically significant ($p=0.0001$) as all health facilities that offer maternity services should use partograph to monitor labour for every woman in active labour.

4.3.2 Midwives' Knowledge of Partograph

Few midwives 4 (9.1 percent) correctly listed the components of a partograph (Figure 4.6). These were the maternal part, the foetal part and progress of labour. Majority listed parts of the components like fetal heart rate, liquor, contractions, cervical dilatation. It was possible to list three parts of one component.

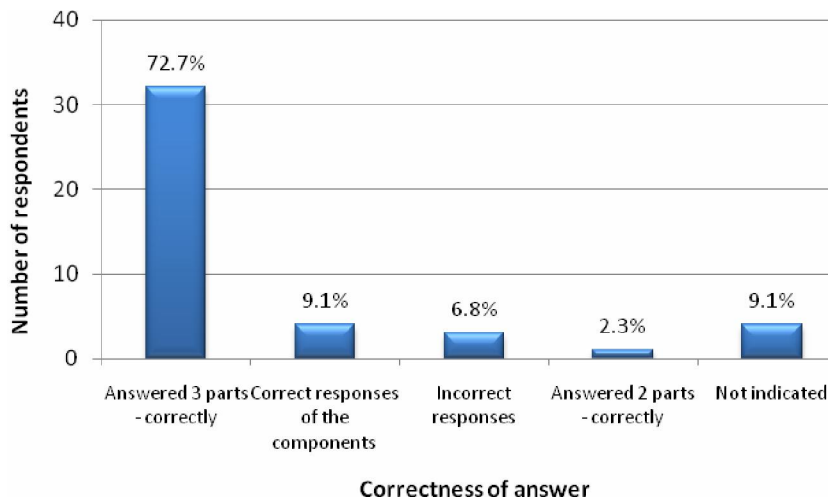


Figure 4.6: Correct Responses to Components of a Partograph n=44

4.3.3 Indications of a Partograph

All midwives 44, (100 percent) correctly said that they use a partograph to monitor all mothers in active phase of labour although 3 (6.8 percent) ticked all the choices.

4.3.4 Midwives' Self Rating of Competence in use of Partograph

Most midwives rated themselves as very competent in plotting the partograph (Table 4. 3) with 27 (61.4 percent) being very competent in accurate assessment of the cervical dilation, while 25 (56.8 percent) are competent in plotting the partograph. 21 (47.7 percent) were very competent in interpreting alert line and 23 (52.3 percent) were very competent in interpreting action line.

Categories of respondents who were incompetent in: plotting the partograph included two males, one female; ages 46-50 had one, 51-55 two midwives; by qualification 3 KECHNs, and 2 KRCHNs were not competent and had 21-25 yrs experience.

In relation to assessing cervical dilatation, one male was incompetent. There was one midwife aged 25-30, one was a KRM, and one with one year experience.

In interpreting action line two males were incompetent, one midwife in age bracket 46-50, and another in 51-55years; two were KECHNs and 2 with 1-2 years midwifery experience. Duration of midwifery practice was significant at $p=.002$.

Table 4.3: Rating of competence in use a partograph. n=44

(Scores below midpoint indicate incompetence)

Competencies	N	Lowest (1) %	Low (2) %	Midpoint (3)%	High (4)%	Highest (5)%	Average response
Plotting the partograph	44	1 (2.3)	2 (4.5)	4 (9.1)	12 (27.3)	25 (56.8)	4.3
Accurate assessment of cervical dilation	44	0 (0.0)	1 (2.3)	0 (0.0)	16 (36.4)	27 (61.4)	4.6
Assessment of descent of the presenting part	44	1 (2.3)	0 (0.0)	5 (11.4)	15 (34.1)	23 (52.3)	4.3
Interpretation of the alert line	44	0 (0.0)	3 (6.8)	4 (9.1)	17 (38.6)	20 (45.5)	4.2
Interpretation of the action line	44	0 (0.0)	2 (4.5)	6 (13.6)	14 (31.8)	22 (50.0)	4.2
Overall response	44	0 (0.9)	2 (3.6)	3.8 (8.6)	15 (33.6)	23 (53.2)	4.3

4.3.5: Knowledge on Expected Frequency of Examination in Labour

Most of the midwives 43 (97.8 percent) gave correct responses on frequency of observing FHR (Table 4.4). Twenty four (53 percent) midwives gave correct response on frequency of observing Pulse rate. Of those who were incorrect, 8 were males, 8 females; 6 were (25-30 years old).

Twenty nine (65.9 percent) midwives failed to report the correct frequency of taking respirations. Four were males, 11 females, 13 were aged 25-30 and 6, 31-35 years; twenty (62%) were KECHNs, 8 (80%) KRCHNs (p value=.006 for professional qualification). This is surprising as KRCHNs are expected to be more knowledgeable.

Twenty nine midwives responded on frequency of testing urine while 15 did not. Twenty (89.6 percent) did not know how frequently urine is tested. Their demographic characteristics include: 14 males and 12 females. Three midwives (n=4) in age (46-50), and 2 (n=2) in age (51-55) did not know correct frequency of testing urine. By experience, 2 (1-5 yrs), 2 (6-10 yrs) and 2 (21-25yrs) gave wrong responses; by professional qualification, 4 KECHNs (n=20), 1 KRCHN (n=7) 1 KRM (n=1) had wrong responses.

Table 4.4: Scores of correct responses to frequency of monitoring labour n=44

Vital observations and their frequency in labour	Responses N=44		Total
	Correct %	Incorrect%	
Foetal heart rate (FHR) (½ hour)	43 (97.7)	1(2.3)	44
Contractions (1/2 hour)	36 (81.8)	8 (18.2)	44
Temperature	36 (81.8)	8 (18.2)	44
Respiration	15 (34.1)	29(65.9)	44
Blood pressure	38 (86.4)	6(13.6)	44
Pulse rate (PR)	28 (63.6)	16 (36.4)	44
Vaginal examination	41 (93.2)	3 (6.8)	44
Test urine for protein, glucose, ketones,	18 (40.9)	26 (59.1)	44

SECTION D: MIDWIFERY PRACTICE

4.4.1 Degree of Confidence in Performing Specific Midwifery Skills

Midwives 30 (69 percent) are very confident and do not require coaching in many activities. These (figure 4.7) include normal child birth 43(97.7 percent), active management of 3rd stage of labour 42 (95.5 percent), counseling for better birth initiative 41 (93.2 percent), managing malaria in pregnancy 41(93.2 percent), episiotomy and repair 40 (90.9 percent).

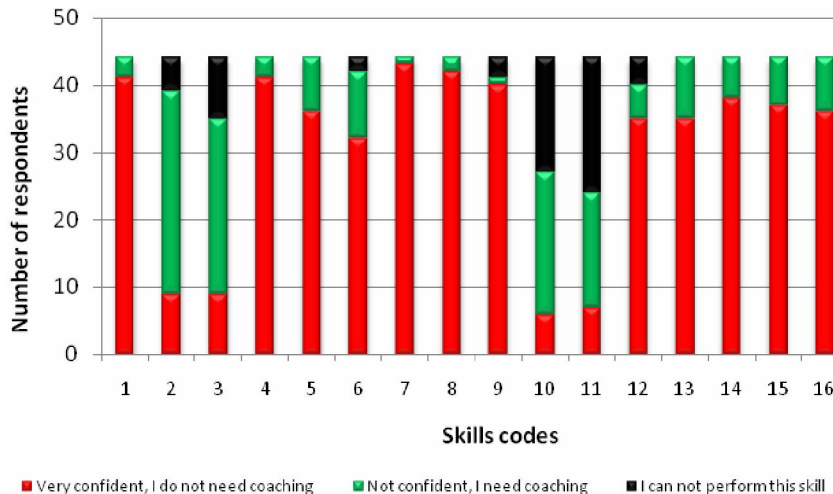


Figure 4.7: Rating of confidence in performing specific midwifery skills: n=44

Midwifery Skills listed in fig. 4.7	
1. Counseling for birth preparedness & complications readiness	9. Episiotomy and repair
2. Managing severe pre-eclampsia	10. Bimanual compression
3. Managing severe eclampsia	11. Setting equipments for repair of cervical tears
4. Managing malaria in pregnancy	12. Repair of perineal tears
5. Monitoring labour using partograph	13. Diagnosis and referral of breech for delivery
6. Augmentation of labour	14. Antepartum heamorrhage
7. Normal child birth	15. Prolonged labour
8. Active management of 3rd stage of labour	16. Postpartum heamorrhage

4.4.2 Demographic characteristics of midwives who are not confident in specific skills

Among the activities that midwives are not competent in are: management of severe preeclampsia 28 (66.7 percent), and eclampsia 24 (85.5 percent), bimanual compression 20 (47.6 percent), setting equipments for repair of cervical tears (46%) and bimanual compression 17(39 percent) (Table 4.5).

Demographic characteristics (Table 4.5) revealed that: more females (17) than males (13) were not confident in managing patients with severe preeclampsia as well as eclampsia (11 males compared to 15 females), and more males (11) than females (10) were not confident in performing bimanual compression (10 versus 7) and setting equipments for repair of cervical tears (9 versus 8).

The highest number of midwives who were not confident in performing all skills fall under 31-35 age classification.

Under professional category, 21 (65.6%), 19 (59.3%) and 14 (43%) of KECHNs could not manage preeclampsia, eclampsia and perform bimanual compression respectively.

In the activities reviewed most of the midwives who could not perform the specific skills had the least experience of 1-5 years. For example preeclampsia 19 (53.8%), eclampsia 14 (53.8%), bimanual compression 11 (52.4%), setting equipments for repair of cervical tears 8 (72.7%), and repair of perineal tears 3(60%) as shown in table 4.5.

Table 4.5. Demographic categories of midwives who can not perform specific skills (n=44)

Key: b- not confident, need coaching c-cannot perform this skill

Demographic categories	SeverePreeclampsia		Eclampsia		Bimanual compression		Setting equipments for repair of cervical tears		Repair of perineal tears	
	B	C	b	C	b	C	B	c	B	c
Gender										
Male (n=21)	13	4	11	6	11	7	9	9	2	4
Female n=23)	17	1	15	3	10	10	8	11	3	0
Totals	20(46%)	5(11%)	26(59%)	9(20%)	21(48%)	17(39%)	17(39%)	20(46%)	5(11%)	4(9%)
Age										
<25	2	0	2	0	0	0	0	0	0	0
25-30	11	0	8	2	10	4	9	3	1	1
31-35	5	2	6	3	3	4	4	5	0	3
36-40	1	0	1	0	2	1	1	2	1	0
41-45	3	0	2	0	1	2	0	3	0	0
46-50	5	2	5	3	2	5	3	3	2	0
55-55	3	1	2	1	3	1	0	4	1	0
Totals	30(68%)	5(11%)	26(59)	9(20%)	21(48%)	17(39%)	17(39%)	20(46%)	5(11%)	4(9%)
professional qualification										
KEM	1	0	1	0	1	0	0	1	1	0
KECHN	21	4	19	5	14	14	10	15	4	2
KRN/M	0	1	0	1	0	1	0	1	0	0
KRCHN	8	0	6	3	6	2	7	3	0	2
Totals	30(68%)	5(11%)	26(59%)	9(20%)	21(48%)	17(39%)	17(39%)	20(46%)	5(11%)	4(9%)
Experience in yrs										
1-5	19	4	14	4	11	7	8	9	3	2
6-10	3	1	6	1	4	5	4	5	0	1
11-15	3	1	2	2	2	2	2	2	1	1
16-20	0	0	0	0	0	0	0	0	0	0
21-25	5	2	4	2	4	3	3	4	1	0
Totals	30(68%)	8(18%)	26(59%)	9(20%)	21(48%)	17(39%)	17(39%)	20(46%)	5(11%)	4(9%)

SECTION E: INSTITUTIONAL FACTORS

4.5. Midwives' Perspective of Availability of Resources for Provision of Emergency Obstetric Care

The basic equipments and supplies for EmOC should always be available at a basic facility as emergencies are unpredictable. Blood transfusion and theatre services are functions of the comprehensive facilities.

Diagnostic equipments are available for emergency obstetric care to over 42 (95 percent) of the midwives except for dipsticks which were always available to only 7 (16 percent) of the midwives and never available 18 (41.9 percent) in many of the facilities (Table 4.6).

Supplies for obtaining blood samples are always available to over 42(95 percent) of the midwives. Intravenous fluid equipments are always available to over 95 percent to midwives. The tourniquet was reported not to be available by 5 (11.4 percent) of respondents. Presept is not available to most 32 (72.7 percent) of the midwives. Laboratory equipments are always available to 22 (50 percent) of the midwives. Oxygen flow meter is available to 30 (68.1%) of midwives. policy and arrangement for timely referral of patients was indicated to be always available to 22 (55.8 percent) of the midwives.

Table 4.6: Availability of resources for basic obstetric care (N=44)

Diagnostic Equipment	N	Always (1)%	Sometimes (2)%	Rarely (3)%	Never (4)%	Average response
BP Machine	44	42 (95.5)	0 (0.0)	0 (0.0)	2 (4.5)	1.1
Stethoscope	44	42 (95.5)	0 (0.0)	0 (0.0)	2 (4.5)	1.1
Foetal scope	44	42 (95.5)	0 (0.0)	0 (0.0)	2 (4.5)	1.1
Thermometer	44	39 (88.6)	3 (6.8)	0 (0.0)	2 (4.5)	1.2
Dipstix	44	7 (15.9)	5 (11.4)	14 (31.8)	18 (40.9)	2.9
Overall response	44	34 (78.2)	2 (3.6)	2.8 (6.4)	5 (11.8)	1.5
IVF:Needles	44	41 (93.2)	1 (2.3)	0 (0.0)	2 (4.5)	1.2
Granola	44	40 (90.9)	1 (2.3)	0 (0.0)	3 (6.8)	1.2
Tourniquet	44	37 (84.1)	2 (4.5)	0 (0.0)	5 (11.4)	1.4
Infusion set	44	41 (93.2)	1 (2.3)	1 (2.3)	1 (2.3)	1.1
Overall response	44	40 (90.3)	1 (2.8)	0 (0.6)	3 (6.3)	1.2
Equipment for blood sample						
Specimen bottles	44	40 (90.9)	1 (2.3)	1 (2.3)	2 (4.5)	1.2
Needles	44	42 (95.5)	0 (0.0)	0 (0.0)	2 (4.5)	1.1
Spirit swabs	44	42 (95.5)	0 (0.0)	0 (0.0)	2 (4.5)	1.1
Oxygen cylinder	44	31 (70.5)	2 (4.5)	2 (4.5)	9 (20.5)	1.8
Flow meter	44	28 (63.6)	5 (11.4)	2 (4.5)	9 (20.5)	1.8
Overall response	44	37 (83.2)	2 (3.6)	1 (2.3)	5 (10.9)	1.4
Disinfectants: Chlorhexidine	44	41 (93.2)	1 (2.3)	1 (2.3)	1 (2.3)	1.1
Povidone iodine	44	28 (63.6)	7 (15.9)	6 (13.6)	3 (6.8)	1.6
Spirit	44	42 (95.5)	0 (0.0)	0 (0.0)	2 (4.5)	1.1
Presept	44	10 (22.7)	0 (0.0)	1 (2.3)	33 (75.0)	3.3
Soap	44	41 (93.2)	1 (2.3)	0 (0.0)	2 (4.5)	1.2
Drugs & fluid for emergency tray	44	42 (95.5)	0 (0.0)	0 (0.0)	2 (4.5)	1.1
Laboratory equipment for blood group & cross match	44	23 (52.3)	8 (18.2)	3 (6.8)	10 (22.7)	2.0
Functional theatre	44	21 (47.7)	0 (0.0)	0 (0.0)	23 (52.3)	2.6
Policy and arrangement for timely referral	42	22 (50.0)	13 (29.5)	2 (4.5)	5 (11.4)	1.7
Overall response	44	30 (68.2)	3 (7.6)	1 (3.3)	9 (20.5)	1.8

SECTION F: PATIENTS' FACTORS**4.6.1 Common complications of pregnancy that patients are admitted with.**

According to the study, Foetal distress 15 (33.3 percent), antepartum haemorrhage 15(33.3 percent) and eclampsia 14(31.1 percent) are the three commonest complications that patients are admitted with in pregnancy.

4.6.2 Timing of Admission to Labour ward.

Most primigravidas 21(48 percent) sought admission in the latent phase of labour probably because of no prior experience; 9 (20.9 percent) before labour starts. 25 (61 percent) of multipara (2-4 deliveries) come for admission during active first stage of labour probably owing to their knowledge of signs of true labour, while the grand multipara (>5 deliveries) 53.5 percent come in the second stage of labour (Table 4.7).

Table 4.7: Time patients come for admission in labour ward n=44

	N	Before labour starts (1)%	In latent phase (2)%	In active 1 st stage of labour (3)%	In 2 nd stage of labour (4)%	Born before arrival (5)%	Average response
Primigravida	44	9 (20.5)	23 (52.3)	12 (27.3)	0 (0.0)	0 (0.0)	2.1
Multipara (2-4 deliveries)	44	1 (2.3)	7 (15.9)	28 (63.6)	6 (13.6)	2 (4.5)	3.0
Grand multipara (>5 deliveries)	44	3 (6.8)	3 (6.8)	10 (22.7)	24 (54.5)	4 (9.1)	3.5
Overall response	44	4 (9.8)	11 (25.0)	17 (37.9)	10 (22.7)	2 (4.5)	2.9

4.6.3 Reasons for Arrival in Second Stage of Labour.

Transport 35 (77.8%) and financial problems 10 (22.2%) were cited as reasons given by most patients for delaying to come to the health facility. This was confirmed by key informant II. This implies that as long as women do not get to the facility in time, they may not get the necessary assistance.

4. 6.4 Reasons for coming to Hospital after Home Delivery

Patients may have planned to go to the hospital for delivery but experience difficulties. Some may still go to the hospital to seek immediate postpartum care like examination or some may have developed complications after home delivery hence the need to seek care. The explanations were varied. Women went to the health facilities after home delivery mainly due to delay in accessing finances 28 (62.2 percent), transport problem 22 (48.9 percent).

Thirteen (28.8 percent) midwives reported that patients came to the hospital after complications of labour (9 (20.5 percent % after PPH and baby's complications 3 (6.8 percent). This was confirmed by the key informants as part of the factors that discouraged patients from going to the health facilities.

4.7: Midwives' Attitude to Patients

It emerged from most Key Informants that most midwives had good relationship with patients resulting to common understanding. The relationship was described as cordial as they are able to identify their needs and take appropriate actions.

Midwives treat patients with respect; ensure privacy, confidentiality and patients build trust in them. Midwives educate patients during the antenatal period on birth plans and how to cope with labour. They advise patients to go to hospitals for delivery and inform them of lack of transport so that they can go to a comprehensive health facility early. Midwives however have no mechanism of tracking where all the women who attended antenatal clinic delivered to be sure that they had safe delivery with the assistance of SBA.

Midwives inform pregnant women about the true and false signs of labour so that they can make decisions of when to go to the hospital for delivery. By doing this midwives ensure that patients make informed choice of the birth place.

“Midwives lack adequate time to give information to the clients because of the overwhelming activities and they rarely review the previous history” (Key Informant IIX).

Age between some mothers and young midwives (especially newly qualified) becomes a barrier in communication. Patients seem to question the experience these young nurses have to offer.

Most 5 (>62percent) Key Informants (KI) said that midwives are friendly, care and treat patients with respect. This makes them come back to seek other services as mentioned by KI no.5.

4.8.0 RELATIONSHIPS

4.8.1. Cross tabulation between number of years of midwifery practice and level of competence

More midwives who had worked for fewer years rated themselves very competent in plotting a partograph. There was no significant relationship ($p=0.088$). In the absence of updates, this could be because they had learnt in their training more recently than the older midwives (Table 4.6).

Table 4.8: Correlation between years of practice and level of competence in plotting a partograph

		Number of years of midwifery practice				Total
		1 – 5	6 – 10	11 – 15	21 – 25	
Competence in plotting the partograph	Lowest	0	0	0	1	1
	Low	0	0	1	1	2
	Neutral	3	0	0	1	4
	High	7	4	1	0	12
	Highest	13	5	3	4	25
Total		23	9	5	7	44
Chi2=2.902, df=1, p=0.088						

4.8.2 Cross tabulation between nursing qualifications and level of competence

The results showed negative correlation. P=0.239. The enrolled community nurses rated themselves high. It may be attributed to the fact that they are involved in monitoring labour more oftenly than the registered midwives who in addition to caring for the woman in labour perform administrative duties (Table 4.9).

Table 4.9: Cross tabulation between Nursing qualification and level of competence

		Professional Nursing Qualification of Midwives				Total
		Kenya Enrolled Midwife	Kenya Enrolled Community Nurse	Kenya Registered Community Nurse	Kenya Registered Nurse/Midwife	
Competence in plotting the partograph	Lowest	0	1	0	0	1
	Low	0	2	0	0	2
	Neutral	0	4	0	0	4
	High	1	7	0	4	12
	Highest	0	18	1	6	25
Total		1	32	10	1	44
Chi2=1.385, df=1, p=0.239						

4.8.3. Cross tabulation between professional qualification and knowledge on partograph.

There was negative correlation between professional qualification and knowledge on partograph (p=0.321) (Table 4.10). It is expected that the higher the education level, the more knowledge that one should exhibit.

Table 4.10: Cross tabulation between professional qualification and knowledge of components of a partograph

While 4 (12.5%) KECHNs answered the correct components of a partograph correctly, another 24 (75%) and 7 (70%) KRCHNs answered three parts of a partograph. This was not statistically significant ($p= 0.321$).

		Components of a partograph ^{1,2,3}					Total
		No response	Incorrect responses	Answered 2 parts - correctly	Answered 3 parts - correctly	Correct responses of the components	
Professional Nursing Qualification of Midwives	Kenya Enrolled Midwife	1	0	0	0	0	1
	Kenya Enrolled Community Nurse	1	2	1	24	4	32
	Kenya Registered Community Nurse	2	1	0	7	0	10
	Kenya Registered Nurse/Midwife	0	0	0	1	0	1
Total		4	3	1	32	4	44
Chi ² =0.984, df=1, p=0.321							

4.8.4. Cross tabulation between age, experience, knowledge and practice

There is a correlation between age and the level of confidence. Fourteen midwives in age brackets (25-30) and 7 (31-35) rated themselves very confident they would not require coaching in augmentation of labour $P=0.005$ (Table 4.11).

Many midwives will require updates on setting equipments for repair of cervical tears which is statistically significant $p=0.015$ and in diagnosis and referral of breech for delivery ($P=0.027$ for experience, and $p=0.012$ for knowledge) Table 4.11:

Table 4.11: Cross tabulation between age, experience, knowledge and practice

Practice	Stats	Age	Experience	Knowledge
Counseling for birth preparedness & complications readiness	Chi ²	0.929	0.246	0.407
	Df	1	1	1
	P	0.335	0.620	0.523
Managing severe pre-eclampsia	Chi ²	2.824	2.377	0.594
	Df	1	1	1
	P	0.093	0.123	0.441
Managing severe eclampsia	Chi ²	0.996	0.658	0.253

	Df	1	1	1
	P	0.318	0.417	0.615
Managing malaria in pregnancy	Chi2	0.419	1.740	0.407
	Df	1	1	1
	P	0.517	0.187	0.523
Monitoring labour using partograph	Chi2	2.436	0.022	0.696
	Df	1	1	1
	P	0.119	0.883	0.404
Augmentation of labour	Chi2	7.825	15.486	0.336
	Df	1	1	1
	P	0.005*	0.000*	0.562
Normal child birth	Chi2	0.811	0.553	0.129
	Df	1	1	1
	P	0.368	0.457	0.719
Active management of 3rd stage of labour	Chi2	0.273	1.132	0.265
	Df	1	1	1
	P	0.601	0.287	0.607
Episiotomy and repair	Chi2	3.265	1.195	1.287
	Df	1	1	1
	P	0.071	0.274	0.257
Bimanual compression	Chi2	2.908	1.229	2.754
	Df	1	1	1
	P	0.088	0.268	0.097
Setting equipments for repair of cervical tears	Chi2	5.925	1.699	0.049
	Df	1	1	1
	P	0.015*	0.192	0.825
Repair of perineal tears	Chi2	0.012	0.098	3.899
	Df	1	1	1
	P	0.912	0.754	0.048*
Diagnosis and referral of breech for delivery	Chi2	0.669	4.908	6.377
	Df	1	1	1
	P	0.413	0.027*	0.012*
Antepartum hemorrhage	Chi2	0.236	0.231	0.391
	Df	1	1	1
	P	0.627	0.631	0.532
Prolonged labour	Chi2	0.236	0.973	1.053
	Df	1	1	1
	P	0.627	0.324	0.305
Postpartum hemorrhage	Chi2	0.849	0.469	0.309
	Df	1	1	1
	P	0.357	0.494	0.578

4.9.0: FINDINGS OF THE KEY INFORMANTS

Information was obtained by interviewing eight key informants in order to confirm and give credence to the quantitative data. Data is presented according to the major themes that emerged from the information.

4.9.1. Team Members who interact with midwives

The key informants mentioned similar team members who work with midwives to enhance effective care. These include doctors, clinical officers, hospital administration, support staff, lab technicians, nurses, health record officers, drivers, anesthetists and District Health Management Team (DHMT) as well as woman's relatives.

4.9.2. How midwives interaction with other team members facilitates care

The team members facilitate care offered to patients by the midwives in different ways. All informants agreed that interaction with other team members enhances availability of required commodities and improves services offered to the patient which ensures timely attendance to patients. In enhancing the care midwives provide, different roles of team members include consultation, procurement of supplies, catering, supervision and referral of patients.

4.9.3. Constraints experienced by midwives

The study revealed that midwives experience various constraints that affect the quality of care they provide. Shortage of staff in health facilities was ranked top in the list. Some midwives work during the day shift and are on call at night if there is a woman in labour. This is similar in all public facilities. Midwives were reported to be overworked, get fatigue and burn out. In most cases they work in the other departments and also do non-nursing jobs like accounts and clerical duties. During the night shift there is only one midwife for the night duty. In case of referral the health facility has to close down or call for the nurse who is off duty. This leads to few or no women seeking delivery services in some facilities because of the inadequate care given by the midwives. Midwives spend little time with individual patients in cases where they report one midwife on duty.

There is no government facility with theatre to cater for patients who develop complications.

Transport is a problem in all health facilities. There is only one functional ambulance at the district hospital. It is difficult to release it to transfer patients from the peripheral facilities as it is always in use. This causes unnecessary delays to patients. “Sometimes one may call for the ambulance and be informed that the same ambulance has referred a patient from the district hospital to St. Orsola, the only hospital with a theatre in the district” (informant v). Poor road network makes transportation impossible during rainy season. This makes patients not to get appropriate interventions on time when they develop complications at the health centre. Most of the time midwives deal with women who delay to come to the hospital and come when complication arise from home delivery.

Social economic status of the people in the area is low. Low income dictates home delivery. Most of the time patients come to the hospital when complications develop.

High numbers of patients who seek other services pose additional workload to the midwives.

Facilities do not have safe water; others lack of electricity

4.9.4 Factors that Encourage Patients to come to the Facility.

Informants listed the following factors as encouraging patients to utilize health facilities (table 4.12). Staff attitude to the patients was said to be positive as patients would go to a place where they are treated with respect and handled with care and this cultivates their confidence and trust in the staff.

Table 4.12: Factors that Encourage Patients to come to the Facility.

Factors	key informants	Percent frequency
God quality services offered	6	75
Only facility in the district with a theatre	3	37.5
Availability of hospital ambulance at affordable fee	4	50
Convenient location for those who live near the facility	5	62.5
Affordable maternity fee in public facilities	2	25
Friendly staff	2	25

4.9.5. Factors that discourage patients to come to the facility

Factors cited by most key informants as discouraging patients from coming to the facility included:

- Long distances to the health facility as most patients have to walk n=4 (50%)
- Long waiting hours due to shortage of health care workers n=8 (100%).
- Inadequate facilities to cater for all the needs of mothers in labour e.g. theatre, few staff (midwives) n=3 (37.5%)
- Lack of good referral system in place n=2 (25%)
- cost of delivery service to most was unaffordable to women;
- Patients find no need to come to the facility since they will be referred to other hospitals 3 (37.5%)
- Most patient are used to delivering at home in the previous pregnancies thus find no need to go to the hospital n=3 (37.5%) 1.
- Literacy level is low with most mothers having standard 7 education and below.
- Midwives do not reside within the hospital so patients will not come to the health facility if labour starts at night.
- Women know incase of difficulties they will be referred and charged for transport. They prefer to go to the hospital directly to avoid the high cost (ksh.2000) and delay.

4.9.6. Utilization of Health facilities

The average number of deliveries in the three months preceding the study could not be obtained as data from St. Orsola was not available. However data from the public facilities revealed underutilization of services.

No maternal death was recorded in any institution during the study period.

There were 60 patients referred to St. Orsola during the period under review. All were from e Marimanti district hospital where an ambulance is available.

4.9.7. Suggestions to encourage patients use health facilities

The need for more midwives to be deployed to ensure 24 hour coverage and provision of basic and emergency obstetric care was cited by all key informants. Other suggestions include improvement of hospital infrastructure; encouraging mothers and their families to join NHIF to cater for the hospital bills; building of maternal shelter for mothers who live

very far to be accommodated when they approach the delivery date; making theatre operational by deploying anaesthetist and theatre nurses and equipping it. An ambulance to be provided to each facility for timely transfer of patients directly to a facility offering comprehensive obstetric care.

4.9.8. Choices offered to women in making decisions about their care

Women were reported to choose the hospital to deliver based on the information of the services available in the district. They have no choice of who attends to them. Some informants said women were free to use the position they want during delivery while others said women knew the traditional method (dorsal lithotomy position) while in hospital. No birth partners accompany women in labour. Visitors and relatives are allowed to see them after delivery. Women were said to labour quietly and may not ask for pain relief. “They know one has to feel pain and should bear it (informant I).”

4.9.9. Resources required to effectively reduce maternal death

The following resources featured commonly among key informants as necessary in reducing maternal mortality:

4.9.9.1. Manpower:

More midwives with improved skills for them to perform manual removal of the placenta and repair cervical tears; theatre trained nurses, anaesthetist; obstetricians to assist in difficult deliveries; records officers to maintain patients’ records, nutritionist to offer advice to mothers on how to feed their babies to avoid malnutrition which is a problem that makes mothers have many pregnancies; Clinical officers trained in comprehensive reproductive health care so that they can attend to women who complicate in labour

4.9.9.2. Materials

Materials required include:

- functional operating theatre;
- shelter for patients whose homes are far from the facility;
- upgraded rural facilities equipped to be able to conduct normal delivery;
- Upgrading the road network to improve transport.

The key informants said that distance would be reduced when dispensaries are upgraded and adequate staffs are deployed to these facilities.

4.9.9.3. Money:

Money would be required for:

- fuel to refer patients and pick them when the dispensaries call for help;
- service the 2 stalled ambulances lying at the district hospital;
- fee charged cannot sustain the ambulance especially with the poor roads between facilities hence more money is needed.

The sub district hospital requires funding for:

- supportive staff salaries,
- for fuel to transfer patients as well as to maintain an ambulance once it is provided;
- fuel to run the water pump;
- Installing electricity to operate electrical equipments like the oxygen concentrator.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 DISCUSSION

The study involved 44 midwives working in the government and nongovernmental facilities in Tharaka District Eastern Province. The aim of the study was to assess the effectiveness of midwives in reducing maternal mortality in Tharaka district.

5.1.1 Participants Demographic Information

Fifteen (34.1 percent) midwives in the study had 1-5 years of active midwifery experience. Whereas the longer a midwife actively practices, the more they gain competence and proficiency the study found a negative correlation between years of experience and their competence in midwifery skills. The decline in maternal mortality in Sweden was attributed to highly experienced and competent midwives whose skills were important in provision of care (Hogberg, 2004).

Most of the midwives 32 (72.7 percent) were enrolled community nurses. UNFPA (2006) noted that for many reasons, some to do with the fact that most midwives are females, there has been gross underinvestment and sometimes none at all in building a cadre of professional midwives; midwives lack status and respect; and further asserts that without expert midwives to teach midwifery skills and supervise others, ensuring quality of care will not be possible and efforts to reduce MM will fail. The high number of midwives who are enrolled community nurses may not have attained a diploma in nursing and midwifery as required in the Nursing Council of Kenya's 2005-2010 strategic plan.

Professionalizing midwifery is an acknowledged positive action as was experienced by countries like Malaysia, Sri Lanka and Thailand which succeeded in reducing MM using midwives by investing in quality and the numbers of midwives (UNFPA, 2006).

The additional professional courses relevant to midwifery practice were PMTCT, adult ARVs, and Active management of third stage of Labour (AMTSL). In the study few midwives have done midwifery related update courses to improve their knowledge and skills. Surprisingly only one midwife had training in EOC; yet any intervention that would improve the quality of EOC must act through at least one of the three mechanisms: improve clinical

management of uncomplicated labour, improve detection of complications of labour or improve the clinical management of complications of labour (Adeyi and Morrow, 2009).

None of the midwives had done Life Saving Skills (LSS) course. A study in Vietnam on effectiveness of LSS training revealed improved detection and diagnosis of life threatening conditions and appropriate management of labour and birth (Nguyen et al. 2005), thus emphasizing the need for upgrading courses especially in resource limited areas.

Midwives reported no update courses in use of partograph. A similar state was noted in Uganda by Nakkazi (2007) in her study that despite the many times the partograph has been reviewed, midwives did not receive clinical updates.

5.1.2. Midwives Knowledge and self rating of competence in use of partograph

Self rating of competence in utilization of partograph (highest score 62.2 percent and lowest 47.7 percent) with a mean of 54 percent is low considering that it is self rating. This finding is consistent with other studies done to evaluate knowledge and utilization of the partograph that revealed low and poor knowledge of partograph among midwives (Oladopo et al 2008). Harvey et al. (2007) found wide gaps exist between current evidence based standards and provider competence in selected skills.

5.1.3. Midwives' Rating of quality of Care

Documentation of progress in labour was ranked fair. In her review of documentation of partographs, Nakkazi (2007) reported that midwives often feel that completing the partograph is time consuming hence are not keen on documenting immediately after taking observations. Documentation helps not only in clinical management of patients but also in instances where the midwife's evidence is required in defense of actions or omissions. Additionally, lack of or inaccurate documentation was reported to lead to data weaknesses which have made monitoring of progress in reducing MM problematic (Kenneth et al. 2007).

Some aspects of care were ranked with low quality. Findings from the key informants revealed shortage of staff that affected quality of care. The shortage of nurses is acknowledged by the world health organization. Evidence suggests that the risk of hospital mortality lowers by 9 percent for an additional registered nurse midwife (Whiteman et al. 2002). Nevertheless, bridging gaps can be improved by training midwives in lifesaving skills so that once a woman comes into contact with a midwife, she will receive appropriate

management timely as time is of essence when dealing with obstetric emergencies (Kongnyuy and Broek, 2009).

5.1.4. Availability of resources for Essential Obstetric Care

Resources required by midwives to provide basic obstetric care were adequate with over 42 (95 percent) always available. Adeyi and Morrow (2009) recognized that availability and use of EOC of sound quality would reduce the burden of illnesses and death resulting from pregnancy. They nevertheless reported that methods for defining, assessing and improving the quality of EOC at the point of service delivery in developing countries is quite weak.

Dipsticks were however not available to 47 percent of the midwives to test urine for acetone or proteins during labour. This probably explains midwives' poor scores of the frequency of testing a woman's urine during labour. Recognition of protein and acetone in urine is one of the quickest observations that would assist a midwife to detect onset of preeclampsia or maternal distress thus taking prompt action.

5.1.5. Patients' factors affecting their Care

Transport, financial problems and poverty were cited as reasons why women arrived to the hospital late or after home delivery. The key informants confirmed this finding. These are also confirmed in the three delay model (Barnes et al. 2006). Unless patients come to the facility in time they risk complications and may delay assistance. Indeed several studies attest to the difficulties experienced by women during referral for any services related to EOC from the community to a higher level (Parveen et al 2001, Kongnyuy and Broek, 2009).

The arrival of a woman at a referral facility is the end of a long and often complex decision making process by the client and a health provider (Bossyns and Lerberge, 2004). Midwife's competence is important in dealing with the woman at the hospital as a rapid diagnosis and appropriate action are instituted.

5.1.6. Midwifery practice

The study revealed average competence of midwives as the number of cases they had attended to were few. Kwast (2006) stated that development of competence requires regular, repeated, supervised, hands-on practice in the clinical area and assessment of the competencies; where development of competencies is not feasible due to numbers, frequent drills are advised to prepare the midwife to cope with emergencies.

Most midwives were not competent in life threatening procedures like management of severe preeclampsia 28 (66.7 percent), and eclampsia 24 (85.5 percent), bimanual compression 20 (47.6 percent). Fifty percent of the midwives can not set equipments for repair of cervical tears and 17(40 percent) can not perform bimanual compression. Training of midwives working in low resource settings may avoid acting in crisis because of their inadequate knowledge of appropriate techniques and procedures for example aortic compression for postpartum haemorrhage (WHO, 2000).

5.1.7. Midwives' Attitude towards Patients

Midwives in the district were reported by the key informants to have positive attitude towards their patients. They were reported to be overwhelmed by working alone, in other departments other than maternity, and working on day shift and being on call at night. They respected and guided women through the antenatal period. Under the circumstances, as explained by Simba et al. (2009), midwives did not spend adequate time with the women to give them information to enable them make informed choices. The authors add that informed decision making process relies on full exchange of information in a non-urgent, non-authoritarian, cooperative manner.

Key informants agreed that all the facilities were underutilized. This may be attributed to the long waiting hours and uncertainty to access transport for referral from the primary facility as they lack ambulances. WHO, (2007) noted that women's satisfaction with the care is linked to the utilization of services and a reduction in maternal mortality. It is however confirmed by Pettersson et al. (2007) that in all countries, poverty is strongly associated with less access and use of health care, including skilled midwifery care at birth.

5.2 CONCLUSION

Midwives gender distribution demonstrated gender balance, a paradigm shift from the female dominated profession. Their age distribution had a bimodal characteristic with peaks in 25-30 and 46-46 age brackets.

Majority of the midwives were enrolled community nurses 72 percent.

Among other professional courses done by the midwives were, PMTCT, IMCI, AMTSL, and only one midwife had done a course in EOC and FANC. Most importantly, midwives had not received any updates in use of partograph despite the many times it has been revised.

Most midwives 25 (52.3%) had worked for 1-5 years hence having experience and time to gain competence necessary for effectively reducing maternal mortality.

The commonest nursing modality practiced was team nursing. Midwives interacted with other team members including doctors, laboratory technician, drivers, and support staff. These team members facilitate care of patients in various ways.

Midwives rated themselves highly in the quality of care they provide. Among the highly rated care activities were initial assessment of a woman in labour at 32 (72.7%), health education 27 (61.4%), and monitoring of mother in labour 26 (51.9%). Midwives rated themselves lowly in the ability to conduct research 5 (11.4%) and maintaining infection control. Most facilities in the district use partograph to monitor labour 41 (93.2%). This was significant at $P < 0.001$. All midwives were aware of the use of partograph 41 (93%).

Only 4 midwives were able to correctly list the components of a partograph. Majority listed parts of the components of the partograph.

Midwives' self rating of the competence on the use of partograph was average with a mean of 54.4%. Respondents' experience and competence in plotting a partograph was not statistically significant. P value is 0.229 and between nursing qualification and level of competence, P value is 0.674.

On average the number of cases attended was low with a mean range of 0.23 for bimanual compression to 31.2 for counseling for birth preparedness. This number is low and a midwife may not be proficient since this is gained as one attends to many cases.

While midwives rated their degree of confidence in performing routine obstetric care activities high, the emergency obstetric care activities had low degree of confidence and they indicated the need for update. This is worrying given that midwives are the primary workers a woman makes first contact with and due to the fact that emergencies are unpredictable.

Most of the midwives had adequate resources (over 95%) to provide essential obstetric care. Dip sticks for urinalysis were rarely or never available in some facilities. This may explain the low scores for midwives in the frequency of testing urine for mothers in labour.

The three most common complications that mothers were admitted with are antepartum haemorrhage, foetal distress and eclampsia.

Most of the primigravidas arrived in the hospital for admission before onset of labour 10 (22.7%) and latent phase 21 (48.8%) while multiparas mostly arrived in active phase of labour and grand multipara in second stage of labour. Among the reasons patients gave for late arrival to the hospital were transport, financial problems and poverty.

Midwives' attitude to the patients was described as cordial, friendly, caring, and respectful. They also communicated adequately to their patients and this enhanced development of trust between them.

5.3 RECOMMENDATIONS

- To strengthen midwifery practice in Tharaka District, there is need to improve numbers to ensure 24 hour provision of Essential and Emergency Obstetric Care. This will reduce the long waiting hours that discourage women from utilizing most of the facilities thus enabling midwives to work effectively. Midwives' knowledge and skills in Lifesaving Skills is important to handle emergencies since they are the first contact health providers in the rural facilities. The knowledge and skills can be enhanced through regular continuous professional development courses and drills for skills that midwives do not commonly encounter in their practice.
- The district needs to put in place mechanisms to investigate the number of births and deaths that take place at home in order to plan strategies to ensure every birth is attended by a skilled birth attendant. Consequently maternal mortality reviews will be necessary to evaluate progress towards reduction of maternal mortality in the district.
- An observational study is important in the district in order to document the actual gaps that exist in the midwives' knowledge and practice. The identified gaps will be specifically addressed in order to boost midwives' competencies that are essential for improving women's reproductive health and ultimately reducing maternal mortality.

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APPENDIX I: CONSENT FOR PARTICIPANTS

My name is Rosemary Mugambi. I am a level II master’s student at the University of Nairobi, College of Health Sciences, School of Nursing Sciences. I am carrying out a study on **‘The Effectiveness of Nurses Role in Reducing Maternal Mortality rates in Tharaka District’**

I would like to request you to participate in this study. The study does not involve invasive procedures. There is no health risks involved in the study. The results of the study will help policy planners to improve health care system that supports improvement of maternal health and ultimately reduce maternal mortality.

The information you give will be maintained confidential as you will not be required to indicate your identity on the questionnaire. No information of any kind will be released to any other person or agency without your written permission. You are free to decline or withdraw from the research at any time and you will not be victimized. Feel free to seek clarification from the researcher.

In case of any further concerns please contact Mugambi on 0720213783 or my supervisors on 0722256080, 0727466460, 0722789177, or KNH Research and Ethics Committee on 2726300 extensions 44102.

Research participant’s consent

I _____ have fully understood the purpose of this study and that no health risks are involved; that I am free to withdraw any time.

I willingly volunteer to participate in the study.

Signature _____ Date _____

Researcher _____ Date _____

APPENDIX II: QUESTIONNAIRE

Facility code_____

Questionnaire Code no. _____

Topic: The Effectiveness of Nurses in their Role of Reducing Maternal Mortality Rate in Tharaka District.”

Instructions

- 1. This questionnaire is intended to obtain information for study purpose only. The information gathered will help improve the clinical functions of the midwives. All your responses will be treated confidentially.**
- 2. DO NOT write your name or any other identification anywhere in this questionnaire.**
- 3. The questionnaire has six sections. Please complete all the sections.**
- 4. Put the completed questionnaire in the given envelope, seal it and hand over to the researcher.**

SECTION A: DEMOGRAPHIC INFORMATION

Please tick () the most appropriate response.

1. Indicate your gender.

1. Male () 2. Female ()

1.1 Indicate your age in completed years. _____.

1.2 Tick the highest level of education attained

1. Form 4() 2. Form 6() 3. University () 4. Any other (specify) _____

1.3 Indicate your nursing qualifications

1. KEM () 2. KECHN() 3. KRN/M () 4. KRCHN () 5. BScN ()

1.4 Please indicate all additional professional courses attained and the year of attainment.

Course

Year

Course	Year
_____	_____
_____	_____
_____	_____
_____	_____

1.5

Indicate the number of years you have been actively practicing midwifery: _____

1.6 Indicate the number of months you have worked in this facility _____

1.7 What nursing modality do you practice in this set up?

1. Primary Nursing () 2. Team nursing () 3. Functional Nursing
 4. A mixture of primary & team Nursing () 5. A mixture of Primary and Functional ()

SECTION B: NURSING INDEPENDENT ROLES

On a scale of 1-5 give a rating of the quality of nursing services that you provided in this facility. (1- lowest, 5- highest).

- | | | | | | |
|---|---|---|---|---|---|
| 2.1. Monitoring of the mother in labour. | 1 | 2 | 3 | 4 | 5 |
| 2.2. Initial assessment of a woman in labour. | 1 | 2 | 3 | 4 | 5 |
| 2.3. Health education to the woman on better birth initiative. | 1 | 2 | 3 | 4 | 5 |
| 2.4. Nursing documentation of progress of labour. | 1 | 2 | 3 | 4 | 5 |
| 2.5. Your ability to conduct research in this facility. | 1 | 2 | 3 | 4 | 5 |
| 2.6. Your ability to make appropriate obstetric care interventions. | 1 | 2 | 3 | 4 | 5 |
| 2.7. Maintaining infection control practices. | 1 | 2 | 3 | 4 | 5 |

SECTION C: KNOWLEDGE AND UTILIZATION OF THE PARTOGRAPH

3.1 Do you use a partograph in this facility?

1. Yes () 2.No ()

3.2. List the components of a partograph:

1. _____
 2. _____
 3. _____

3.3. On whom do you use a partograph to monitor labour?

1. Mothers with fetal distress only. ()
 2. Mothers with complications in pregnancy only ()
 3. All mothers in active phase of labour ()
 4. Mothers with high risk pregnancies ()
 5. Mothers expecting precious babies only ()

3.4. On the space provided, indicate how frequently you assess the following observations and plot on the partograph?

1. Foetal heart rate _____
2. Contractions _____
3. Temperature _____
4. Respirations _____
5. Blood pressure _____
6. Pulse rate _____
7. Vaginal Examination _____
8. Test urine for protein, glucose, ketenes, _____

On a scale of 1-5, rate yourself on competence on the use of a partograph. Please circle the number you choose. (1-lowest, 5- highest score)

- | | | | | | |
|---|---|---|---|---|---|
| 3.5 I am competent in plotting the partograph: | 1 | 2 | 3 | 4 | 5 |
| 3.6 I am competent in accurate assessment of cervical dilation. | 1 | 2 | 3 | 4 | 5 |
| 3.7 I am competent in assessment of descent of the presenting part. | 1 | 2 | 3 | 4 | 5 |
| 3.8 I am competent in interpretation of the alert line. | 1 | 2 | 3 | 4 | 5 |
| 3.9 I am competent in interpretation of the action lines. | 1 | 2 | 3 | 4 | 5 |

SECTION D: PRACTICE

4. The following questions refer to your clinical activities. For each skill listed, please record:

- 1. The number of cases personally managed for the last three months.**
- 2. The degree of confidence you have in performing these skills**
 - a. Very confident, I do not need coaching.**
 - b. Not very confident, I need coaching**
 - c. I can not perform this skill**

Skill	Number of cases in the last three months	Degree of confidence a, b, c,
4.1 Counseling for birth preparedness & complications readiness		
4.2 Managing severe pre-eclampsia		
4.3 Managing severe eclampsia		
4.4 Managing malaria in pregnancy		
4.5 Monitoring labour using partograph		
4.6 Augmentation of labour		
4.7 Normal child birth		
4.8 Active management of 3 rd stage of labour		
4.9 Episiotomy and repair		
4.10 Bimanual compression		
4.11 Setting equipments for repair of cervical tears		
4.12 Repair of perineal tears		
4.13 Diagnosis and referral of breech for delivery		
4.14 Antepartum heamorrhage		
4.15 Prolonged labour		
4.16 Postpartum heamorrhage		

SECTION E: INSTITUTION FACTORS

5. Regarding availability of equipments for emergency obstetric care, indicate by circling the correct answer according to the key provided.

1. Always 2. Sometimes 3. Rarely 4. Never

5. Diagnostic equipments:

5.1.1 BP machine,	1	2	3	4
5.1.2 Stethoscope:	1	2	3	4
5.1.3 Foetal scope:	1	2	3	4
5.1.4 Thermometer,	1	2	3	4
5.1.5 Dipstix):	1	2	3	4

5.2 Intravenous fluid equipment

5.2.1 Needles:	1	2	3	4
5.2.2. Branula:	1	2	3	4
5.2.3 Tourniquet:	1	2	3	4
5.2.4 Infusion set:	1	2	3	4

5.3 Supplies for obtaining blood sample

5.3.1 Specimen bottles:	1	2	3	4
5.3.2. Needles:	1	2	3	4
5.3.4. Spirit swabs:	1	2	3	4
5.4.1 Oxygen cylinder:	1	2	3	4
5.4.2 Flow meter:	1	2	3	4

5.5 Disinfectants and cleaning materials:

5.5.1. Chlorhexidine	1	2	3	4
5.5.2. Povidone iodine	1	2	3	4
5.5.3. Spirit	1	2	3	4
5.5.4. Presept:	1	2	3	4

5.5.5. Soap:	1	2	3	4
5.6 Drugs and fluids for emergency tray:	1	2	3	4
5.7 Laboratory equipments for blood group and cross match:	1	2	3	4
5.8 Functional theatre:	1	2	3	4
5.9. Policy and arrangements for timely referral of patients are in place.	1	2	3	4

APPENDIX III: KEY INFORMANTS INTERVIEW GUIDE

This is a study to establish how effective midwives are as key health providers in reducing maternal mortality rates in Tharaka district. The study is for the award of Master of Science Degree in Nursing (midwifery /obstetrics) of the University of Nairobi. You are kindly requested to participate fully, to give as much detailed, honest and truthful information as possible. The information shall be strictly confidential and shall be used only for research purpose. No personal details will appear anywhere to uphold confidentiality. We shall be grateful for your kind cooperation. Your information will contribute to better care and improved maternal outcomes in the district and the country.

Consent

I have been clearly explained and understand fully the purpose of the study. I freely consent to participate. I sign below to confirm this.

Signature ----- Date-----

I, the undersigned, have clearly and fully explained the relevant details of this study to the person whose signature appears above.

Name of researcher-----Signature-----Date-----

Kindly answer the following questions as much as possible

1. Explain how midwives’ interaction with other team members influences the quality of maternity services.
2. What is the level of utilization of delivery services in your facility? What factors affect the utilization?
3. Explain how midwives’ attitude affects their role of reducing maternal deaths in the district.
4. What resources do you require to effectively reduce maternal deaths in your facility?

APPENDIX IV: Letter of Approval from KNH



KENYATTA NATIONAL HOSPITAL
Hospital Rd. along, Ngong Rd.
P.O. Box 20723, Nairobi.
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi.
Email: KNHplan@Ken.Healthnet.org
28th July 2009

Ref: KNH/UON-ERC/ A/265

Mugambi Rosemary Kanyua
Dept. of Nursing Sciences
School of Medicine
University of Nairobi

Dear Rosemary

**RESEARCH PROPOSAL: "EFFECTIVENESS OF MIDWIVES IN THEIR ROLE OF REDUCING
MATERNAL MORTALITY RATES IN THARAKA DISTRICT, KENYA" (P90/3/2009)**

This is to inform you that the Kenyatta National Hospital Ethics and Research Committee has reviewed and **approved** your above revised research proposal for the period 28th July 2009 – 27th July 2010.

You will be required to request for a renewal of the approval if you intend to continue with the study beyond the deadline given. Clearance for export of biological specimen must also be obtained from KNH-ERC for each batch.

On behalf of the Committee, I wish you fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

This information will form part of database that will be consulted in future when processing related research study so as to minimize chances of study duplication.

Yours sincerely

DR. L. MUCHIRI
AG. SECRETARY, KNH/UON-ERC

c.c. The Chairperson, KNH/UON-ERC
The Deputy Director CS, KNH
The Dean, School of Medicine, UON
The Chairman, Dept. of Nursing Sciences, UON
Supervisors: Dr. Jennifer Oyieke, Dept. of Nursing Sciences, UON
Dr. Grace Omoni, Dept. of Nursing Sciences, UON
Dr. Blasio Omuga, Dept. of Nursing Sciences, UON

APPENDIX V: Letter of approval from the Ministry of Education

REPUBLIC OF KENYA



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NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: **NCST/5/002/R/637/5**

Date: **17th July 2009**

Ms. Mugambi Rosemary Kanyua
University of Nairobi
P.O. Box 30197
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on '*Effectiveness of Midwives in their Role of Reducing Maternal Mortality Rates in Tharaka District, Kenya*'

I am pleased to inform you that you have been authorized to undertake your research in Tharaka District for a period ending 30 September 2009.

You are advised to report to the District Commissioner and the District Education Officer Tharaka District before embarking on your research project.

Upon completion of your research project, you are expected to submit two copies of your research report/thesis to our office.

A handwritten signature in black ink, appearing to read 'Shaukat A. Abdulrazak'.

PROF. SHAUKAT A. ABDULRAZAK Ph.D, MBS
SECRETARY

Copy to:

The District Commissioner
Tharaka District

The District Education Officer
Tharaka District

APPENDIX VI: Authorization letter from the District Commissioner Tharaka

OFFICE OF THE PRESIDENT



Received
31/7/09
MEDICAL OFFICER OF HEALTH
THARAKA SOUTH DISTRICT
P.O. BOX 1 MARIMANTI

DISTRICT COMMISSIONER
THARAKA SOUTH DISTRICT
P.O BOX 1
MARIMANTI

E-mail: dctharaka07@yahoo.com
Fax: 064 30919
Telephone: 064 31911/31912
When replying please quote
Ref. No. THA/ED.12/11 VOL.1/17

31st July 2009

The Medical Officer of Health
Tharaka District

RE: RESEARCH AUTHORIZATION
ROSEMARY KANYUA MUGAMBI

The above is a student of Nairobi University and reported to this office after National Council for Science and Technology authorized her to carry out research on "***Effectiveness of Midwives in their Role of Reducing Maternal Mortality Rates in Tharaka District, Kenya***".

Please assist her do her research.

A handwritten signature in blue ink, appearing to read "J. T. Bullut", enclosed in a hand-drawn oval.

J. T. Bullut
For: DISTRICT COMMISSIONER
THARAKA SOUTH DISTRICT

CC

M/S Rosemary Kanyua Mugambi

APPENDIX VII: Authorization letter from the Medical Officer Tharaka District

Telegram:
Phone: 14
Marimanti

MINISTRY OF PUBLIC HEALTH AND SANITATION



District Medical officer of Health
THARAKA DISTRICT,
PO BOX 5,
MARIMANTI.

3rd July, 2009

ROSEMARY KANYUA MUGAMBI
SCHOOL OF NURSING SCIENCES
UNIVERSITY OF NAIROBI
P.O BOX 30197, 00200
NAIROBI.

RE: AUTHORITY TO CONDUCT RESEARCH.

The bearer of this letter is a student from University of Nairobi pursuing a Master of Science Degree in Obstetric nursing / Midwifery.

She is in the district to conduct research on "The effectiveness of Nurses in their Role of Reducing Maternal mortality.

Please accord her the necessary assistance to meet the objectives of the study for the few weeks she will be in the district.

Elisha K. Njagi

For DMOH THARAKA DISTRICT

MEDICAL OFFICER OF HEALTH
THARAKA DISTRICT
P.O. BOX 5, MARIMANTI

