

USE AND DOCUMENTATION OF PARTOGRAPH IN URBAN HOSPITALS IN LILONGWE- MALAWI: HEALTH WORKERS' PERSPECTIVE

A cross sectional study on use and documentation of partograph and factors that prevent optimal utilization of the partograph: Perspectives of health workers at Bwaila and Ethel Mutharika Maternity Units in Lilongwe - Malawi.



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Abstract

Background: A partograph is a pre-printed paper that provides a visual display of recorded observations carried out on mother and foetus during labour. It is universally used as part of Safe motherhood initiative for improving labour management and reducing maternal and foetal morbidity and mortality. The partograph is used to identify abnormal labours which are the cause of problems that lead to morbidity and mortality. However, most parameters on the partograph are not monitored and most health care workers do not document their findings on the partograph after reviewing a woman in labour. Hence the progress of labour may not be closely monitored or labour monitoring may not translate into actions required when need arise. In Malawi, factors that influence partograph use at Ethel Mutharika and Bwaila Maternity Units in Lilongwe, Malawi were not known.

Aim: The aim was to assess the use of the partograph and its effects on the maternal and foetal outcomes.

Materials and Method: A cross sectional study which used a ‘mixed methods’ approach. The quantitative study used a structured questionnaire to collect data from the partographs retrospectively. The qualitative study consisted of 20 interviews with clinicians and nurse midwives and 4 focus group discussions with nurse midwives

Findings: The analysis of the quantitative data showed that the partograph was improperly utilized. Only 3.9% of 464 partographs were correctly filled in. A strong association was found between monitoring FHR and method of delivery but also between FHR and foetal outcomes ($p < 0.01$). We also found a strong association between monitoring descent and method of delivery but also between descent and foetal outcomes ($p < 0.01$). The odds of foetal deaths were reduced by 59.6% if FHR was monitored. The qualitative component demonstrated that the barriers to use of the partograph included shortage of staff with high workload, negligence, inadequate supervision and lack of motivation.

Conclusion and recommendation: The partograph was not optimally used, evidenced by incomplete documentation with only 3.9% partographs correctly documented **and less than 5% on all parameters on partograph being properly filled in.** There was no difference in performance in the two units. Time spent in labour by the women did not influence the amount to which they were observed. The study shows that there is a strong association between monitoring foetal heart rate, descent and method of delivery; and between monitoring foetal heart rate, descent and foetal outcomes. Monitoring of foetal heart rate also

reduced the odds of death in the foetus as well as monitoring of descent. The findings indicate the foetal heart rate and descent are the common but also most important parameters influencing the labour outcomes.

Further study is required to assess the complexity of the atmosphere where the partograph is used and documented by the method of participant observation.

Key words: partograph, partograph utilization, labor management tool, progress of labor, birth complications, maternal and perinatal morbidity and mortality, Malawi.

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Operational definition of terms

Health worker/skilled birth attendant/ staff:

Refers to an accredited health professional - such as a midwife, doctor or nurse - who has been educated and trained to proficiency in the skills required to care in pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and new-born.

In Malawi, a skilled birth attendant is neither a patient attendant nor a trained or untrained traditional birth attendant (TBA).

Maternal mortality: is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy or the cause of death.

Maternal Mortality Ratio (MMR): is the ratio of the number of maternal deaths per 100,000 live births.

Perinatal mortality: Is the death of a viable foetus or neonate.

Perinatal mortality rate (PMR): Is the number of death of foetus or neonates per 1,000 live births.

Neonatal death: Is the death of new born within 28 days of life.

Neonatal mortality rate (NMR): the number of neonatal deaths per 1,000 live births.

Labour: is a physiologic process during which the products of conception (i.e. the fetus, membranes, umbilical cord, and placenta) are expelled outside of the uterus.

Normal labour: Is when a woman with term pregnancy (37-40 weeks) is admitted in labour requiring no induction or oxytocic stimulation, no instrumental or abdominal delivery but attains spontaneous vaginal delivery.

Prolonged labour: Is labour of more than 12 hours in active stage.

Obstructed labour: Labour is obstructed when there is absence of progress in cervical dilatation, or, failure of presenting part to descent in the pelvis despite good, efficient and regular uterine contractions.

Staff on locum: These are staff that come to work in labour ward to add to the existing staff and are paid according to the extra hours they have worked. The staff book for the locum specifying which date and on which shift they want to work. Staffs who register for locum are either staff working in the labour ward but are off duty or from other departments / wards in the hospital or from other institutions be it private or public.

Unmet need in Family Planning: The proportion of women who desire to practice family planning but unable to access the services.

Abbreviations

ANW- Ante Natal Ward

APH- Ante Partum Haemorrhage

BEmONC- Basic Emergency Obstetric and Neonatal Care

BMU- Bwaila Maternity Unit

CHAM- Christian Hospitals Association of Malawi

CIOMS- Council for International Organisation of Medical Sciences

CPD- Cephalo-Pelvic Disproportion

C/S- Caesarean Section

CTG- Continuous Cardiotocograph

DHO- District Health Office

EHP- Essential Health package

EMMU- Ethel Mutharika Maternity Unit.

EmONC- Emergency Obstetric and Neonatal Care

EN/M- Enrolled Nurse Midwife

FGD- Focus Group Discussion

FHR- Foetal Heart Rate

IUD- Intra Uterine Death

FP – Family Planning

FSB- Fresh Still Birth

GDP- Gross Domestic Product

HRH- Human Resources for Health

LW- Labour Ward

MDG -Millennium Development Goals

MoH- Ministry of Health

MoLG- Ministry of Local Government

MMR- Maternal Mortality Ratio

MSB- Macerated Still Birth

NMR-Neonatal Mortality Rate

NMT-Nurse Midwife Technician

NSO- National Statistic Office

OPD- Out Patient Department

PNW- Post Natal Ward

PPH- Post Partum Haemorrhage

RHU-Reproductive Health Unit

RNM- Registered Nurse Midwife

SPSS-Statistical Package for the Social Sciences

SRH-Sexual Reproductive Health

SWAp-Sector Wide Approach

USD- United States Dollar

WHO- World Health Organisation

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CHAPTER 1: INTRODUCTION

This thesis assessed the barriers to utilisation and documentation of the partograph in two units of the urban hospitals in Lilongwe, Malawi called Bwaila Maternity Unit (BMU), which is a secondary level facility, and Ethel Mutharika Maternity Unit (EMMU), which is a tertiary level facility. It was an exploration of why the partograph is not used optimally in both units. The thesis starts with chapter one which is an introduction in which the background of the partograph is presented, then the country profile where the study was conducted, followed by chapter two- the literature review which captures studies which have been done so far, the problem statement, significance of the study and finally research questions. Chapter three is the methodology which lays out the means of how data was collected and managed. Details of the findings are presented in chapter four and follows in chapter five is the discussion, methodological limitations, conclusion and recommendations.

1.0 Background Information.

The partograph is a pre-printed paper with a visual/graphical representation of observations made on a woman and foetus during the course of labour. The observations are comprised of the progress of labour, maternal vital signs and foetal heart condition. These observations are displayed on the partograph for easy and quick review of on-going labour and timing of management decisions. The partograph is used as a tool for risk assessment and is effective in detecting abnormal labour during the first stage of labour. When used correctly, the partograph helps to identify problems and interventions can be timely initiated thereby preventing morbidity and mortality.^{1,2} The graph is plotted from when the woman is in active phase of labour.

History of the partograph

The partograph use dates back to the 1950s. It was developed by Friedman, an obstetrician, who had used it to monitor cervical dilation and called it the cervicograph.³ In 1972; Philpott further developed the cervicograph into the partograph which became a practical tool for recording all intrapartum observations in addition to cervical dilation. In Philpott's partograph, he designed alert and action lines which helped to capture prolonged labour.⁴ In 1988, Safe Motherhood Initiative launched the use of partograph as an international standard

practical tool to monitor labour and prevent prolonged labour. In 1994, WHO extensively tested its efficacy and established its scientific basis and rationale for its use in prevention of prolonged labor.^{5, 6} Its use reduces the incidence of prolonged/ obstructed labour and can also detect foetal heart abnormalities which can result in intrapartum foetal hypoxia. In 1994 WHO declared universal application of the partograph in all settings.⁶

In Malawi, the partograph has been in use in Malawi since 1970s. The partograph is the only tool used for intrapartum management and is obligatory in all the three levels of maternal care services. In Malawi, the partograph is presented on a two paged labour chart. The partograph forms the front graphic page of the labour chart which has foetal condition, labour progress and maternal condition (Figure 1).

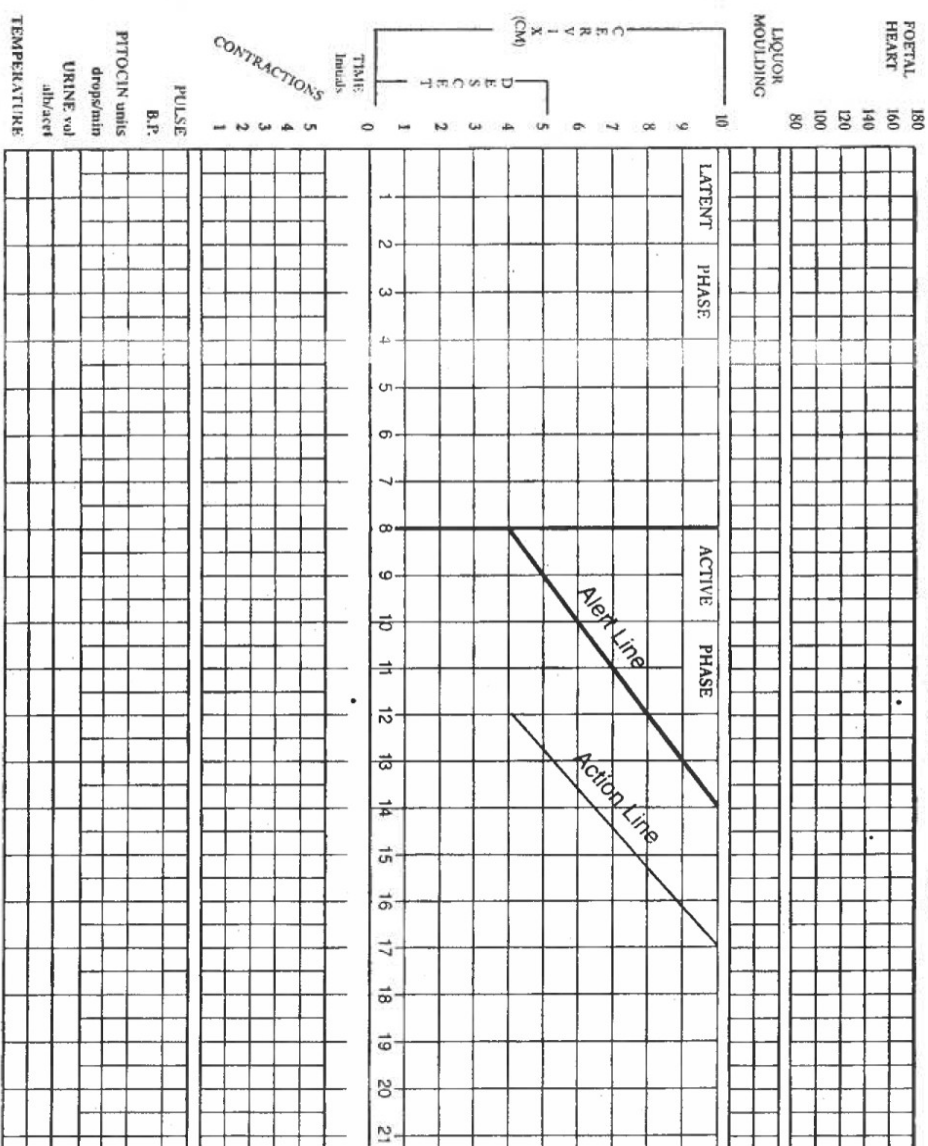
The partograph provides a framework for assessing maternal and foetal condition and labour progress during labour. **Maternal condition** is monitored to assess the well-being of the mother. If mother's well-being is compromised, certainly the foetal condition is also compromised and labour may not be allowed to continue to save life of both.⁷ Maternal condition is observed through checking of **blood pressure** which helps to detect pre eclampsia and eclampsia. **Pulse rate** is observed to detect dehydration or sepsis during labour. **Temperature** checking helps to identify raised temperature which indicates sepsis. Urine output is checked to exclude proteinuria and dehydration but also to keep bladder empty. A full urinary bladder obstructs foetal head descent. **Foetal condition** is monitored to assess the well-being of the foetus. If foetal condition is compromised, even if the mother is healthy, normal labour may also be discontinued by an intervention to save the life of the baby. Foetal Heart Rate (FHR) monitoring is assumed to identify babies being at risk of running short of oxygen (hypoxic). State of membranes show the risk of baby and mother to ascending infections if ruptured for long. The state of colour of liquor can tell whether the foetal life is compromised or not. The health worker would anticipate vaginal delivery if there is no excessive moulding and caput. **Labour progress** is captured through monitoring **cervical dilatation** which tells whether labour is precipitated, normal or prolonged. Precipitated and prolonged labours are potential risks of Post-Partum Haemorrhage (PPH).⁷ Meaningful interpretation of the cervical dilatation is aided by alert and actions lines on the graph. **Alert line** is a graphic line drawn from 4cm to 10cm dilatation. The role of alert line is to separate normal labour from abnormal labour. The crossing of the alert line is associated with foetal distress which increase need for resuscitation of the baby.⁸ **Action line** is a graphic line drawn four hours to the right of alert line. The action line represents slow labour progress. Slow

labours which are also prolonged labours are a potential source of maternal and foetal sepsis, maternal dehydration, exhaustion and uterine rupture.^{1,7}

Contractions which are efficient and effective, predict a normal progression of labour. Consistent and regular monitoring of contractions can show whether progression of labour is normal or not. If not, interventions can be instituted like augmentation of labour. **Descent** shows compatibility of foetal head and pelvis and failure of presenting part to descend in presence of strong contractions indicates cephalo-pelvic disproportion (CPD) which is the common cause of obstructed labour^{4,7}. Consistent and regular monitoring of descent can guide the health worker the method of delivery to anticipate.

Figure 1. Front page of the Malawian labour chart-The Partograph

PRIMIGRAVIDA/MULTIPARA LABOUR CHART ANC:



problems in the woman. The referral component forms a link on the continuum of care. The information is about the identified risks that have prompted the referring unit to refer the woman. The receiving units are informed and take urgency in reviewing and treating the cases.

The back page of labour chart contains information on the first vaginal examination and pelvic assessment which guides the health worker in decision making on whether the woman will deliver vaginally or will need assisted delivery by estimating the actual size of the pelvis in relation to foetal head. The examination also assesses if the woman is in established labour or not. The second stage details show the outcome of the labour process while the third stage is the recording of conceptual products. If retained, the woman gets PPH or sepsis and even passes away. The fourth stage of labour pertains to immediate postnatal check up to determine how the woman is coping and is observed of shock, raised blood pressure and raised temperature. During puerperium, mother and new born are observed to exclude sepsis in both, and PPH, pre eclampsia and anaemia in the mother. Figure 2.

Monitoring labour in a systematic way with use of the partograph; is advocated even in low income countries, to prevent possible child birth complications. Early detection and early management of complications reduces maternal and perinatal mortality and morbidity.¹ Child birth complications are a major cause of both maternal and perinatal deaths. Every year four million neonates die worldwide and one million are fresh still births.⁹⁻¹¹ One thousand women die every day from pregnancy- or childbirth-related complications worldwide.⁹⁻¹¹ The majority of these deaths in low income countries occur from complications of eclampsia, prolonged labour, obstructed labour, haemorrhage and sepsis. Ten to twelve per cent of these deaths are due to prolonged /obstructed labour which is one of the underlying causes of ruptured uterus, haemorrhage, sepsis, uterine prolapse, infertility and obstetrical fistulas.^{1, 9-11} Most of these maternal deaths can be prevented, but are unpredictable.⁹ A significant number of these deaths occur in women who are in good condition at the onset of labour. Performing risk assessment during the antenatal period is not in itself sufficient to identify which women will develop complications during labour and delivery.² Furthermore, because every pregnancy involves some risk, it is a strategic choice that every labouring woman be attended by skilled birth attendants who can accurately observe, regularly monitor, interpret the partograph and act accordingly should complications arise. So, failure to identify problems during labour adds to the woman's already calculated risks of dying that she faces because of the pregnancy.

In Malawi, obstructed labour is one of the important causes of maternal and perinatal mortality and morbidity and attributed to 36% of maternal deaths in 2008¹². The Maternal Mortality Ratio (MMR) is at 675/100,000 live births in 2010 which is far from the expected Millennium Development Goal (MDG) target of 155/100,000.¹³ The Neonatal Mortality accounts for 31/1,000 live births. The partograph has been in use in Malawi since 1970s and its use is obligatory. The expectation is that the graph should be used on every woman reporting in labour to guide in monitoring of labour and assist in identifying problems. The reports of studies conducted in Malawi indicated that use of the partograph had improved referral of women from primary to secondary levels of care. Apart from improving referrals, the partograph had proved to reduce prolonged labour, perinatal mortality and reduce Caesarean Section (C/S) in secondary and tertiary levels.^{14, 15}

This graph is part of the woman's health records and an official document which can be used in legal issues. Despite all this usefulness, the partograph has not been properly used at the two units.¹⁶ The aim of the study was to explore the reasons for not optimally using the

partograph and what consequences this had on maternal and fetal morbidity and mortality in the two urban hospitals in Lilongwe, Malawi.

1.2 Malawi Country profile

1.2.1 Geographical position of Malawi

Malawi is one of the 53 countries in the Sub Saharan region. It is a landlocked country sharing boundaries with Tanzania in the north east, Mozambique in the east, south and south west and Zambia in the northwest. It is divided into three regions and 28 districts, out of which 13 are in Southern region, nine in the Central region and six in the Northern region.

Fig. 3 Map of Malawi



1.2.2 Population

The population is at 13, 077,160 ¹³. The population density is at 139 people living per square kilometre in 2008. The population by sex comprises 49% males and 51% females where more females are not educated and less empowered to make decisions about their health. Forty two

per cent of the population is within the reproductive age group of 15-49 years. Of the total population, 85% live in the rural area.^{13, 17}

The population growth rate is at 2.8 per year that is Malawi had 32% increase in population in one decade (1998-2008)^{13, 18}. The population by age indicates that the younger age group under 25 years makes a higher proportion (67%) of the total population in both rural and urban.

Table 1: Health status indicators

Health Indicator	Measure
Life expectancy at birth	48.3
Health life expectancy at birth	43
Disability –adjusted life expectancy	29.4
Mean systolic blood pressure	134 males/130 females
Total fertility	5.7
Contraceptive prevalence rate	35%
Maternal mortality rate	675/100,000 live births
Under five mortality rate	112/1000 live births
Percentage of children under five underweight for age	13%
Percentage of children under age five height for age	47%
Immunisation coverage	81%
Infant mortality rate	66/1000 live births
Percentage of infants with low birth weight	12%
Neonatal mortality rate	31/1000 live births
Still birth rate	79/1000 pregnancies
HIV prevalence (% ages 15-49)	11%

Source: National Statistics Office (NSO) Malawi 2010;

<http://www.who.int/countryfocus/cooperation>

1.2.3 Socio-economic status

Malawi's economy is based on agriculture which contributes 30% to the gross domestic product (GDP). Major exports are tobacco, tea, and sugar. Agriculture is mostly done in rural areas and is the source of income for rural populations. The employment in farms is seasonal leaving most people poor as their earnings cannot sustain them year round. Fifty two per cent of the population is still living below poverty line, estimated to be living on USD 147 per year¹⁸. Being poor and living remotely make many people unable to access health care

services. They are unable to meet transport costs even if services are free. The most difficult time is when there is an emergency.

Malawi's infrastructure like transport, communication, energy, water management and solid waste is poor. In the transport infrastructure, less than 35% of roads are in good condition. In the rural areas, most roads are impassable during rainy season. There are few motorized vehicle systems in the rural areas and in some areas none¹³. Therefore, transport infrastructure is a constraint on its own to many people in accessing health services including women who have started labour at home.

Communication in the rural areas is poor, with 32% households owning a mobile phone. Fifty three per cent of the total population own a radio and 50% of these are in rural areas. Eleven per cent of the population has a television in their homes¹³. All these pose a challenge to disseminate information including health messages to all population at once or to reach help if needed.

Malawi has a low literacy rate where 19% women and 11% men cannot read and write¹³. There is a link between education and health literacy.¹⁹ Most people, especially in rural areas cannot read, understand or utilize health information to promote and maintain their health. As such, people have less knowledge about their health, medical conditions and treatment. They receive fewer preventive services, report worse health status and are more likely to be in a condition that lead to hospitalisation each time they seek health care.¹⁹ Low education and literacy levels among women of child bearing age attributes to high maternal mortality ratio because of inability to understand the cause and effect of factors contributing to maternal morbidity and mortality.¹⁰

1.2.4 Health care service delivery system

Health services in Malawi are provided by the Ministry of Health (MoH), Ministry of Local Government (MoLG), the Christian Health Association of Malawi (CHAM) and other private-for-profit non- governmental organizations. The MoH provides 60% of the health services, CHAM 36% and the remaining 4% are provided by private-for-profit sectors, the Army and Police. Government facilities under MoH provide services at no cost to the public as such the health financing system is largely donor dependent with 40% of the total budget from the government. Eighty five per cent of the population live within 8 km from a functioning health facility¹⁷⁻¹⁸

1.2.4.1 The National Health Policy

Ministry of health (MoH) is responsible for policy formulation. The national health policy drives the operations in the Ministry of Health. The health goal of the government of Malawi is ‘to raise the level of health status of all Malawians by reducing incidence of illness and occurrence of premature death in the population’. This is achieved by development of a health system and delivering of health services that are capable of promoting health, preventing, reducing and curing disease.^{21,22,,23} Preventive and curative services are provided using the three health care delivery systems, primary, secondary and tertiary levels of care. The primary level of care is delivered by rural hospitals, health centres, and health posts while secondary level of care is delivered by district hospitals and CHAM hospitals. The tertiary level of care is delivered by the central hospitals which have specialised services.

Several global and local initiatives, programmes, strategies and policy frameworks for implementing health service delivery were adopted and developed to achieve the MDG targets. Some of them are Sector Wide Approach (SWAp) and Essential Health Package (EHP)²¹. SWAp is a policy framework –a major financing mechanism for the health sector.

EHP is a primary care centred approach which covers cost effective interventions that address major causes of morbidity and mortality in the general population. These include vaccine preventable diseases, malaria, adverse maternal and neonatal outcomes, tuberculosis, acute respiratory infections, sexually transmitted infections, acute diarrhoeal diseases, nutritional deficiencies, eye, ear, skin infections, common injuries and schistosomiasis.²³

1.2.4.2 Professional regulation

There are two professional bodies which work with the MoH and are responsible for regulating training, education, practice and licensure²²⁻²³.

The Medical Council is responsible for licensing medical practitioners. This profession applies the principles and procedures of evidence based modern medicine in preventing, diagnosing caring for and treating illness, disease and injury in humans and maintenance of general health. These go for a formal training before they can be licensed²². The practitioners include general medical doctors, obstetricians/gynaecologists, also the paramedical practitioners-clinical officers who also undergo a tertiary level training in theoretical and practical medical services before licensed.

The Nurses and Midwives Council is responsible for licensing nurses and midwives. The cadres are: Registered Nurse Midwife (RNM) either trained at degree or diploma level trained in theoretical and practical nursing/ midwifery. Midwifery professionals are those who also have tertiary level of education in theoretical and practical midwifery. The next cadre is the Nursing and Midwifery Technician (NMT). They are trained for three years and are the second level of nursing and midwifery practitioners who provide basic care. The last cadre is the Enrolled Nurse Midwives (EN/M) who has two years formal training but also provides basic care.

Nurses and Midwives Council approves nursing /midwifery training curriculum and training institutions, sets standard for training and for practicing institutions (standard for practice), sets and conducts licensure examination and then certifies those who have passed. It also monitors and evaluates institutions to ensure standards are complied with.²²⁻²³

1.2.4.3 Human resource in health

Malawi experiences chronic critical shortage of health personnel. The poor working environment and pay has motivated some health workers to leave the country. This has led to a heavy brain drain creating shortage of staff. As a result of this, 74% nursing positions were vacant in 2010.^{23,24} Between 2004 and 2009; Malawi received support from donors and cooperating partners to implement a 6 years human resource emergency plan and a 6 year emergency pre-service training to address the crisis. This achieved 53% increase in staff.²² The challenge lies in how to retain these health workers.

Malawi does not have a policy readily available on health worker requirement but uses information from countries which are within the same economic level and same region²².

According to Malawi MoH, Human Resources for Health (HRH) Census report 2008; the ratio of physicians to the general population is 1/100,000; nurse midwives is 1/5,000 and specialists is 1/200,000²⁵ While WHO recommended ratio in developing countries, is one physician per 5,000 population and one nurse per 1,000 population²².

There are distribution imbalances of health personnel where 71% nurses are in urban and 29% in the rural areas serving a population of 85%. Seventy seven per cent of the physicians are in the urban and only 23% in the rural area. Sixty five per cent nurses work in public facilities while ten per cent work in the private facilities. This is the opposite with physicians, 43.5%

work in public and 50.9% work in private facilities. Apart from numerical and distribution imbalances, there is an imbalance in the training and skill mix²².

1.2.4.4 Sexual and reproductive health (SRH) in Malawi

The reproductive health policy was adopted in 2002 with the aim ‘to provide accessible affordable, convenient and comprehensive reproductive health services to all women, men and youth through informed choice so that they can attain their reproductive health goals and rights’²⁶. To achieve this, MoH has a Reproductive Health Unit (RHU) within the ministry which is implementing comprehensive reproductive health programmes and initiatives.^{27, 29} It aims to provide safe maternal and neonatal care, quality family planning and adolescent reproductive health services to reduce unwanted pregnancies. The key performance indicators are reduction in maternal mortality, reduction in total fertility rate, increase in contraceptive prevalence rate and reduction in population growth. The key interventions are emergency obstetric care services, family planning, skilled birth attendants during pregnancy and child birth, essential new-born care, and community maternal and neonatal care health services.²⁶

The family planning policy advocates for provision of family planning services to anybody who seeks them regardless of age and marital status. The unmet need in FP is 72% but many barriers still remain in accessing services like interrupted supplies and lack of wide range of services for people to choose and feel secure. With high fertility rate, the life- long likelihood of dying from pregnancy related conditions is high.²⁶

1.2.4.5 Accessing maternal health and MDG 5

Maternal health services in Malawi are delivered by midwives, nurse-midwives, clinical officers, general medical doctors, and gynaecologists/ obstetricians. All these cadres acquire knowledge and skills in obstetrics and midwifery care during their respective formal trainings. Delivery of maternal health services occur at primary, secondary and tertiary level. Most primary maternal health facilities are managed by nurse midwives who only manage normal deliveries, except for a few facilities that conduct vacuum extraction.

Secondary level provides advanced care like surgical procedures, blood transfusion, vacuum extraction, some screening and diagnostic tests. The tertiary levels are highly specialized facilities with obstetricians / gynaecologists. In Lilongwe, Bwaila hospital is a secondary level and Ethel Mutharika Wing is a tertiary level facility. Both institutions are teaching sites for nursing/midwifery and clinical medicine.

The Malawi Demographic Health Survey 2010 report indicates that 95% of pregnant women 15-49 years attending antenatal care received care from skilled birth attendants but quality of services is not known. Seventy three per cent were hospital deliveries with 71% deliveries conducted by skilled birth attendants. More deliveries were conducted by nurse midwives, (60%) against 11% by clinicians.¹³

The progress on the two MDG indicators is minimal. MMR is at 675/100,000 far from the MDG target of 155/100,000. The proportion of births attended by skilled birth attendant is at 71% also short of the 100% MDG target. The government is committed to improve maternal health and has developed, adopted and implemented various local and global initiatives, strategies, programmes and policy frame works in pursue to attain the MDG 5 targets. Governance, human resource, access, equity and utilisation of maternal health services have been the issues on focus. Access to maternal health is ensured by provision of maternal services at all levels of care. Geographical accessibility is ensured by establishing Basic Emergency Obstetric and Neonatal Care (BEmONC) facilities and Emergency Obstetric and Neonatal Care facilities (EmONC). Access to skilled personnel is ensured by the government training health professional (nurses and clinicians) in reproductive health, midwifery and obstetric care.²⁹

There is also evidence that obstetric care is poorly accessed and utilised with a case fatality rate of 3.4% against target of less than 1%. Malawi has met need of Comprehensive EmONC facilities (CEmONC) but falls short of the number needed of Basic EmONC facilities. Malawi has only 40% recommended EmONC facilities per 500,000 populations. There are no obstetricians or gynaecologists or general surgeon in the 28 district government hospitals. In a district hospital, C/S are performed by non- physician clinicians (clinical officers). Clinical officers perform 60% of C/S cases and doctors perform 40% of C/S. There are severe shortages of clinical officers at district level. There is reliance of clinical officer for delivery of life saving emergency obstetric care¹². All this have a negative impact on quality of care therefore difficult to achieve the MDG 5.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter summarises the previous studies conducted on use of partograph. The information in this chapter intended to facilitate understanding of the partograph use as

experienced by other countries. Several studies have been conducted worldwide focusing on the design, implementation and evaluation of the effect of its use. More systematic studies have been widely implemented in high- income countries and have focused on design of the partograph, while more single studies have been widely implemented in low income countries which have focused on implementation and evaluation of the partograph. In this study, focus has been on studies which investigated the benefit of using the partograph and the barriers to its use.

2.2 Benefit of using the partograph

Studies which have been conducted to assess quality of monitoring of maternal, fetal and labour progress showed that substandard monitoring is strongly associated with negative labour outcomes.³⁰⁻³²

A quantitative study that was conducted in Tanzania, reviewed partographs in order to assess quality of monitoring during labour and how pregnancy outcomes were related to quality of partograph implementation³⁰. The results showed that only 58% partographs of the eligible deliveries were satisfactory implemented. Poor partograph based monitoring of labour was related to unsatisfactory maternal and fetal outcomes. For example, number of babies with Apgar scores of less than 7 almost doubled in the poor monitored deliveries and there was also an increase in C/S. Nyamtema et.al in their study which employed quantitative and qualitative methods to assess quality of partograph use also found poor documentation of partographs in Tanzania³¹. The partographs that were documented showed substandard monitoring of maternal and fetal conditions and was associated with poor labour outcomes. A similar study was done in Uganda with the same study design and methods. The objective was to establish the extent of partograph use, and how its use related to fetal Apgar score. The study found that the partograph was used in 70% of the total deliveries during the data collection period (one month). Four (50%) of the centres did not use partograph on any woman in labour. When FHR monitoring was rated, standard monitoring of fetal heart rate was only in 2% of the partographs. Most partographs were of substandard monitoring on fetal heart rate and was associated with increased risk of baby having the Apgar scoring of less than 7 at birth.³²

In these studies, the results showed a higher perinatal morbidity and mortality when women were poorly monitored. The studies did not measure maternal outcomes.

Studies which have assessed the role of alert and action lines on the graph have found that there is a higher rate of fresh stillbirths in labours with crossed alert line than in normal labours.⁸ When both lines were crossed, women had a rate of fresh stillbirths ten times than for normal labour.⁸ Women monitored with the two hour action line required more interventions, like more oxytocin augmentation, without improving maternal and fetal outcomes than in the four hour action line.³³⁻³⁵ The two hour action line has been criticized of increasing unnecessary interventions.^{8,35} Although the four hour action line was recommended, it is argued that four hours is too long and dangerous omissions may occur which can lead to maternal or fetal death.³⁶

Improper use of partograph during labour was reported to have resulted in missed opportunities to timely diagnose CPD, malpresentations, fetal abnormalities and other causes of obstructed labour.¹² Obstructed labour led to 8% of the maternal deaths worldwide, 11.3% of maternal deaths in Bangladesh, 26.2% in a study in community based in Uganda, 45.5% in hospital based study in Ethiopia, and 36% in Malawi, concluding that a careful assessment of engagement and descent of the presenting part is important to prevent occurrence of obstructed labour.^{12,37}

Most of the studies which assessed the effect of using the partograph used randomized controlled trials. For example, a systematic review which combined randomized control studies from high and low-resource settings assessed the effect of partograph on reducing maternal and perinatal deaths.^{38,39} The review was inconclusive and the findings did not show that the use of partograph reduces maternal and perinatal mortality and morbidity. Three out of the five studies were from high resource countries with advanced technical tools for maternal and foetal monitoring as opposed to low resource settings where the partograph is the only tool used to monitor women in labour. The partograph is still a useful tool in low resource settings like Africa to detect problems of obstructed and prolonged labours which are the daily occurrences.^{1, 2, 11, 27}

A prospective, multicentre trial randomization of hospitals in Indonesia, Malaysia and Thailand (South East Asia) assessed the impact of using the partograph. The findings showed that there was a reduction in complications of obstructed and prolonged labour. The findings were statistically and clinically significant where fewer women had labour longer than 18 hours; fewer needed augmentation of labour and fewer had postpartum sepsis. Among women with normal labour and childbirth, more had spontaneous cephalic births and fewer required

forceps delivery. Stillbirths reduced from 0.5% to 0.3%. The findings of this trial have been heralded and the partograph has become the 'gold standard' for monitoring women in labour, and WHO recommended its use in low income countries⁶.

Improvements in maternal and fetal outcomes through use of partograph were further demonstrated in a study conducted in Pakistan, Zimbabwe and Malawi. The findings showed a reduction in prolonged labour, reduced need for augmentation, reduced vaginal examinations, reduced cases of postpartum haemorrhage, perinatal mortality and C/S in primigravidas.^{4, 15, 40}

Increased women satisfaction with labour experience has also been reported when women were frequently attended to.³⁵

Studies have also reported health workers perspectives that the partograph helped to estimate time of delivery and detected slow progress, hence timely intervention.^{41, 42} Health workers stated that the graph provides a complete efficient and easy way of handovers in a continuum of care. It is simple, easy to use and gives a detailed summary of observations on a single page graph compared to pages of written notes; so, partograph ease their work. Midwives and nurses recommended the use of partograph as it helped them interpret progress of labour and enabled them to make correct management decisions of women in labor.^{2,41-43}

The partograph when used correctly is effective and helps to ensure careful monitoring of the woman in labour, recognize and respond to complications in a timely manner, avoid unnecessary interventions thus prevent maternal and neonatal morbidity or mortality.

In contrast, Lavender and Malcomson in their study in UK found that some health workers had some reservations on use of partograph. Making decisions using the partograph based on action line was seen as rigid and did not allow them to consider other factors like maternal wishes, fetal condition and maternal condition. They argued that action line only focuses on dilatation of cervix yet there might be a significant progress in descent.⁴¹ This can happen with early plotting of cervical dilation. They felt use of partograph limited their professional autonomy in making decision about care. While others reported that women are not the same and are inherently different; therefore partograph compromise individualized care.⁴¹

Although a number of studies have shown the effectiveness of using partograph in detecting problems during labour, a systematic review did not show the effect³⁸. Furthermore, the WHO trial results, though they were recommended, the number of maternal deaths did not decrease.

Twenty three deaths occurred before the implementation of the partograph and twenty four afterwards. There were no reduction in C/S rate and vacuum extraction.⁶ This possibly could be explained as the staff not being competent to use, document and interpret the observations so that timely action could be taken.

2.3 Barriers to correct use of the partograph.

Studies which were conducted to assess the effects and impact of partograph use have also reported barriers to correct use of the partograph. The barriers include lack of knowledge, lack of resources, lack of supportive supervision and women's perspective.

2.3.1 Lack of knowledge

Detailed knowledge is a pre-requisite to use of partograph through in-service training as reflected in the WHO trial and Canada studies^{6, 39} where there was intensive teaching of midwifery and medical staff before implementation of the partograph.^{6, 39, 44-45} Health workers educational needs on how to use the partograph showed a significance difference in the outcomes in the women cared for by midwives who received training and those who did not.

In a cluster randomized trial by Fadhy et. al in Indonesia, the nurses were randomized to receive training alongside using the partograph. The findings showed an improvement in fetal and maternal outcomes in that there was a significant increase in referral rate and reduced vaginal examinations and Apgar score of less than 7 at 1 minute,⁴⁴ concluding that education, training and supervision of health workers promote effective use of partograph.

Significant improvement in documentation of fetal heart rate, colour of amniotic fluid, cervical dilatation, uterine contraction and vital signs of the mother were found in a quasi-experimental study in Angola.⁴⁵ The aim was to assess the impact of education on midwives on use of partograph. Although the study showed improvements in documentation after training, the staff failed to correctly observe descent and crossing of alert line which are the most important parameters in detecting obstructed and prolonged labour respectively. Interviews and observations of midwives could have been used to explore their attitudes towards use of partograph and understand their critical and analytical thinking in action.

Two cross-sectional questionnaires based-surveys conducted in Nigeria that assessed knowledge and utilization of partograph among health workers in primary, secondary and tertiary facilities; found different knowledge levels. Doctors demonstrated more knowledge on partograph than nurses. Poor results were shown in non-professional cadres.^{46, 47} Since it

was a questionnaire based survey, and there was no exploration of why such a difference between the professionals existed. It was also found that health workers at tertiary facilities used the partograph more than those at secondary and primary facilities. This too, needed further exploration to find out the reasons for the differences. However, the results confirmed the significance of formal training and need for in service trainings. Although the need for formal training and on-going in-service education has been noted, the study did not assess these in relation to maternal and perinatal outcomes. It is therefore not known whether in-service education would decrease deaths in mother and baby. Another survey conducted in Benin found high use of partograph; - 98% rate, but nearly half of the partographs were inaccurately filled in and decisions taken by midwives were wrong. There was misuse of oxytocin. This was a result of lack of knowledge which needed periodic retraining, supervision and a system of continuous assessment of quality in filling the partographs.⁴⁸

A methodological limitation in these highlighted studies is that they were mostly cluster trials and surveys and lacked a qualitative exploration on use of partograph.

2.3.2 Lack of resources

Despite health workers positive attitude on use of partograph, lack of resources was also one of the reasons why the partograph was not utilized. The resources include the graph paper, guidelines, equipment for carrying out vital signs observations and pens.^{31,32}

Availability of health workers to attend to women in labour is another factor. In a study conducted in Benin, more staff on duty was associated with high utilization of the partograph. There were more partographs completed where there was more than one midwife and few partographs were completed where there was only one midwife on duty.⁴⁸

2.3.3 Lack of supportive supervision

In Indonesia, Fadhy et.al, found that when staff were trained and then given supportive follow up, there was an increase in the referral rate from primary health care centres to secondary or tertiary levels. A higher rate of correct use of partograph was shown which resulted in reduction in vaginal examination, augmented labour and increased referral.⁴⁴ In Tanzania, Bosse et.al, and in Uganda, Ogwang et.al, reported that the health workers lacked follow-up and supervision. This resulted in poor monitoring of maternal –fetal condition and there were high perinatal deaths.^{30, 32} One of the eight centres which participated in the study in Uganda correctly used the partograph. This centre received more supportive technical supervision than any other centre.

2.3.4 Women's aspect

Surveys in Benin and Ethiopia reported women arrived late at hospital, nearly in second stage of labour (8-10 cm cervical dilatation).^{48, 49} The survey in Benin found that 20% of the women did not benefit from the use of partograph.⁴⁸

2.4 Studies conducted in Malawi

Two studies were conducted on partograph use in a tertiary hospital, Queen Elizabeth central hospital. One study conducted by Kwast and Rogerson in 1973 found significant reduction in prolonged labours, C/S and perinatal deaths. Women who had laboured longer than 24 hours reduced from 14% to 3% of total deliveries, C/S from 21.3% to 9.5% and perinatal deaths from 5.3% to 3.8%.¹⁵

Burgess in 1986 reported that use of partograph reduced active interventions in normal labours but also allows timely referral of patient with problems for essential management. She concurred with the findings of Lavender and Malcomson that decisions about management in labour cannot be based only on cervical dilatation but considering also nature of contractions and descent of foetal head.¹⁴

2.5 Conclusion

Most studies herein have shown that monitoring the progress of labour with correct use of the partograph improves maternal and fetal outcomes, but some studies have failed to document that using partograph reduces maternal morbidity and mortality at all times. The aim of using partograph is to differentiate normal from abnormal progress in labour. The partograph acts as an early warning system identifying those women who will likely require some form of intervention. Success of its use requires knowledge and skills gained through formal education and on- going regular in-service training. It requires resources to carry out the observations and documenting. Without these, monitoring of labour becomes incomplete hence problems are missed, or identified late; resulting in complications which cause maternal and neonatal morbidity and mortality. Most studies employed a quantitative method to assess effect of use and impact. Those that were explorative did not use mixed methods. Therefore, we decided that this study employs mixed methods; a quantitative method was employed to assess the use of partograph while a qualitative method was employed to explore the factors that hinder the use of the partograph. In Malawi there is dearth of studies on partograph and only two studies reported effect of use of partograph. These merited this study.

2.6 Problem statement

From the literature review, it is clear that using the partograph is evidence-based practice. The aim of using partograph is to facilitate maximum monitoring of mother and foetus during labour. In case of problems arising in an expected normal birth, midwife should be able to make quick clinical decisions. Literature has also shown that the partograph was not fully utilised. This led to missed opportunities to identify problems and address complications in a timely manner. Complicated deliveries are more detrimental as they cause severe psychological and physical harm to women, serious economic and social change as well as adverse maternal and foetal outcomes. Managing complications is expensive for both the mother and institution. This is not exceptional for Malawi evidenced by the high maternal and perinatal mortality rate. Malawi is currently reported to have MMR of 675/100,000 against the MDG target of 155/ 100,000 live births and neonatal mortality of 31/1000 live births.¹³ PPH and Obstructed labour are the most common causes of maternal deaths in Malawi. Obstructed labour/prolonged labour attributed to 36% of maternal deaths in 2008.¹² These are preventable deaths. The partograph is an effective tool to recognize such problems during labour. It assists in early decision making and early interventions that can reduce maternal and foetal morbidity and mortality.

During an assessment of maternal deaths at Bwaila Hospital, it was reported that maternal death was high and that in some cases partographs were either not correctly completed or used at all.¹⁶ The reason for this state was not known. The studies have highlighted the possible reasons for not using the partograph, but are not from the context and views of Malawians. Therefore, this study explored the views of health workers to assess the main reasons for the under-utilization of the partograph at Bwaila Maternity and Ethel Mutharika Maternity referral units in Lilongwe in Malawi.

2.7 Significance of the study

The results of the study will help inform the institutions participating in this study and other midwifery care providers on how use of the partograph may be increased for improvement of maternal and fetal outcomes. The results will also inform on areas where teaching strategies need to be enhanced as it relates to instruction on partograph, its purpose and correct use at a referral hospital. Ultimately the healthcare workforce will be more equipped to effectively monitor the health of mother and baby.

2.8 Purpose of the study

To gain understanding on the current utilisation of the partograph in Malawi, and provide opportunity to remedy the problem with tailored in-service training that hone on the deficiencies.

2.9 Research questions

To what extent is the partograph used and completed at Bwaila and Ethel Mutharika Maternity Units?

How does the use relate to maternal and foetal outcomes?

What factors enhance or prevent use of partograph among health workers?

Specific objectives

To review partographs and identify the maternal, foetal and labour parameters that are not completed

To relate maternal and foetal outcomes to the completeness of the graph

To explore usefulness of the partograph as perceived by health workers

To explore reasons for using or not using the partograph

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter focuses on the design and methodology used to answer the question under study. It describes the study settings, the population, sample size and sampling procedures, methods, tools used to collect data and piloting. Data analysis, reflexivity, validity and reliability and ethical clearance are also described in details.

3.2 The study design.

A cross sectional study design that combined quantitative and qualitative enquiries was used. The quantitative study was used to answer the first and second research questions, while the qualitative study answered the third research question.

3.2.1 Rationale for the choice of the design.

The design is carried out at one point in time and is descriptive. It aims at describing the population with respect to outcome of interest and a set of risks factors. An association between risk factors and outcome of interest can also be investigated. However, causal inferences cannot be made in this type of design.⁵⁰

The design was opted because it was the most appropriate way for reviewing and assessing medical charts. We wanted a snap shot of the current situation and this method is acceptable for that. The design gave an overall picture of the problem under study at that time across the population.⁵⁰⁻⁵¹

3.2.2 The quantitative study

The quantitative study is a systematic process in which numerical data are utilised to obtain information. The study provides descriptive and inferential statistics for prediction, control, confirmation and test of a hypothesis. However, in cross sectional design, the quantitative study is useful for hypothesis generation and not good for hypothesis testing.⁵⁰ The method may give accurate and objective results which are also easily generalizable because of large samples used.⁵²⁻⁵⁴ However, quantitative study provides confined access to clinical knowledge where the researcher defines the boundaries of information to be collected through a pre-formed questionnaire. Partograph review was used to collect data and partographs were sampled from the two hospitals.

3.2.3 The qualitative study

The qualitative method also follows a systematic process to understand the subject matter under study. It is descriptive and is interested in process, meaning of how people make sense of their lives, experiences and how they interpret their context. The researcher tends to become immersed in the subject matter. The results are subjective. The results are also context bound and use small sample therefore difficult to generalise the findings.⁵⁵ In contrast to quantitative, a qualitative study uses small sample but generates vast data.

The qualitative study employed focus group discussions (FGD) and individual interviews as methods of data collection. The FGD offers safer and more supportive contexts within which to explore lived experiences. Informants share these experiences with others who understand what they are sharing. This supports the importance of creating homogeneous groups in the FGD. The advantage of focus group discussion is that interaction among members stimulates new thoughts and more ideas are generated. These ideas are not personal as ideas of each member are validated by other members in the group. This helps the researcher not to be easily persuaded by weak evidence. FGD can also produce valid data. The disadvantage is that the ideas are based on power of social influence. The group pressure is strong and members may say things for conformity/compliance, identity and internalisation. A member may not argue or if asked to comment may respond by 'as the others have already said.' The ideas which they may fail to comment could be an important and true point and they would just support. The reactions among members on ideas raised might also influence those participating to speak lies. So FGD can also influence the researcher to be easily persuaded by weak evidence where data generated is not valid.⁵⁶⁻⁵⁷

By employing the individual interviews, the aim of the interviews was to get broader and deeper view of the phenomena under study from different cadres of different years of work experience. The advantage of the individual interviews is that it searches deeper into the issues under study. The disadvantage is that informant may feel scared, intimidated and suspicious and may give responses that are superficial which they know are expected by the researcher. Informants may also run out of ideas and therefore difficult to generate data.⁵⁶⁻⁵⁷

Semi-structured question guides were developed which were used to guide focus group discussions and the interviews respectively.

3.2.4 Rationale for the choice of the methodology

The combination of quantitative and qualitative studies helped overcoming deficiencies that one enquiry could have. They complemented each other and triangulation via mixed methods strengthened the findings. The quantitative method was chosen to provide descriptive statistics that measure the use of partograph while qualitative method explored the factors that led to under-utilisation of partograph.

There were also too few studies in the literature search which employed qualitative method. Of the few exploratory studies, one was a survey which administered a questionnaire to obtain perspectives. These studies lacked researchers' involvement to listen to informants' views and probe to get a deeper meaning of their responses. Therefore, this study used a qualitative study other than survey methods to get views and learn lived experiences of the health workers and the quantitative to provide descriptive statistics on use of partograph across the given population.

The focus group and interviews were chosen to have an open access to clinical knowledge where tacit knowledge, experiences, opinions of the informants could be explored in their natural context and gain a deeper understanding of informants' lived experiences.⁵⁶⁻⁵⁷

Using the open semi structured guides to collect data allowed the researcher to probe beyond a simple answer. Probing was done depending on the responses offered. For example, probing provided a chance to clarify ambiguous responses. The semi- structured guides also provided an opportunity that the sequence and wording of questions could be manipulated during the course of interview or discussion but not to change the meaning of the questions. The guides helped to collect data systematically.

3.3 The study settings

The study was conducted at Bwaila Maternity Unit and Ethel Mutharika Maternity Unit in Lilongwe, Malawi. These sites were purposively selected because they are busy units and have many maternal deaths.¹⁶ These units were also reported for under-utilization of the partograph.¹⁶ They are teaching institutions to medical and midwifery students from colleges within the country. Both of these have fairly new architecturally nice buildings. The new BMU was opened in October 2009 replaced an old unit which was built in 1930s. The EMMU was opened in August 2010 as a referral hospital for the nine districts in the central region of Malawi.⁵⁹

3.3.1 Bwaila Maternity Unit

Bwaila Maternity unit is in Lilongwe District which is the capital city of Malawi. It is situated in the central part of the country. The district has a population of approximately 1,7million people and is 6,159 km²in size.⁵⁸ The district has a central hospital, two rural hospitals and 43 health centres. Bwaila Hospital is one of the busy districts maternity hospitals in Malawi. Being a secondary care facility; it receives referrals from all health centres and CHAM hospitals in the district. The hospital has new infrastructure from 2010. People living in urban areas of Lilongwe directly access maternity services at BMU without cost and without being referred. This, however, has adversely contributed to the congestion at BMU.

It provides antenatal, postnatal services and has inpatient facilities for obstetric conditions. The bed capacity is 220. The hospital provides antenatal care to nearly 20,000 pregnant women and conducts around 13,000 deliveries per year. The staffing levels are low compared to the staff ratio by WHO.²⁴ The LW has 23 nurse- midwives who work in two shifts, day and night with an average of 7 nurse-midwives per shift. The staffing levels are maintained by staff on locum (explained elsewhere). Contrary to the nurse-midwives allocation in each ward of the unit, clinicians are allocated to the whole unit. One clinical officer, one doctor and one obstetrician (consultant) do work on a call. In case of emergencies in LW, the clinicians are called for further management.

3.3.2 Ethel Mutharika Maternity Wing.

The hospital is part of Kamuzu Central hospital and it was opened on 3rd August 2010. The hospital is not as busy as Bwaila hospital in terms of managing normal deliveries.⁵⁹ EMMU is a tertiary care service. Mothers and infants with serious complications are referred there for specialised care. This Wing is about 10 km away from Bwaila hospital.

The LW has 12 nurse-midwives who rotate day and night shifts. Clinicians work in LW in the same manner as at BMU.

Table 2: Comparative characteristics of BMU and EMMU

Characteristic	BMU	EMMU
Catchment population	1,725,010	>5.5 million
Catchment area	Lilongwe district.	Central region (9 districts)
Bed capacity	220	220
Average no. of maternal deaths per month	1.5	0.5
Average no. of admissions per month	1420	270
Average no. of deliveries per month	1117	250
Average no. deliveries per day (24 hours)	40	8.6
Total no. of Nurses in LW	23	12
Average no. of nurses per day shift	7	4
Maximum no. of nurses per day shift	9	5
Maximum no. of nurses per night shift	7	4
Maximum no. of nurses per day shift(weekend)	7	4
Maximum no. of nurses per night shift (weekend)	7	4

Sources: NSO 2011, Malawi; District Health Office, Lilongwe

3.4 Access and recruitment

Permission was sought from people in authority to carry out the data collection. Approval was sought from the District Health Office (DHO) at BMU and from the Director at Kamuzu Central Hospital for EMMU (Appendix 3.1&3.2). The Unit matrons and Heads of clinicians in the two units were also sought for an approval to use the health workers and to use patients' files. Then the researcher was directed to the ward in-charges for the respective units who also

directed the researcher to the ward clerks. The ward clerks were responsible for filing and storage of files for discharged patients. The researcher worked with ward clerks to retrieve files of patients for the partograph review. After the partograph reviews, the researcher was in the ward for focus group discussions and interviews with health workers. At that time, rotation of the health workers in the wards had just occurred and there were new in-charges and new health workers in the wards (LW & PNW). The researcher met the in-charges and introduced herself and explained the purpose of the study again, and that she sought to conduct focus group discussions and individual interviews with the health workers. The researcher made all contacts and made appointments with health workers who took part. The LW and PNW records like duty roster and contact information sheets were used to get participants. The health workers were approached individually either by face to face or by phone. Information about the study was given to the informants; and I ensured that they understood the content and purpose of the study, as well as the ethical principles of voluntary consent, rights of withdrawal without any consequences, confidentiality and anonymity. Health workers who indicated willingness to take part in the study were accorded an appointment for an interview or participation in focus group discussion.

3.4.1 Refusal to participate

The health workers who refused to participate gave their excuses on first contact for appointment and only one declined after an appointment. Those who did not participate expressed unwillingness except for only one health worker who demanded to know how much he/she was to be paid for his/her information.

3.4.2 Characteristics of Informants

The study employed informants who had training in obstetric and midwifery care with a variation in age, experience and qualifications. Most of the midwives and some clinicians were new in the LW following a staff rotation that was recently done by the unit management. The researcher saw this as a challenge as it affected the input in the discussions. Some staff did not open up while others possibly had little to say about their experiences in the units. The age distribution of participant was between 25 years and 60 years while experience in midwifery care was between 9 months and 39 years. Experience in working in the units ranged from 2 weeks to 2 years. Gender distribution showed more female midwives than males. Only 5 male nurses participated in the study. Among the clinicians, the majority who participated were males, with only 2 female clinicians.

Professional qualifications included 1 Obstetrician, 3 doctors, 6 clinical officers, 7 RNMs and 19 NMTs and 5ENMs.

Table 3. Description of professionals who participated in the study

Profession			Description	
Profession	Cadre	Number interviewed	Years of training	Core professional duties
1. Clinicians	Obstetricians	1	+5	Specialised obstetrical care
	General medical doctor	3	+5	General health care
	Clinical officer	6	3	General health care
2. Nursing	RNM	7	4	Supervisory and managerial level in nursing and midwifery care
	NMT	19	3	Basic nursing and midwifery care
	ENM	5	2	Basic nursing and midwifery care

Source: WHO Africa Health workforce observatory 2009

3.4.3 Recruitment of research assistant

One RNM was recruited to help in data collection. The RNM was a new graduate and had been in the ward for 9 months. He was a male with knowledge in research process and a little

experience in midwifery care. Being a RNM, he had high knowledge in midwifery care than NMT. While his 9 months experience meant that he had not yet been embedded in the routines of the ward as such, hence did not have pre-formed opinions on the subject matter. He was informally trained and explained of the purpose and objective of the study. Even though the research assistant had previous experience in maternity, a meeting was arranged a week before the data collection. The aim was for him to have an understanding of the study. The areas that were discussed were roles and expectations during the data collection process. In FGD, he was to assist in setting the environment for the discussion and during the FGD; he was to take notes while the researcher asked questions and kept track of the direction and content of the discussion. After the FGD, we went through the notes together discussing and clarifying issues which we differed or were not clear. He was also consulted in verification of some issues not clear arising from the informants in the interviews.

3.5 Quantitative study

3.5.1 Population

This was a retrospective review of all partographs of the deliveries conducted one month before data collection

Inclusion criteria

Partographs for all women reporting for labour

Women who were admitted in labour with cervical dilatation on admission of any measure in cm (less or more than 4cm)

Pregnancy at any gestation which was monitored with a partograph

Partographs for all women delivered one month before data collection

Partographs for all methods of delivery.

3.5.2 Sample size calculation in quantitative study

The sample size was calculated using the formula: $n = t^2 \times p(1-p)/d^2$

Description

n = the required sample size.

t = the confidence level at 95% (standard value of ± 1.96)

p = the estimated proportion of the partographs used and completed, in this study it was not known and was estimated at 50%.⁵¹

d = the standard error or precision at 5% (standard value of 0.05)

$$n = (1.96)^2 \times 0.5(1-0.05)/0.05^2$$

$$n = 3.8416 \times 0.05(1-0.05)/0.0025$$

$$n = 384.16$$

$$n = 384$$

While using tables with the same unknown prevalence of 50% as above, with 95% confidence interval and 0.5% significance level, this gives the same sample size of 384 using the formula : $[n = z^2 \cdot a/2P(1- P)/d^2]$ ⁶⁰

20% of n=384 was expected to be missing in the study, so we calculated 20% of 384 and was added to keep the study's power [384+ (20% of 384)]. This gave a total sample of 464.

3.5.3 Sampling procedure

The sample for each site was calculated using proportion on the number of deliveries for the period 24th June to 24th July 2011. Using the delivery register, total number of deliveries for the above period was noted. This gave a proportion of 4:1 See the calculation below. Partographs from 24th June to 24th July 2011 were counted to counter check the number as shown in the delivery book and to identify any missing files.

3.5.3.1 Calculation of proportion of sample size for BMU and EMMU

No of deliveries (BMU) 24th June to 24th July =1030

No. of deliveries (EMMU) 24th June to 24th July =240

Proportion: 1030:240 =4:1 i.e. BMU has deliveries 4 times EMMU

Sample size for EMMU $461 \div 4 = 115.25 = 116$ to achieve the calculated sample size

Sample size for BMU = $116 \times 3 = 348$

3.5.3.2 Sampling

To get the actual sample, the average number of deliveries per day for the period 24th June to 24th July was calculated for each unit (BMU: $1030 \text{ deliveries} \div 30 \text{ days} = 34.3 = 35$; EMMU: $240 \text{ deliveries} \div 30 \text{ days} = 8$). So, 35 and 8 were the average number of deliveries per day for the two units respectively. The number of days that were required to achieve the sample was calculated as (BMU: $348 \div 35 = 9.9 = 10$ days; EMMU: $116 \div 8 = 14.5 = 15$ days). This meant that deliveries from only 10 days of the time period from 24th June-24th July were needed to meet the sample size at BMU and 15 days at EMMU. The 10 and 15 days were randomly sampled by writing each date on a separate piece of paper for the time period 24th June to 24th July. The thirty pieces were mixed and with eyes closed, one hand picked up a piece at a time isolating the 10 and 15 days respectively. The pieces randomly selected had dates which were used to yield the required sample size. All deliveries were checked and the partographs/labour charts reviewed.

3.6 Data collection

3.6.1 Partograph reviews

A retrospective partograph/labour chart review was carried out on deliveries conducted between 24th June and 24th July 2011. The labour ward delivery book was used to check number of deliveries. The researcher worked with ward clerks to retrieve files of patients. The researcher reviewed the files and collected data from 464 partographs. All deliveries were included irrespective of mode of delivery and time admitted in labour ward. Data from 464 labour charts were extracted and filled in a questionnaire (Appendix5). Using the parameters described below, the labour charts were assessed by inspection of documentation of the parameters as filled in or not filled in (yes or no, complete or not complete), especially for essential information. Degree to which these parameters were filled in (adequate or not) was also assessed.

The independent variables which were of the main interest include the following:

Foetal monitoring which was assessed on FHR, status of membranes, liquor, and moulding.

Maternal condition which was assessed on temperature, blood pressure, and pulse rate.

Labour progress which was assessed on cervical dilatation, uterine contractions, and descent of foetal head. Alert line if crossed and action line if reached was also assessed.

Apart from the main parameters above which constitute the partograph, other parameters on the labour chart were also assessed for documentation (Yes or no; complete or not complete). These included personal details i.e. name, age, address, gravida and parity; admission details i.e. date of admission, date and time of labour onset, date and time of membranes ruptured and abnormal symptoms. Documentation (yes or no) was also inspected on first examination on admission, first vaginal examination, pelvic assessment, second stage of labour. On the second stage of labour, charts were checked on documentation (yes or no) on date and time of delivery, method of delivery, Apgar score at 1 minute and at 5 minutes.

Status of new born was assessed if documentation was done (yes or no) on sex, weight, length, head circumference, abnormalities and if baby was sent to nursery. Third stage was assessed by documentation (yes or no) on date, time and mode of placenta delivery, blood loss, completeness of membranes and placenta. Perineum, immediate postnatal care and subsequent puerperal care were also assessed. Time duration between admission in labour and delivery was calculated in some charts.

The dependent (outcome) variables on status of the mother were: method of delivery i.e. spontaneous vertex delivery (SVD), vacuum extraction (V/Ext), breech delivery and caesarean section delivery).

The dependent variables on foetal outcomes were: status of the baby at birth i.e. alive or dead. Alive included: live full term (LFT), premature (Prem); Dead included: Stillbirth- fresh (FSB), macerated (MSB).

In order to assess staff the workload, using the ward and delivery registers, data were also collected on number of admission per day, per month and per year. The total number of midwives on duty per day was collected compared against the number of deliveries (Table 2). This helped to weigh the workload.

3.7 Data Analysis

The variables were coded, entered and analysed using SPSS version 18.0. The researcher and the statistician did the data cleaning, clarification and quality control. Descriptive statistics were run and frequency tables were produced to describe the extent to which the partograph was used. Fischer's exact test was also run to find the association between the independent variables and the dependent variables.

3.7.1 The extent of use

The extent of use was assessed by determining the proportion of the parameters documented or not documented against the parameters on the partograph or labour chart. The following grading system was used:

1. Grading of labour chart

Complete: if the labour chart had information on all sections including all the three components (foetal monitoring, labour progress and maternal monitoring) of the partograph

Incomplete: if there was no information in other components or sections of the labour chart.

Blank: if there was no information on the partograph or labour chart.

2. Grading of The partographs.

OK: if the three components on the partograph were completely filled in.

Adequately filled in: if the three components had information, but lacking information in some parameters.

Inadequately filled in: if two components had information filled in.

Grossly inadequate: If only one component or no information on the three components.

Note:

1. Components denote the 3 parts of the partograph (foetal, maternal and labour progress).

2. Parameters denote what is included in the components (foetal-FHR, liquor moulding).

3.7.2 Test of association

A natural test for the association of categorical variables in a contingency table is the Chi-square test. However, when the number of observations obtained for analysis is small (< 5), the Chi-square test usually produce misleading results. A more appropriate test is the Fisher's exact test. The only drawback with a Fisher's exact test is that it does not report a formal test statistic like a Chi-square test. It only produces a p-value. Where the test was applied for statistical significance, the cut off point for the level of significance was 0.05.

3.7.3 Strength of association

We used Phi and Cramer's V as a post-test for determining the strength of association. The value for this test is between 0 and 1. If the Phi and Cramer's V value is close to 0, then the association is very weak. A value that is close to 1 indicates a very strong association. In this analysis, the Phi and Cramer's V is interpreted as in the Table 4 below;

Table 4. Interpretation of Phi and Cramer's V test of analysis

Phi and Cramer's V	Strength
≤ 0.10	Weak
$(0.10, 0.30]$	Moderate
> 0.30	Strong

3.8 Qualitative study

3.8.1 Population

The study population of interest was the health workers working in labour ward. But during the pre- test study, it was observed that issues on postnatal care were not adequately answered by the health workers who were working in the labour ward. Then we decided to add health workers working in postnatal ward. The health workers in PNW also made it possible to have a focus group discussion especially at EMMU where there were few nurses in LW. A purposeful sample was planned with all health workers from the two professions (nurse midwives and clinicians i.e. obstetricians, doctors, clinical officers).

Inclusion criteria

- Health workers who worked in LW and PNW at Bwaila and Ethel Mutharika Maternity Wing.
- Health workers who worked day shift or night shift at the time of data collection and accepted to use their free time.
- Health workers who were on holiday who could be reached.

Exclusion

- Health workers who worked in other departments.

3.8.2 Sample size

The aim of having sample size was not for representativeness but getting insight into the phenomenon. The saturation point was the main deciding factor to sample size. Saturation point is when no more new ideas can be analysed in the data collected⁵⁷. Four focus group discussions and 20 individual interviews were conducted in the two units to achieve the saturation point. It was difficult to organise the clinicians for a focus group discussion because they were few, instead only individual interviews were conducted.

3.8.3 Sampling

In the qualitative study, purposive sampling was used to select health workers who participated in the study. The health workers worked in shifts and this gave an opportunity that every staff could participate at his or her on free time. Using purposive, increased richness of data where the people recruited were those with rich knowledge on the topic. In this study, health workers working in the labour ward where partograph was used were recruited; as opposed to the previous studies which recruited heads of maternity department as key informants.³² The in-charges or heads, most of the times have multiple roles and might not spend their entire time working with the partograph in LW. This study used informants of different professional background and cadres.

3.8.4 Methods of data collection

Qualitative research aims to answer how and why questions. From the quantitative study, it was clear that the partograph was not properly used. The qualitative study was a follow up study of the quantitative study exploring specific factors or reasons that kept health workers from utilising and filling in the partographs in both units. The study was designed to provide opportunity for the researcher to examine their experiences and identify issues that confront them collectively as well as individually. Before data collection, a pre-test study was carried.

3.8.4.1 Pre-testing of data collection tools.

Pre-testing of guides was done in September, 2011. It was carried out at Mzuzu Central hospital maternity unit. Mzuzu Central hospital is in the northern part of Malawi. The site has an average of 316 admissions per month and 302 deliveries per month. It has a catchment population of 1,698,502. The LW has an average of 6 midwives per shift. Mzuzu central hospital has a similar setting to the main study sites in terms of obstetric services, a busy site, and tertiary level having all types of professional cadres.

Approval was sought from the Director of Mzuzu Central hospital who sent me to the Unit matron for the maternity department who further referred me to the sister in-charge of the labour ward.(Appendix 3.3) Appointments were made with health workers. A total of 16 informants participated in the pilot study. Data collecting tools were pre tested to check clarity, applicability to avoid methodological errors during main data collection.

Findings of pre-testing

The pre-test study found that it was difficult to organise a group of clinicians to conduct a focus group discussion. This was so because clinicians were few in the department. There were only 6 covering a number of wards i.e. LW, PNW, nursery, ANW and theatre. It was also found that when the guides were tested, most questions were a repetition. Finally the findings pointed out areas that needed probing which were not known before.

Application of the findings of pre-testing

The number of questions was reduced but wording was maintained to avoid losing the meaning of it. Questions were prepared to probe the areas which were pointed out. It was also decided that focus group discussions with clinicians will not be conducted.

Conclusion

The findings of pre-testing study helped to decide the changes and improvements in the tools to ensure validity of the interview guide. These findings helped to modify the guides into questions that guided the data collection and pointed out areas of possible probing (Appendix 6&7).

3.8.4.2 Focus group discussion

Focus group discussions and individual interviews were the methods used to collect data. Information from each method was supplementing, complementing or validating the other. All focus group discussions and interviews took place in English, an official language in Malawi. I obtained informed consent from each health worker who participated in the study. Focus groups were carried out using homogeneous groups which allowed an analysis based on commonality of experience in the profession. Four focus group discussions were conducted with nurses. Though this method was used but has a limitation in disclosing sensitive issues. The individual interviews therefore, counter acted this bias.⁵⁷

Each FGD had an average of 6 informants. Saturation point in FGD was reached after the fourth session when no more new ideas could be analysed from the data collected.^{52,57}

Semi-structured question guides were used to guide focus group discussions and the interviews respectively. The guides were developed in English (Appendix 6&7). Using the guides to collect data allowed the researcher to probe beyond a simple answer. Probing also provided a chance to clarify ambiguous responses but also to ask issues not mentioned by the informants which were important to the researcher. The semi-structured guides also provided an opportunity that the sequence and wording of questions could be manipulated during the course of interview or discussion but not to change the meaning of the questions. The focus group discussions and the interviews were audio recorded to ensure as much data was captured to counteract memory bias by researcher. By audio recording the discussions, the researcher reduced the taking down of points in interviews and promoted maximum concentration on the informant and on the process.

3.8.4.3 Semi-structured individual interviews

I obtained informed consent preceding each interview. The aim of the interviews was to search for broader and deeper view of the phenomena under study from different professionals and cadres with different years of work experience. Twenty interviews were conducted. The researcher conducted the interviews. The guide was flexible and questions were open ended. Further details on an idea or response were obtained by probing. The richness of the data was further increased by observing attitude and behaviour of respondents but also notes and summaries which were written after each interview.⁵⁷ (Appendix 8.)

3.9 Qualitative data analysis

Data analysis was done simultaneously with data collection. The researcher continually refined and reorganised data in light of the research questions. The interviews and focus group discussions were transcribed verbatim and analysed using content analysis. Transcribing allowed more thorough examination of the data as it permitted repeated examination of the responses.

Conventional content analysis as described by Hsieh was used where coding of categories were derived directly from the text and the researcher avoided using pre-conceived categories but allowed categories to flow from the data.⁶¹

I began reading all data, transcript by transcript repeatedly to achieve immersion and get an overall impression. I read the data again and ideas that came to my mind were written down to derive the codes. Then data were read again carefully highlighting exact words from text that described the factors to non-use of partograph. Key words or phrases that seemed to capture the concepts of non- use of partograph using participants words were written in the margin of the text. I did this for the first five transcripts and then I developed preliminary codes which were then used to code the remaining transcripts. When I encountered data that did not fit in the existing codes, I added new codes. After coding all transcripts, then I examined all the data within a particular code searching for patterns and variations within that data set. During this process, some codes which were relating to each other were combined to form broader categories and others which did not relate were split into sub categories. These categories were read again. Finally, I examined all the categories to come up with themes that can be presented as findings.⁶¹⁻⁶³ Quotations representing the themes identified were selected and used to illustrate the findings.

3.10 Dissemination of researching findings

A written report similar to this thesis will be submitted to University of Oslo in Norway, Ministry of Health in Malawi, Lilongwe District Health Office, Bwaila hospital and Ethel Mutharika Maternity Wing. The results will also be disseminated during staff meetings of the training nursing colleges.

The findings will also be shared in professional conferences and meetings locally and internationally. Some of the findings will be published into a scientific paper.

3.11 Reliability and Validity

Reliability in quantitative study is the extent to which results are consistent over time, accurately represent the total population and the results can be reproduced under similar methodology.

Validity in quantitative research determines objectivity of the results thus whether the research truly measured what it was intended to measure. Credibility of the results depends on instrument construction.^{57, 62}

Reliability and validity in qualitative study is concerned about the precision than replicability. This involves seeking illumination, understanding and examination of the process and product of research for consistency (trustworthiness). The idea of trustworthiness is to establish

confidence in the results. So credibility in qualitative research is in the efforts of the researcher.⁶²

In this study, reliability and validity were achieved in a number of ways as follows:

- The study employed triangulation of methods, quantitative and qualitative approaches.
- Sampling was designed to maximise diversity of experiences on partograph use. Data was collected from the two professions (nurses and clinicians). The study recruited different cadres in nursing i.e. EN, NMT, RNM; Clinicians i.e. Clinical Officers, general medical doctors and obstetricians, to get varied information that enriched the findings of the study.
- Different data collecting methods like reviews, focus group discussion and interviews were used supplementing, complementing and verifying data from each of these.
- The interview guides were pre-tested to test its validity, though not a formal test.
- Team approach where researcher and assistant regularly met and discussed the data collected from the focus and interviews. The in-charges were also contacted to verify some issues which were not clear.
- Same data was collected from two sites which also ruled out site variation. Same question guides were used to collect data.
- The analysis process was chosen to capture the complexity in the experience, professions and sites that allowed themes to flow from the data.
- Feedback workshop: The information obtained from partograph/ labour chart reviews was complemented with health workers responses. When discrepancies were found between the two sources as to why data was inconsistent, it was not assumed the records were correct, a feedback meeting was meant to look into that. Preliminary findings were presented in a staff meeting to validate the findings to reduce subjective views which might have led to unwarranted emphasis or invalid conclusions. The researcher took advantage of the routine morning meetings for nurses and clinicians both at BMU and EMMU. People in authority were also briefed and a copy of the preliminary findings was given to each unit in advance before the presentation.

3.12 Reflexivity

Self –awareness was an on-going process before, during and after the research process examining one’s own attitudes, behaviour, beliefs and how these would influence relationships, interactions, data gathering, descriptions, analysis and interpretation of the findings. This reflection also helped the researcher to accept differences and uniqueness of each individual informant thereby reducing prejudices but promoting respect and dignity.

The researcher is a Malawian practising nurse-midwife and an educator, who has worked in the labour ward, whose understanding of, and perceptions about the health care system in general and nursing practice in particular arise from personal experiences. Years of work experience that included placements in different units particularly labour ward, different positions held both as a bedside care provider and supervisor but also the experience in the teaching of midwifery nursing students have made her appreciate the context. The researcher’s experience is that the partograph has become a reporting document filled in at the end of delivery and not as a monitoring tool. The researcher has been interested in what can be done to improve use of the partograph among health care workers and what can be done to increase competency and confidence in students in using the partograph so that it becomes a meaningful tool.

With this background, the researcher recognizes this as a potential source of bias. She was investigating her own field and might meet uneasiness to interpret and represent findings which she was not in agreement on some aspect of findings. She continuously tried to eliminate –pre-conceived knowledge about the topic and portrayed a non- judgmental attitude. Where her views and informants views differed, she did not misinterpret informants or reject their ideas. She used the knowledge gained from literature review, her expertise and called for verification from the informants but also frequently consulted the in-charges of the units. The researcher was also aware of the potential biases that arose in the informants because of perceived power imbalance between informants and the researcher. This affected the degree to which participants were open to discuss their lived experiences as they thought she might write something negative about them.^{64,65} In such circumstances, the researcher was continually reminding the informants the purpose of the study and that she was a student looking forward to learn from them. She also kept active interactions and was open but sensitive where informants and her own insights differed.

3.13 Ethical consideration

3.13.1 Researcher's role

The researcher has vast knowledge and experience from the study topic and settings. The use of self especially in qualitative research process facilitated adequate probing, and enhanced understanding of the data gathering process and interpretation. Apart from being a qualified instrument, the researcher also attempted to understand people's interpretation of the phenomenon. She continuously stayed sensitized to the data and the unexpected interaction with informants.

She assumed the role of researcher and a learner, and not an expert and moral advisor. She maintained her personal integrity and committed to her work as a researcher, always hoping that solutions exist and change was possible. She displayed attitude of involvement where she functioned at the best of her ability regardless of the circumstances she had found herself in so that at the end of the process she learns. She was open to other people's perspectives through open communication and being flexible while maintaining autonomy in thought and actions. She also took into consideration the concerns for welfare and fairness of the informants i.e. the value, preferences and feeling for others, through dialogue and keeping promises.

The researcher kept professional distance and was independent so that the researcher was not influenced with either informants or funding project. This can lead to a biased investigation which can emphasize the interest of either party.^{52, 62}

3.13.2 Ethical clearance

The ethical clearance was sought to contribute to safeguarding the dignity, rights, safety, and well-being of all potential research participants. Ethics committees are responsible for acting in the full interest of potential research participants taking into account the interest and needs of the researchers.⁶⁶ Full ethical clearance process preceded the commencement of the study and clearance from both Norway and Malawi was obtained. Permission from appropriate Malawian authorities like District Health Office, Directors of Bwaila Hospital and Kamuzu Central Hospital and Ethel Mutharika Maternity Wing was also obtained. (Appendix 3)

3.13.3 Informed consent

The requirement to obtain voluntary informed consent from individuals before they are enrolled in a research study is a fundamental principle of research ethics. This is in accordance with United Nations international Covenant on Civil and Political Rights (1966),

in the Declaration of Helsinki, In the Belmont principle, In the International Ethical Guidelines for Biomedical Research involving Human Subject of CIOMS Guideline.⁶⁶⁻⁶⁹

The requirement is based on the fundamental moral duty that we do not act against a person's wishes, and that we respect a person's human dignity. According to The Declaration of Helsinki on the 22nd paragraph; Informants in this study were each adequately informed of the aims, methods, sources of funding, institutional affiliations of the researcher, the anticipated benefits and potential risks of the study and the discomfort it may entail. The Informants were also informed of the right to withdraw from participation in the study or to withdraw consent to participate at any time without reprisal. They were informed that participation is strictly voluntary. After ensuring that the informant has understood the information, and has accepted to participate, was asked to provide a written informed consent. (Appendix4). Verbal consent was sought throughout the data collection period where necessary.⁶⁹

3.13.4 Confidentiality.

It is the responsibility of the researcher to establish secure safeguards of the confidentiality of participant's research data.⁶⁸ Arrangements for protecting the confidentiality of such data was observed strictly during data gathering, processing and analyzing.

The researcher and those directly involved in the research study were the only people who had access to the data material, field notes, transcripts and audiotapes. The materials were stored in a locked cupboard. Transcribed material was kept in a password protected computer. All the data will be destroyed after 5years after the end of the research study, unless the informants are consulted and agree to its further use.

3.13.5 Incentives

Monetary incentives were considered for the inconvenience caused, as some of the health workers were called to participate while on off duty when many health workers do their private income generating jobs. This was done as an appreciation to give me their time to participate. The health workers were not informed about this prior to participation in the study. Each health worker who participated was given 1000 Malawi Kwacha which is equivalent to 35NOK. In addition, they were also given money for transport reimbursement when they had travelled to the study place.

CHAPTER 4: FINDINGS

The findings are being presented in three parts according to the study's research questions: 1) extent of use of the partograph and completeness; 2) use of partograph in relation to maternal and foetal outcomes; and 3) factors that influence the use and non-use of the partograph.

4.1 Extent of use of the partograph and completeness

4.1.1 Introduction

The data were extracted from 464 files into the questionnaires. The study extracted more forms from BMU (348) than at EMMU (116). The presentation of the findings has focussed on use and completeness in documentation on the partograph other than the whole labour chart. Other components on the labour chart have been presented but with less discussion. The section presents the degree to which the components on the partograph were completed.

4.1.2 General performance on the documentation in both units

In both units, it was observed that documentation in some partographs was illegible and did not provide any information. The filling in some charts was not precise. For example, dots on the graphs were not connected and the visual outlook could not be displayed. Some charts, were filled on one line then two to three lines were blank, and then filled again and so on. Some partographs seemed to be filled in hurry and some information or wordings were not complete (Appendix 10a-10c). The charts were generally incomplete, not properly documented, and some charts were not documented at all. The partographs had incomplete information and it might have been difficult to make decisions or follow up progress of labour in women.

The performance of the two facilities was compared; each facility was evaluated on the proportion of the documentation on the labour charts. (Table 5)

4.1.3 Degree of completeness of documentation on the Labour chart in the two units.

The forms were assessed on completeness in filling whether they had all information documented or not. The forms which had information filled in on all parameters of the partograph were rated complete and adequate. The findings showed that not many forms had complete information. Large proportion of the forms was inadequately filled and lacked continuity in documentation. The partographs were started but most of them could not be

completed. The table below presents the proportion and degree to which the partographs were completed (The grading is presented in section 3.7.1).

Table 5: Status documentation on partographs in the two units.

Unit	OK	Adequate	Inadequate	Grossly inadequate	Total
EMMU	4 (3.4%)	37 (31.9%)	59 (50.9)	16 (13.8%)	116 (100%)
BMU	14 (4%)	141(40.5%)	185 (53.2%)	8 (2.3%)	348 (100%)
Total	18(3.9%)	178 (38.4%)	244 (52.6%)	24(5.1%)	464 (100%)

The table shows only 3.9% of 464 partographs were properly filled in. EMMU had 3.4% (n=116) partographs properly filled in and BMU 4% (n=348). A large proportion of partographs was incorrectly filled in. This shows that problems could not be easily detected. The performance in the two units was irrespective of the stage of labour the woman presented herself in, time spent in labour, referred or not, and whether it was normal or abnormal labour.

This is to say that documentation was not more or better in those who reported in first stage of labour than those who reported nearly in second stage. Those who reported in first stage might have spent more time in labour than those who came in nearly second stage. The forms indicated that women who reported with complications were less monitored when the documentation was assessed, than the women who had normal labour. There was no difference in documentation. The expectation is that complicated cases catch the attention of the staffs hence they should be frequently monitored and their partographs properly filled in.

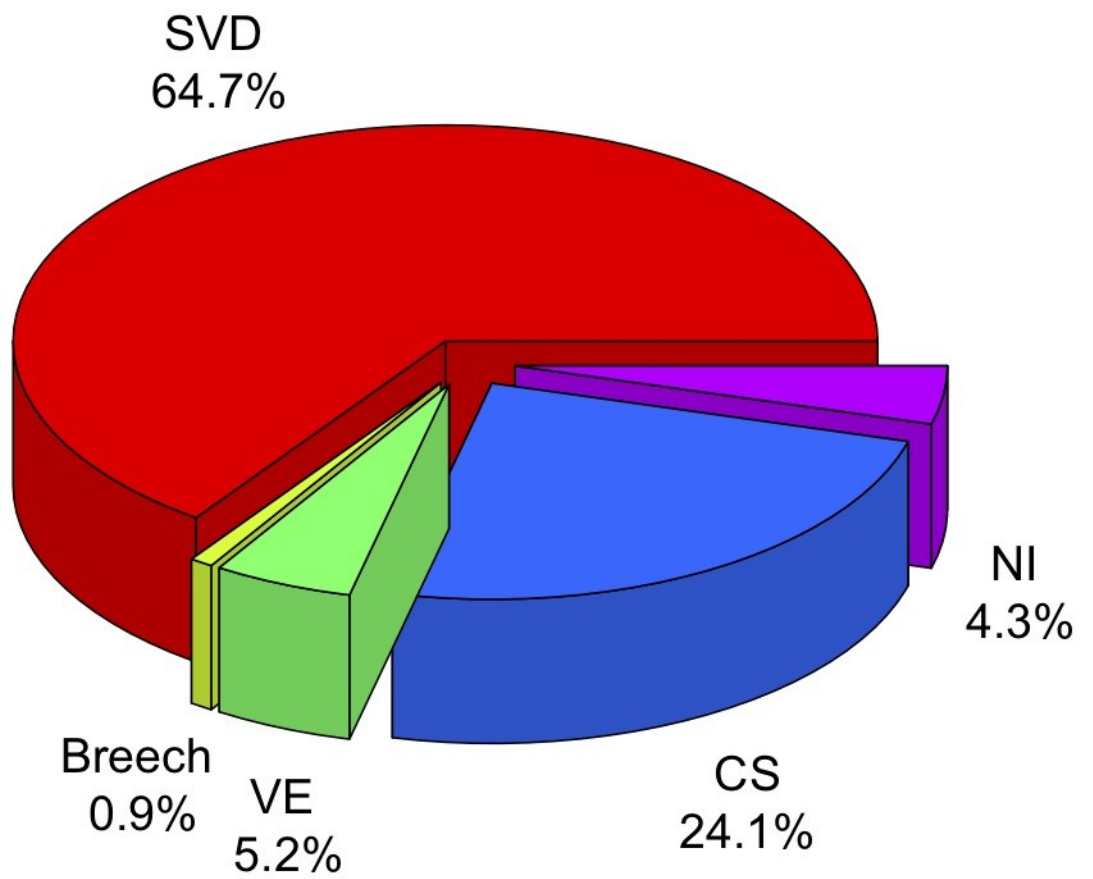
There was no difference in performance in the units despite that EMMU only had 25% of the total cases. The performance at EMMU was a surprise because the hospital is well equipped and total number of deliveries is far less by 75% compared to BMU (Fig.1, Fig. 2).

EMMU is a tertiary facility which manages high risk cases, and also being close to BMU, normal deliveries would be expected to report at BMU. But the findings show that EMMU also managed normal cases more than high risk cases. (Fig.4). With fewer number of deliveries, in comparison to BMU, and with high number of complicated cases which needed intensive monitoring; this should have influenced high rate in utilisation of partograph at EMMU. The findings show blank partographs in charts which were of C/S delivery. The

explanations for the blank partograph at EMMU could be that many cases were delivered by emergency C/S and in these situations especially, the partographs were not used. The other possibility is that cases which were complicated and were not emergent were kept in ANW and were scheduled for C/S while in the ANW. However, for the health worker to decide for C/S, assessments might have been done on which to base decisions. This is the drawback of retrospective studies that one cannot establish the processes of decision making based on case notes only.

At BMU, the unit managed a lot of cases and more of them were normal deliveries but also here the documentation was poorly done. (Fig 5).

DELIVERY METHODS AT EMMU



DELIVERY METHODS AT EMMU

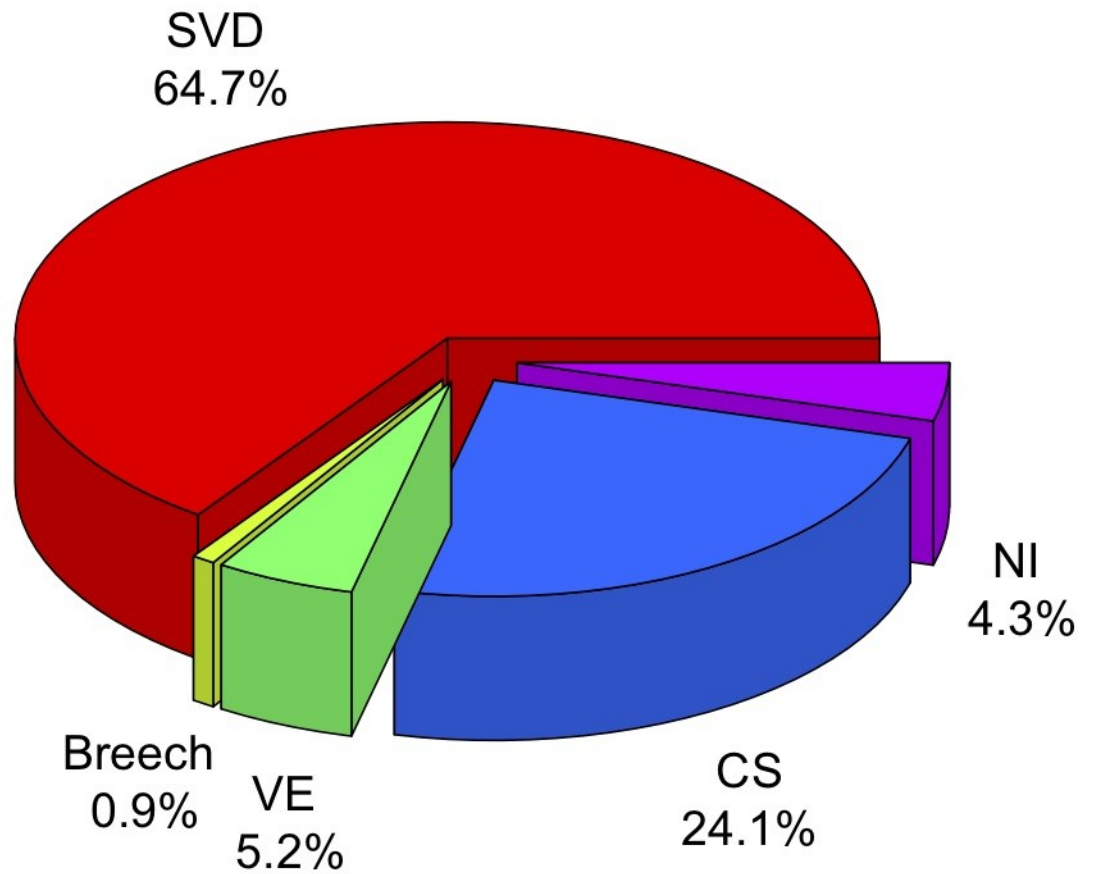


Fig 4: Proportion of deliveries at EMMU by method of delivery.

V/E: vacuum extraction; NI: method of delivery not indicated.

DELIVERY METHODS AT BMU

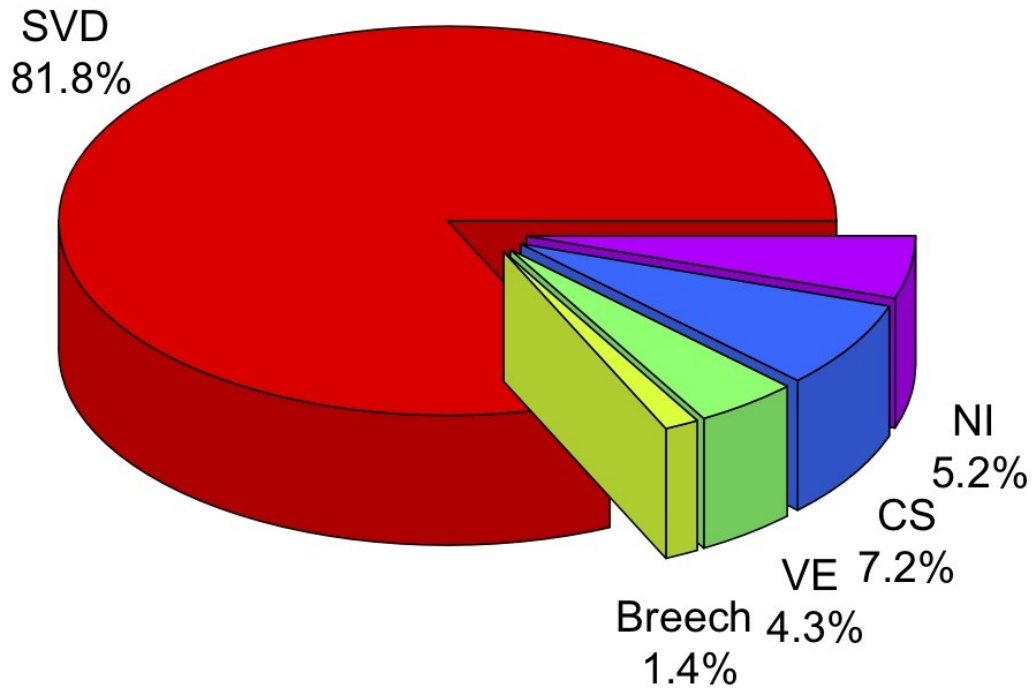


Fig 5: Proportion of deliveries at BMU by method of delivery

V/E: vacuum extraction; NI: method of delivery not indicated.

4.1.4 Completeness of documentation on the Partograph

The components on the partograph were assessed on the degree of completeness in filling. Each component was assessed if each parameter had information documented. The findings showed that not all components had parameters filled in. In some cases, one parameter on the component was filled in. For example, on monitoring foetal condition, FHR was the common parameter filled in. On monitoring maternal condition, it was blood pressure which had more observations than pulse rate and temperature. The table below represents the number of

partographs which had parameters correctly filled in, OK or inadequate. The findings should be interpreted with the reference to the grading system presented in section 3.7.1.

Table 6: Degree of completeness on partographs for a number of observed items (n=464).

Parameter	OK	Adequate	Inadequate	Grossly inadequate
FHR	14 (3%)	148 (32%)	200 (43%)	102 (22%)
Liquor	16 (3%)	159 (34%)	179 (39%)	110 (24%)
Moulding	11 (2%)	122 (26%)	141 (31%)	190 (41%)
Descent	17 (4%)	173 (37%)	202 (44%)	72 (15%)
Contraction	17 (4%)	167 (36%)	201 (43%)	79 (17%)
Cervical dilatation	17 (4%)	171 (37%)	203 (44%)	73 (15%)
Blood pressure	13 (3%)	104 (22%)	125 (27%)	222 (48%)
Pulse rate	10 (2%)	80 (17%)	105 (23%)	269 (58%)
Temperature	4 (1%)	44 (10%)	57 (12%)	359 (77%)

The study reveals high proportions of incompletely recorded parameters on the partographs. Maternal blood pressure and pulse rate were completed in 3%, and 2% of the charts respectively; temperature was 1%. Foetal heart rate and liquor were completed in 3% and 3% respectively; and moulding was 2% while labour progress was 4%. There was no parameter that was well documented more than the other. High percentages of incomplete documented parameters on the partograph in Table 6, reflects lack of continuity in plotting.

Lack of documentation on the partographs indicates poor monitoring of the women who reported in labour at the two units. Monitoring and documentation was grossly inadequate and therefore incapable of detecting problems. This shows problems might have been missed, and affected the outcomes of the mother and foetus. Regular observations are required to be able to detect problems. The view of the researcher is that most Malawians rarely visit the hospital for medical check-up and when they visit the hospital like in this study, for labour and delivery, it is indeed an opportune time to screen the women e.g. blood pressure.

4.1.5 Time spent in labour and frequency of observations

Time spent in labour was calculated only in charts that had admission and delivery time documented. Labour which is normal is expected to last not more than 12 hours in multigravida and not more than 18 hours in primgravida.⁷ It was found that most women spent more than 30 minutes in labour to a maximum of 22 hours. The ones who spent 22 hours may reflect early plotting by health workers. But if labour was really long, then it reflects poor management of the woman which can be the result of poor monitoring of labour. The findings showed women who had delivered by SVD, the majority spent 1-6 hours in labour. The findings also showed that women who had instrumental delivery, time spent in labour was spread between 1-24 hours but were less observed than the women who delivered normally.

The time period spent in labour was compared to the frequency in monitoring the parameters on the partograph. The study had found the majority of women did not receive many observations. This was in agreement with the findings presented in Table 5&6 that parameters were not observed and documented. The tables reflect few women, less than 5% to have been observed regularly. The findings show for example, 381 women who were monitored FHR, 35% (133) women were monitored only once. Descent was monitored in 394 women but 22% (88) had a single observation. On the other hand, 0.3% (1) and 0.3% (1) had observations seventeen times and twelve times respectively. The variation in frequency of observations was great with the majority not being properly monitored. The use of partograph is crucial as it is the only monitoring tool during labour in the two units. The researcher's view on importance of having many regular observations is that it would help in detecting problems or help in decision making as opposed to a single observation.

Table 7 presents frequency of observations during the first stage of labour which were computed for the median and inter quartile range.

Table7: Frequency and Time interval for a variety of observations on the partograph.

Observation item	Median	IQR
Time spent in labour	3.5	(1.4,6.8)
FHR	2	(1,5)

Monitoring of liquor	2	(1,2)
Monitoring moulding	1	(1,2)
Descent	2	(2,3)
Contractions	2	(2,3)
Cervical dilatation	2	(2,2)
Monitoring of blood pressure	1	(1,2)
Monitoring pulse rate	1	(1,2)
Monitoring temperature	1	(1,1)

Descriptive statistics for times the parameters on the partographs were documented was computed. Mean could not be calculated because there was no skewness so median and interquartile ranges are presented. Table 7 shows that the values were not widely spread out and they were clustered in cervical dilation and temperature. The lack of wide spreading explains the fewness in the number of observations. The temperature was least observed.

It was also observed that those who spent more time in labour had observations least documented on their charts. This did not affect the foetal outcomes because almost all babies were born alive. The researcher would expect that the more time the patients spend in labour, the more observations are to be done.

4.1.6 Completeness on documentation on the labour chart.

The other components on the labour chart were assessed of completeness on filling. The table 8 below has been presented to show the degree to which the documentation varied. Though the partograph and labour chart were graded differently (section 3.7.1), it was found that the documentation on certain components on the labour chart were complete. For example, the second stage of labour was 94% and third stage 99% completed, while the partograph was completed in less 5% in all parameters. This variation was in contradiction with the importance of partograph to detect problems of the mother and foetus before delivery.

Table 8 below presents documentation on various components of the labour chart. The table shows that some components did not have any information documented. In some cases monitoring started but did not continue.

Table 8: Completeness of documentation on the labour chart (n=464)

Component	Complete filling	Incomplete filling	Blank

Personal details	93 (20%)	278 (60%)	93 (20%)
Admission details	290 (62.5%)	58 (12.5%)	116 (25%)
First exam	408 (88%)	47 (10%)	9 (2%)
Referral	20 (4 %)	-	444 (96%)
1st vaginal exam	427 (92%)	23 (5%)	14 (3%)
Second stage	438 (94%)	26 (6%)	-
Third stage	460(99%)	4(1%)	-
Perineum	390(84%)	-	74(16%)
Postnatal check	68(14.7%)	290(62.5%)	106(22.8%)

In the table 8, referral had the highest omission in documentation and was documented in only 20 charts (4%). A large number of the forms could not show who the referred cases were. The expectation is that the referred cases should be indicated on their partographs so that they can easily be identified and followed up. In this case, women could easily be missed and probably were not managed according to the protocol governing management of referral cases.

Postnatal check was completed in 15% of the total charts. This was in agreement with NSO report of 2010 which indicated that 48% of women in the postpartum period did not receive postnatal care.¹³ More maternal and neonatal deaths were reported to occur during the first 24 hours post-delivery. These include only facility based deaths because women are usually discharged after 24 hours post-delivery.

This study also found that women whose charts were inadequately completed received inadequate care or not cared at all. Twenty three per cent (23%) did not receive care and their charts were blank while 63% received inadequate care. The women were observed once on the vital signs. For example, blood pressure could be checked once soon after delivery (immediate postnatal check) or once during the 24hours (subsequent check) in hospital before discharge. This increased risks of puerperal complications not being detected before discharge. Most women would not readily visit the hospital after discharge if any problems arise at home. Long distances to health facilities and also being ignorant of the problems that lead to complications would prevent them to seek care post- nately. Low education and low literacy levels among women of child bearing age attributes to high maternal mortality ratio

and morbidity. The women are unable to understand the cause and effect of factors contributing to the maternal morbidity and mortality.^{13,20}

Personal particulars for identification on the partograph were completed in 20% of the charts (Table 8). While the other 20% had missing information on name of the women in 43(9%), age in 65(14%), address in 59(13%), gravida in 58(13%) and parity in 59(13%). This information would have identified particular risks in the women. The age, parity and gravida may have a direct effect on the labour outcomes.^{7, 70}

Admission details on the labour chart were completed in 63% of the charts. Date and time when membranes ruptured; and date and time when labour started was hardly documented in both units. Lack of documentation on date and time of labour onset made it impossible to calculate length of labour. Lack of information on admission time and date, made calculation of hours between admission and delivery impossible in some charts. Though there was also a problem in calculating time spent in labour in some charts which had only delivery time.

The information on admission though it was not documented in some partographs was of importance to suspect infection in those who had membranes ruptured early before established labour. Also knowing when labour started would help to calculate the length of labour and be able to prevent prolonged labours.

First vaginal examination, second stage, and third stage of labour had highest documentation of the information. First vaginal examination was 92% completed; second stage 94% and third stage 99%. In the second stage though had high documentation, head circumference and length of baby were hardly documented in both units.

4.1.7 Fresh still births

It was also observed that three FSB occurred among the partographs which were reviewed. In the Table 9 below, is a display of the observations that were extracted from cases of the FSB.

Table 9: FSB and completeness in documentation on the labour chart.

Case no.	Documentation of parameters on labour chart						
	Personal details	Partograph	Referred	Mode of delivery	3 rd stage	4 th stage	Postnatal check

1	yes(name & address only)	yes-FHR 4 times	NI	yes –C/S	yes	No	Yes
2	No	No	NI	yes-C/S	yes	No	No
3	Yes	No	yes-Mitundu	yes-C/S	yes	No	No

Note: no=means not documented, yes =means documented, NI=means not indicated.

Three FSB occurred at EMMU and 100% of the cases had no information documented on the partograph. One was a referral case but two had no information as to whether they were referred or not. I will here describe them in some detail as they illustrate some principles.

In case No.1, the cause of death was cord around the neck and C/S was done for fetal distress. Fetal monitoring was done four times. The chart had no indication on the time of admission in labour, whether night or day and how much time the woman was in labour ward before C/S was performed.

Lack of documented information coupled with the study design, retrospective; it is difficult to know time spent in the labour ward by the woman; the fetal condition as the labour progressed, and at what stage of labour was the foetal distress detected. Tight coiling of the cord probably caused the death. This case demonstrates the need for appropriate assessment of foetal condition, to be able to detect subtle FHR abnormalities. This is important to consider as many studies have also reported FHR documentation not being complete compared to other components on the partograph.^{6, 32, 71}

Case No.2 had C/S for APH- abruption placenta. The partograph was attached to the case note but did not have any information. Being an emergency could be a possible explanation for not using the partograph. However, if foetal death was ruled out, maternal condition would have been checked and documented like blood pressure and pulse rate. After the C/S delivery, there was no documentation until the woman got discharged. It was not known whether the woman actually reported with a dead foetus as nothing was documented. In case of an already detected foetal death, C/S may be contraindicated in certain conditions.

Case No.3 was an APH with no classification; placenta abruption or preavia. The case was referred from Mitundu rural hospital with minimal information. The possible reason for not documenting the partograph could be the same as in case two.

In the last two cases, the time of admission was not indicated. No assessment on the partograph was documented. The researcher had difficulties to know how emergencies and other complicated cases were cared for, as there was scarce documentation. This further confirmed the earlier findings that there was more improper use of partograph in abnormal than the normal deliveries, contrary to the researcher's known view that at risk cases should be monitored closely.

These three cases needed a follow up. Such cases could also be understood better if prospective observation as a method of data collection was done; to follow how and when decisions are made if labour deviates from normal, and how emergencies and other complicated cases are managed using the partograph.

4.1.8 Utilisation of findings

It was also observed that where documentation was done, the health workers seemed not to utilize the findings of their assessments as central to decision making. This may be that they were unable to interpret the observations. A case was extracted from the files which were reviewed to illustrate this. Case study was not otherwise one of the methods in this study, and this case has been presented only to complement the findings (Appendix 11).

In the case study, the initial findings of assessment indicate that the woman reported in active phase of labour. However, it was not known how long she had laboured at home because onset of labour was not indicated. After four hours, the same findings were obtained and then the next four hours. Alert line was crossed and action line reached but the woman was still allowed to continue with labour, despite the partograph indicating action. It is suggested that when alert line is crossed, the cervical dilatation is slow, an indication of delay in labour. This should prompt a health worker at a health centre to transfer woman to a hospital, and if in a hospital, the woman should be observed more frequently.¹ If the action line is reached, a critical assessment of the cause of the delay is done and a decision about appropriate management is made.

4.1.9 Conclusion

Use of partograph increases quality and regularity of observations on mother and foetus. It gives an early warning for detection of abnormal progress of labour and assist in early decisions during labour.¹ However, the extent to which the partograph is utilized at the two settings pose a challenge that partograph is hardly used as intended. There was no difference in performance in the two units. The partograph was not optimally used, evidenced by

incomplete documentation with only 3.9% of 464 partographs properly documented and less than 5% completed parameters on partograph. Time spent in labour by the women did not influence the amount to which they were observed. This means problems were missed or detected late. The study has also revealed that there was a wide variation in documentation which suggests that midwives prioritised certain parameters than others. Despite this gross improper utilisation of the partograph, it was found that most babies were born alive. Only 0.6% was FSB. This could also mean that all parameters may not be necessary to ensure optimal maternal and foetal outcomes.

4.2 Use of partograph and the relationship with maternal and foetal outcomes

4.2.1 Introduction.

This section presents findings on the association between the use of partograph and the maternal and foetal outcomes. The variables in computing association included the partograph as explanatory variable and method of delivery as the maternal outcome while status of new-born at birth as foetal outcome. The variables are described below:

The partograph with the explanatory variables on the three components which are foetal monitoring (FHR, moulding, liquor); maternal monitoring (blood pressure, pulse, temperature); labour progress (descent, contractions, cervical dilation, crossing of alert line and reaching of action line).

The maternal outcome was the methods of delivery which were SVD, breech, Vacuum Extraction and C/S. There was no maternal death among the partographs which were reviewed. There was no death in the month of June and one death occurred in the month of July but was not sampled.

The foetal outcome which was the status of new-born at birth included alive (live full term infant (LFTI), Premature infant (Prem)); and dead (FSB and MSB). Three fresh stillbirths (FSB) and seven macerated still births (MSB) were sampled, making a total of ten foetal deaths.

4.4.2. Association between use of partograph and maternal outcomes (method of delivery)

Fischer's exact test was applied to assess association between use of the partograph and the delivery methods (SVD, C/S, Breech and Vacuum Extraction).

Statistical analysis confirmed an association between the following partograph components and delivery methods; gravida, parity, fetal monitoring (FHR, moulding and liquor), monitoring labor progress (descent, contractions and cervical dilatation), the crossing of alert line, reaching of action line, monitoring blood pressure ($p < 0.01$, Fisher's exact test). The strength of the association as measured by the Phi and Cramer's V indicate that there is a moderate association between delivery methods and parity, gravida, BP, pulse, crossing of alert line and rupture of membranes. A strong association was found between delivery methods and referral, FHR, moulding, liquor, descent, contractions, cervical dilatation and reaching of action line.

However, there was no association between monitoring temperature and delivery methods ($p = 0.08$). The strength of the association was also found to be weak (Phi and Cramer's V = 0.073).

The results show that monitoring of the parameters except temperature were significant with $p < 0.01$ and would influence the mode of delivery either by SVD or instrumental delivery e.g. C/S. The association was found to be strong with information documented on referral, FHR, moulding, liquor, descent, contractions, cervical dilatation and reaching action line with Phi and Cramer's V > 0.30 .

The higher the age, gravidity and parity the higher the chances of developing complication that may need instrumental delivery.⁷ Therefore observation of these were important and would have acted as warning signs. The findings indicate 14% (65) and 13% (58) charts had no information on age and parity respectively therefore unable to predict method of delivery.

Information on referral was also significant ($p < 0.01$, Fischer's exact test). These are cases that had already shown clinical signs of abnormal labour and this strongly influenced mode of delivery. The Phi and Cramer's V values also indicated a strong association of > 0.30

The findings show a strong association between foetal monitoring and method of delivery. The condition of foetus whether healthy or compromised assessed through monitoring of FHR, moulding and liquor can influence the choice for mode of delivery. FHR that is persistently below 120 beats and above 160 beats maximum per minute indicate foetal compromise and this can influence the mode of delivery. While foetal compromise can also be seen in the status of liquor and in the degree of moulding. Proper monitoring of foetal condition would detect these and would show the course of labour whether labour continues

to be normal or has diverted from normal. The method of delivery can therefore be influenced by the state of foetus. The regular monitoring is therefore required to achieve this.

Labour progress was strongly associated with the method of delivery. The compatibility between the maternal pelvis and foetal head assessed through regular monitoring of descent can influence the method of delivery.^{7,85} The cervical dilatation which is also dependent on nature of contractions would influence the method of delivery. Poor contractions can lead to unyielding cervix which leads to crossing of alert line and reaching of action. These are signs of prolonged labour. Accurate and regular monitoring of labour progress is required for early detection of these problems.

4.2.3 Association between use of the partograph and the foetal outcomes

The filling in of partograph was found to influence the status of the new-born, either born alive or dead. In this case the baby could be born LFTI or live premature; or born FSB. The study did not assess the Apgar scores of the babies but only assessed if documentation on Apgar score was done as either filled in or not. The variables were yes and no if documentation was done. But the Apgar scores in this case would help to know the foetal morbidity as influenced by the use of partograph.

An association was found between foetal outcomes and parity, gravida, monitoring foetal heart rate, liquor, moulding, descent, contractions and cervical dilatation with a p-value <0.01 ; between reaching the action line and foetal outcomes ($p = 0.03$). There was a strong association between foetal outcomes and monitoring of FHR and descent. There was a moderate association between foetal outcomes and parity, gravida, liquor, contraction, cervical dilatation referral and moulding. No association was observed between foetal outcomes and crossing of alert line on the graph ($p=0.052$; Fisher's Exact test) and strength of the association was weak (Phi and Cramer's $V = 0.094$).

This indicates that documentation of FHR and descent was important for prediction of the condition of foetus at birth. This also may help the health worker to know where he/she anticipate a need for resuscitation.

The findings indicate that FHR monitoring and monitoring of descent were strongly associated with method of delivery as well as foetal outcomes ($p < 0.01$, Fischer's exact test and Phi and Cramer's $V > 0.30$). Therefore, to achieve good foetal outcomes, proper monitoring of FHR seems to be important. FHR monitoring has also been found in this study

to influence mode of delivery. Descent indicates the compatibility of foetal head and maternal pelvis.⁷ So regular monitoring of descent would show whether descent of foetal head is progressing or not, in presence of regular progressive contractions. Decisions can then be made about the anticipated mode of delivery. It is important to monitor descent as opposed to checking descent on admission only or irregularly as was the findings in this study where 202(44%) and 72(16%) were inadequately and grossly inadequately documented respectively. Descent has also shown to have a strong association with the foetal outcomes. In most cases, obstructed labour where there is failure of descent, it is accompanied by prolonged labour which is not detected early enough because of poor monitoring of women in labour.

4.2.4 Probability of Foetal deaths and use of partograph

Foetal outcomes (alive or dead) were assessed against the explanatory variables (parameters on the partograph) to find the probability of foetus dying if the parameters were not monitored. The odds of delivering a dead foetus were significantly reduced by 59.5% when monitoring of FHR was done and 32.4% in monitoring moulding. While if liquor was not monitored, the odds of dying increased by 53.5%. Checking for membrane rupture and information on referral also reduced the odds of foetal death by 60.8% and 17% respectively. Monitoring of descent reduced the odds of foetal death by 99.7% and labour reaching action line, odds of dying was reduced by 91%. However, when monitoring of contractions was not done and alert line was crossed, the odds of foetal death were significantly increased by 7.5 and 7.3 times more respectively. Furthermore, the odds of foetal death were 187.3 times more if monitoring of cervical dilation was not done.

The results showed wide confidence intervals; for example on cervical dilatation, alert line crossed, contractions, action line reached, this could be due to few deaths which occurred and this weakened the strength of association. Ten foetal deaths occurred in the deliveries representing 2 % (n=464).

4.2.4 Association between times spent in labour and the delivery methods

A trend test was carried out to assess presence of association between time spent in labour and method of delivery. The test itself does not directly explain the association with use of partograph, but on the assumption that the more time spent in labour, the more observations are made. However, in this study, the findings indicated that the use of partograph became

less as time spent in labour increased. The use of partograph has been found to influence the method of delivery.

In the trend test, the findings show that there was an association between time spent in labour and SVD ($p < 0.01$); and between C/S ($p < 0.01$). There was no association found between time spent in labour and vacuum extraction ($p = 0.1$); and no association between time spent in labour and breech delivery ($p = 0.3$). There was no association with breech delivery probably because all breech presentation in primgravid, if detected antenatally, are scheduled for C/S before labour starts. Therefore they do not spend time in labor and are not monitored using the partograph. While with vacuum extraction, in most cases of the cases where it was performed, decisions are made at the end of first stage or during second stage. So use of partograph cannot influence method of delivery at this time. Proper use of partograph is useful in the first stage.

4.2.6 Association between times spent in labour and foetal outcomes.

A trend test was computed to determine if there is any association between time spent in labour and foetal outcomes. Time spent in labour was expected to increase number of observations in labour. The consequence could be early detection of problems and timely interventions.

The trend test between times spent in labour and foetal outcomes showed a statistical significant association between LFTI, premature, and FSB with a p value < 0.01 . There was no association found between time spent and MSB ($p = 0.10$). The foetus had already passed away when the monitoring of labour started.

4.2.9 Conclusion

The study shows that there is a strong association between monitoring FHR, descent and method of delivery; and between monitoring FHR, descent and foetal outcomes. Monitoring of FHR also reduced the odds of death in the foetus as well as monitoring of descent. The findings suggest the FHR and descent are the common but also most important parameters influencing the labour outcomes.

4.3 Factors that contribute to non- use of the partograph

This section presents findings from participants' description of their experiences on the improper use of partograph. The findings have been divided into seven sections that came out of the analysis.

- Shortage of staff
- Negligence
- Not appreciating the importance of the partograph/labour chart.
- Ineffective and inadequate supervision
- Recognition/motivation
- Skill incompetency
- Health workers' perspective about women reporting in labour.

Direct quotes from the tape recorded focus group discussions and interviews have been used to illustrate participants' responses to the diverse issues raised. It was challenging to find a good way of presenting the findings. The issues discussed were highly interrelated, and were discussed at various angles and from different vantage points. This implies that some of the themes could naturally be located under any of the headings. The presentation below was nonetheless chosen as the best way to guide the reader through the informants' elicitation.

4.3.1 Shortage of staff

Shortage of staff was defined by the participants as inadequate personnel to render services of acceptable standard to the population.

Shortage of staff as a factor to the improper use of partograph was an eminent issue. It emerged in all FGD and almost all interviews, except a few individuals in the in-depth interviews who seemed not to agree.

Shortage of health workers in LW and maternity unit as a whole was a problem faced in both units but came conspicuously at BMU. The health workers reported that they were few in number compared to number of patients being served. For example, at BMU, the health workers would conduct over a thousand deliveries per month (Table 2). They would conduct about twenty deliveries against 7 nurse midwives per shift. Furthermore, one nurse midwife would be allocated to two or three delivery rooms. The delivery rooms had also two beds and sometimes plus floor beds. At times, all these women required help from a single health worker at once. In that case, the nurse midwife would only conduct deliveries and unable to carry out observations on the women.

This shows that a lot of women reported at the units and created a high work load for the health workers.

The health workers were concerned with the increased number of patients, the units being referral centres. Some of the patients were from surrounding health facilities and were self-referrals. The informants narrated that BMU being a new facility, attracted a lot of women to deliver at the unit, causing congestion of patients. The researcher felt the flocking of patients who caused congestion could be that patients had less confidence in the health centre. The patients were looking for where their expectations could be met like dignity and competence. The congestion was also expressed by the informants to be as a result of unnecessary referrals from health centres. The health centres at times would refer patients because of lack of resources and basic equipment in the health centres. One NMT in a focus group discussion said:

“sometimes we receive women from health centres because there are no gloves at the health centres.”

The researcher saw this not as unnecessary referral but lack of proper planning by the health centre staff to organise resources in time. However, the unnecessary referrals from health centres and self-referrals increased workload on already stressed health workers and proper monitoring could not be done. This was seen to contribute to the improper use of partograph.

Shortage of staff was also described in terms of the number of services provided. The health workers provided a range of services or care to the women in the wards. The health workers in LW were totally responsible for caring women who reported in labour. They were expected to admit women, monitor women in labour, conduct normal vaginal deliveries, monitor pre-eclamptic and eclamptic patients and assist in C/S deliveries in case of emergencies. If the nurse midwife attended C/S in theatre, monitoring stopped altogether for patients in labour ward. While in PNW, nurse midwives experienced pressure of work because sometimes one nurse could run two wards in a single shift. One staff was expected to deliver a range of services and these activities were not in a sequential manner but the need to help could be felt at once. The nurse at EMMU narrated:

“Resources are available but shortage of staff. Sometimes one staff man 2 wards ANW and PNW. So you just do routine things or general things and not specific management of patients. We are willing to help but with one person it does not work. You have in ANW patients going to theatre for C/S, you have in postnatal ward patients from C/S, and all need observations. You go to theatre and you leave the ward with no one.”

All these were expressions reflecting shortage of staff and how the shortage negatively affected the care of women in labour. The shortage created a heavy workload that kept the health workers ever busy. This did not promote the use of partograph. The health workers expressed that they were busy and did not have time to monitor women. They said monitoring was incomplete in most of the observations because they were always rushing for another activity.

The high workload resulted in most women having only one observation which was done on admission for the entire time spent in labour. The health workers said that they knew that the partograph was important but the number of patients reporting in labour was too much that they rarely completed an assessment on a patient before next patient needing immediate attention arrived. One NMT stated:

“ You start monitoring one woman and before you finish another one calls you for delivery; you stop what you were doing and attend the delivery. After the delivery, you find that you have forgotten all what you had monitored.”

The interruptions led some midwives forgot to document observations made earlier which led to lack of continuity in plotting the partograph. This defeated the purpose of using the partograph as a screening tool.² Lack of continuity of care might have affected their decisions made about patients hence ending in unnecessary interventions.

The shortage made health workers to work on frequent night shifts of about 16 hours long. The night duties were reported to be busier than day duties and more deliveries were conducted at night than on day shift. This produced exhaustion in health workers. They reported not being able to systematically carry out observations on women in labour at most times. Where they carried out observations, the observations were not properly done. Therefore, health workers were uncomfortable to document on the partograph such observations as they considered not being the right information. This could be one of the explanations for most partographs not being filled in.

The health workers were seen that they did too many things to too many patients at a time. Their assessments on patients were incomplete. This made use and documentation of partograph almost absent.

The shortage was also expressed by the clinicians that clinician on duty or on call covered the whole maternity unit which included OPD, theatre, ANW, LW, PNW. In these areas they were expected to do ward rounds, perform C/S and other surgical procedures and attend to

OPD cases. One clinician queried as how efficient and effective he was in what he was doing. He reported that most of the times he did not carry out a thorough assessment on patients and was always rushing. When in LW, clinicians would do an assessment of the parameters on the partograph only if they wanted to recheck what nurses had documented and they did not plot on the partograph. Clinicians reported not to have time to carry out observations and then document on the partograph.

The health workers expressed that improper use of partograph was a result of few health workers who would not monitor all women in labour as required except high risk cases. The midwives expressed their experiences that among the cases they managed, most of them had complications. Because of the shortage of staff, they shifted their concentration on abnormal cases paying little attention to normal cases. However, when the partographs were reviewed, there was no difference in documentation between the partographs of normal deliveries and partographs of abnormal deliveries.

Absenteeism from work was also an issue that kept the number of staff low in both units. This interfered with the use and documentation on partograph. During an interview conducted separately with both matrons, each affirmed that midwives would excuse from work because of sickness of a relative or family member but sometimes because some nurses felt they were more on duty. One of the matrons said:

“There is a lot of absenteeism. Sometimes when they see that they are many on duty then they give excuses. This creates a tight workload on staff.”

Such absenteeism was seen to contribute to the long standing staff shortages and persistent high workload which seemingly did not favour the use of partograph.

The two units run locum system with the purpose of increasing staffing levels on each shift. It was reported that locum were paid at lower rate in these units than in the private facilities. This had resulted in staff flocking to private facilities other than serving in their units. This had contributed to sustained low staffing levels which led to unbearable work load in the units. The partograph therefore could not be used properly; health workers could not carry out observations or continue to observe women and then document. They were few and could not meet the requirement for the monitoring of each woman in labour.

In cases where health workers worked on locum in labour ward, there had been reports of inefficiency and ineffectiveness. The in-charges in LW observed partographs used by locum

staff were not properly used and had gaps. An in-charge in an interview was so concerned with the behaviour of midwives reporting for locum and said:

“Locum has not assisted us because staffs from other departments who come to work in LW, do not fill in correctly, some leave gaps. It is different if on locum there is a staff from LW and another from other department. Of course some from other department are so good but not everyone.”

The expression shows the in-charge did not favour using locum staff from other departments but rather recommended a combination. This indicated an ineffectiveness of the locum package which did not improve performance on the partograph and also in the total care of patients. The partograph was not filled or not correctly filled.

Shortage of health workers was seen to be a crucial problem in the proper use of partograph. However, we had also found that the shortage of health workers as a reason for not completing the partograph was over emphasized. There were circumstances when health workers were available and partograph were still not documented. At times health workers would be absent from duty because they were more of them on duty. These negated their expressions on shortage of staff. Several informants were indecisive that shortage was the main reason for not using the partograph. They argued that it was not always that there were too many patients against number of staff on duty, especially at EMMU but even at times at BMU. Health workers themselves reported that sometimes shortage of health workers was just an excuse; when there were few patients, the staffs sat down and relaxed and could not carry out observations regularly. One NMT in a focus group discussion stressed:

“I can just say negligence or laziness. Sometimes we have enough time to observe and document but we don't do it (...) we sit down and relax. So it is just laziness”

Though there was a problem with shortage of health workers, the health workers needed to maximise every opportune time to carry out observations and document on the partograph. This was important for detection of problems in the women and their foetuses.

4.3.2 Negligence

Incomplete filling of partograph was described as purely negligence as expressed by the informants themselves. They also expressed laziness to be contributing to poor documentation. Contradicting statements to the findings of the review of the partographs were expressed as observed by the researcher, for example, the health workers at EMMU reported

that they managed more abnormal cases than normal; but there was no significant difference in documentation in abnormal cases and in normal cases. Despite having the knowledge that all parts of the partograph are important, assessments were either not done or partially done and therefore not documented. The findings showed that health workers had a challenge in carrying out observations and documenting.

Another accession to negligence was that observations were done but no documented. Firstly, in some cases, the health workers reported that observations were partially done and were therefore not documented. For example, listening to foetal heart rate could not be done for a full minute. As long as the beat was there and was strong, then the assessment was considered as done. Such observations were not documented on the partograph. Secondly, observations were done, but documentation on the partograph was not considered important. Their expression was that as long as the woman and foetus were fine at that moment. They could also forget to document on the partograph. This also questions if the partograph was central to their decisions in labour in a continuum of care. A NMT in a focus group discussion said:

“we have reached a point that we don't have the attitude to document whatever we are doing (...)if you have monitored, as far as the woman is fine and foetal heart is heard, we are also comfortable. We forget that we need to document”

It was further reported that women who were considered of low risk did not receive a lot of observations. In the review, most cases were documented once on admission. It showed that the observations made on admission were used as a basis to decide whether monitoring was to continue or not. The staff reported that those who had abnormal findings on admission were repeatedly observed or continuously observed but not documented. Those women who had normal findings on admission, documentation would completely cease and this made partograph to be marginally documented. One NMT in a group discussion at BMU said:

“...observations are done but if everything is normal sometimes we don't document. We document when there are problems. We concentrate on those ones with problems”

A similar statement was also given at EMMU where a NMT in an individual interview said that monitoring changed if the findings indicated that the mother and foetus were well. They would concentrate on high risk cases. But in the retrospective review of partographs, findings showed no difference between the high and low risk cases.

The health workers narrated how their experience had taught some of them to assume that women would deliver normally if findings were normal on admission. The health workers who had been in service delivery for long had created shortcuts which created gaps on the partographs. Through use of shortcuts they had lost the right way of doing things and came up with excuses for not performing as expected. This might have led to some problems being missed because the partograph was not properly used.

The midwife's lecturer from Kamuzu College of Nursing substantiated this and said:

'I am always with students here so that I teach them the right things, and they learn the right things. Because if the very same staffs who say they are busy, they will teach the students shortcuts then you will have these gaps. We don't want them to qualify with these gaps. We try as much as we can to be here when we can''

Health workers who were in service did not seem to use their experience to improve documentation on the partograph.

The gaps also existed because clinicians mostly use the notes section. When the clinicians carried out an observation, they documented in the progress notes and rarely on the partograph. Some nurses did transfer these notes on to the partograph. One reason for this clinicians' behaviour was that LW was mainly run by the midwives and documenting on the partograph would interfere with midwives' work. Unless the nurse told the clinician to document on the partograph, documentation would ever be on the progress notes. This was seen as negligence. A clinician in an interview narrated:

'The way the labour ward is run here, it is constantly run by midwives. The doctors and clinical officers are only called. The partograph is usually a forgotten section. Usually when we review the women, we just document the findings straight on the doctors notes sections unless they (nurses) remind the doctor where to document.'''

The clinicians expected nurse midwives to remind them to plot on the partograph. Both professions use the partographs to make decisions about patients care and likewise should plot on the partograph. The midwives assigned the clinicians behaviour to some of the gaps on the partograph. This was also common in C/S cases which are performed by clinicians and the labour charts were not filled in second and third stages of labour.

Some clinicians though expressed, openly that it was either because of not being familiar or lack of knowledge on how to document on the partograph.

4.3.3 Not appreciating the importance of partograph

The improper use of partograph was also seen as not appreciating the importance of partograph and probably that was why they made such omissions. It was observed that the partograph was filled in here and there with dots not connected. This made the visual display without meaning. The incomplete information documented did not communicate much sense on what was happening with the patient. (Appendix10). The missing information on the partograph was reported to be due to being busy, but surprisingly, certain sections of the partograph were fully filled in while other sections were completely blank. The health workers seem to have time to fill the second and third stages (Table 7.) The first stage may go up to 18 hours and the partograph was not filled. This probably was negligence or unable to appreciate the importance of partograph.

Forgetting to document was an indication of lack of acknowledgment of the importance of partograph. Health workers reported that forgetfulness happened when doing too many things at the same time. One midwife, RNM contended that as professionals, they had an obligation to carry out observations and document and she stated:

“...Those who say I forgot, to me, this is clearly negligence. You don’t forget, midwives don’t forget. Those who say we are busy, I feel it is an excuse. Because they are things you are supposed to do professionally and you must do them.”

Some midwives in LW described the partograph as having too many details, with small letters as a result it took them time to read and fill in. Hence they recommended the partograph to have big letters.

The midwives also indicated filling in of partograph as duplication of work where they had to document on the partograph and on the midwife admission note (Appendix12). The admission note is a one-time filling while partograph provides on going filling for the entire time in labour. It was surprising that the midwives compared the admission note and the partograph.

The PNW staff also gave an excuse for not using the labour chart. Nurse midwives reported that they used the woman’s health booklet to document their observations because in the booklet they would document only once, which is a summary of the whole labour and delivery process. While the labour chart demanded daily or even hourly observations.

The documentation on the partograph was seen also to be affected by the staff lack of understanding of the observations made yet the expectation of the researcher was that all knew how to use the partograph.

4.3.4 Skill incompetency

Not all respondents shared the same view regarding lack of knowledge on partograph as a reason for not properly using the partograph. The health workers were asked why they used the partograph. Their responses indicated that all have knowledge about the importance and when to use the partograph. Knowledge of partograph was described as basic requirement to work in labour ward. The majority responded that all the components are important. They also knew that the mother or baby can die at any stage of labour. However, some health workers expressed knowledge and skill deficits on the partograph which prevented them from properly using it. Incompetence was expressed by both the nurses and clinicians in both units. They indicated a lack of confidence to carry out observations, plot and interpret independently on the partograph.

This implies that basic midwifery education cannot prepare health workers to be able to properly use the partograph. Ingham identifies in-service education as informal education to improve the required professional skills and attitudes.⁷²

One RNM in a focus group discussion confirmed this incompetency.

“I remember in the previous training (in-service), people were given partographs to fill but were missing out some information. We take things for granted that we all know how to fill while in actual sense no.”

A senior clinician also confirmed the explanations from the RNM:

“There is a possibility that some of the workers in this unit don’t know its use, they don’t know how to document, they don’t know how to interpret or they don’t appreciate what labour is all about or they just don’t care. I totally do not agree that they are not knowledgeable about the partograph”

Because some health workers did not know how to fill or interpret their observations, they may not see the importance of documenting on the partograph. Lack of knowledge produce low self-esteem and strips one of the confidence in what he/she does. The lack of knowledge might not only affect documentation but also even carrying out of the observations. Some had expressed this when they reported a skill incompetency in how to assess station of foetal head. The majority of the health workers said that they were unable to interpret what they have observed and documented, few indicated specific skill incompetencies. The lack of knowledge was also expressed by their bosses for both midwives and clinicians in both units

that some health workers do not properly use the partograph because they do not know how to interpret it and even documenting is a problem. Though a specific skill competency was raised, gaps on the partographs were not only on the foetal head station but on all parameters. Furthermore, documentation in this study assessed how much observations were done, while interpretation could have been assessed by actions taken after observations. Therefore, being unable to interpret could not prevent one from doing the observation and documenting. Further need for in-service training was expressed by health workers, in particular those who were trained sometime back, in order to update their knowledge and skills in use of partograph

BMU was running a continuous in-service education program during the data collection time which was giving chance to every health worker to attend. Topics covered were many and partograph use was included. A two hour session was once conducted on partograph but did not include a practical session. Since this was a new group in LW after the rotation, plans were there for them to attend the on-going training. Though these trainings were run, it was not known how much impact the training had on use of partograph. It is observed that trainings most health workers receive do not bring about the desired changes because of lack of support in the work environment that is needed to use newly learned knowledge and skills.⁷⁸ This was seen in this study from the findings of the partograph review which was the performance of the previous group. The group had attended the workshop; the results indicated a lot of gaps on the partograph. However knowledge and skills were not the only factors to consider on use of the partograph. Probably, trainings should have been followed up by their immediate bosses to assess the utilisation of the knowledge gained.

Inadequate and ineffective supervision

Informants perceived the supervision by their immediate bosses as inadequate and ineffective. Midwives described visits by their immediate bosses were irregular and rarely supervised them. They could go round the wards and most of the times to enquire something and not necessarily supervising. Each time the matrons were in the ward, health workers perceived it as 'policing' other than supporting them. A NMT in a focus group discussion indicated when the issue of supervision was raised:

“if they(supervisors) come to the ward they come for other reasons and not to supervise us. Proper and regular supervision is required and not policing. They should come to see how people are working. This can help to identify gaps.”

A clinician also noted this that health workers on night shifts were not supervised and he said: *“Those who come on locum should be supervised, the night superintendent should come in the ward and supervise the staff on plotting and use of the partographs among other things. No going round and then sleeping (...) sometimes we do C/S without real reason. We just do it because the monitoring is not good so the decision we make rely on how the graph has been plotted.”*

A RNM also echoed similar sentiments about shortage of staff affecting supervision;

“I cannot supervise my colleague as recommended because we are only 4 on duty . Even my immediate boss knows this that we were few. When do I do that because everyone is busy conducting delivery after delivery?”

The researcher felt if the partograph is not properly supervised, the midwives may perceive it as not important but time consuming. Supervision is required. Clinical supervision enhances professional development but can also be seen as a measure of discipline and control. Supervision should not be seen as policing but as a directing course of actions in the ward. Supervision and management should not be invested in one person because these have two different objectives and both roles are demanding as expressed in this study.⁷²

Inadequate and ineffective supervision was also expressed in terms of irregular open meetings between staff and their immediate bosses. The health workers said that they had issues and problems in their daily work which in turn affected their performance including use of partograph. For example: issues of resources, skill in competencies, in consistencies in documenting and interpreting the partograph which made some health workers not to document on the partograph. Health workers reported that they needed meetings to open up and express their concerns. This was described by health workers as lack of support from bosses. The health workers reported that meetings which were conducted every morning for both professions did not discuss the problems on the partograph but rather reported general management of patients. But midwives expressed need for meetings where nurses would gather and share their problems and experiences concerning their work.

Regular meetings can be a cheap way of communicating expectations but also evaluating the progress of work thus easing some of the responsibilities in supervision. Therefore regular supervision and regular meetings are required to know if the standards are complied with.

4.3. 4 Lack of motivation/recognition.

The health workers expressed concerns of being demotivated mainly by the operations in the units which also made the partograph not to be properly used. They felt there was no recognition in their work performance. They also expressed that their bosses did not take in their concerns. Their suggestions or preferences were not heard and they felt frustrated. In recognition to work performance, health workers felt there were a number of ways their bosses would recognise them and one NMT said:

“Choose the best partograph weekly or monthly then appraise that person in a morning report just to motivate health workers.”

Health workers who are ambitious and career oriented may be enthusiastic about work but might sometimes neglect to carry out their roles because their roles do not bring them recognition.⁸⁰ Health workers get motivated when they are recognised. Any good performance is dependent on how motivated the health workers are. The bosses should know what motivates their staff.⁸⁰ It is essential to motivate health workers but people who do the same job might have different motivators and the immediate bosses need to find out this from their health workers. Some external motivators produce results that fluctuate. But as professionals, they have an obligation which should push them to do the right things at the right time and having the right attitude. Use of partograph and documentation is basic and fundamental to care of women in labour and professionals were to use it without excuse.

It was also noted that some health workers were not willing to work in labour ward. They said they were not given a chance to choose where they would like to work, instead they were just allocated to labour ward. Most health workers did not favour working in LW because of the heavy workload. They said they were working against their interests and therefore not productive. This was probably one of the factors which increased excuses among staff resulting in unwarranted absenteeism hence shortage. This could not only affect use of partograph but also total patient care.

Lack of orientation to new health workers in the ward was reported as demotivating. Rotation of midwives was a routine activity in the two units arranged by the hospitals and occurred every six months. Some nurse midwives reported not being oriented to LW when such rotations occurred. Some had not worked in LW since they qualified. While some had worked

in LW long time ago, and had forgotten most of the things that happen in labour. Their concern was that it took them time to get familiarised to the ward routines and procedures before the next rotation occurred. They said that they carried out the observations but were not very confident to plot on the partograph but rather they would only communicate verbally. This created gaps on the partographs yet women were observed.

The rotation being a routine activity, partographs continued to have gaps from time to time. It seemed the bosses were not aware of this problem or was aware and assumed the in-charges took the responsibility of orienting their health workers. Orientation to new health workers is required to help them settle quickly in the new environment.

4.3.5 Inadequate monitoring resources

BMU reported monitoring resources were inadequate and some were not available. The unit had two BP machines an electronic and a manual. Health workers expressed concern over inadequate equipment, for example, one electronic BP machine which was mostly used catered for 10 delivery rooms including eclamptic room but could also be used by other wards. This contributed to blood pressure not being monitored. NMT in an interview said:

“We do not have adequate BP machines in this unit that is why the women are not checked BPs even after delivery, they are just asked if they are bleeding and sometimes their pads are assessed to rule out bleeding. Afterwards, they are sent to the postnatal ward.”

A senior RNM in an interview argued that resources were not an issue for not monitoring woman in labour. Monitoring woman in labour includes foetal, labour progress and maternal parameters. It was only BP machine and thermometers that were inadequate and unavailable. But all parameters were not properly monitored. The RNM in an interview expressed a concern that the things which would be done without resources were not done and she marvelled:

‘...I feel it is an excuse. Things you are supposed to do professionally, you must do them (...) at least you have to monitor BP once at one point in time. The things you can account for were not here, but things that would be done without using any resources are not done. That’s where I have problems and I say that is definitely negligence and carelessness’

It was also reported that staff did not use the manual equipment but opted for advanced monitoring equipment like CTG machine and electronic blood pressure. CTG when used did not promote plotting on the graph. Electronic blood pressure machine was used more than a

manual one. The electronic ones were described to be faster and easy to use especially in such busy environment.

When the manual blood pressure cuff was the only one in use, blood pressure monitoring would be sparingly carried out hence gaps on the partographs. This is described by Cowie and Floyd as ‘art of midwifery lost to technology’.^{73,74} The skills of midwives are being eroded by the new technology where now midwives no longer use what they have been used to and would choose not to carry out observation if the new technology is malfunctioned. Apart from blood pressure checking, all parameters on the partograph are required to be regularly monitored. Assessments during postnatal period are equally important as the assessment of parameters on partograph and are to be checked consistently.

4.3.6 Health workers’ perspective about women reporting in Labour.

The improper use of partograph was associated with the condition of the woman on admission. Health workers reported that some emergency cases from home or referred were rushed to theatre for C/S and they could not do observation on them. They reported these to have led to gaps on the partographs.

Women’s coming in late, nearly second stage of labour in those who had normal labour was also a reason for not documenting on the partograph. While midwives were concerned about women not benefiting from their expertise because of reporting late in labour, women who reported early enough in labour appeared to suffer unwarranted effects due to poor use of partograph. While in some cases the partograph was not used at all. This was observed in several cases and one example is the case where C/S was delayed because of health workers’ incompetence to diagnose the problem in time (Appendix 11).

Some midwives reported that some gaps exist because women did not give adequate and clear information when asked. This resulted in poor generation of data from the women and the partograph could not be filled. For example over 80% partograph did not have information on when the membranes rupture and on when labour started. To some midwives this was a concern that they did not know much about their patients and what complications might have been there in the women. For example, when membranes ruptured, last date of menstrual period and when labour started.

The health workers also pointed out positive factors to use of partograph despite improper use of partograph in the two units. Firstly, both units had uninterrupted supply of partograph papers. Unlike the findings in Benin and Uganda, some centres had no partograph and this contributed to low use of partograph.^{32, 48}

Secondly, there was a constant supply of gloves in both units and no gap on the partograph was as a result of observation not carried out because of lack of gloves. At EMMU, all monitoring resources were available to carry out observations.

Knowledge reported by health workers show that all health workers were appropriately deployed in the labour ward and postnatal ward. This was an enhancer other than a hindrance to proper use of partograph. All the health workers working in maternity unit had a formal training in midwifery care.

Thirdly, the units especially BMU were described to be too busy which the researcher felt was a good environment to gain experience. The health workers were exposed to a variety of conditions and this would have increased their skills in assessment of patients and documentation on the partograph.

4.4 Conclusion

The findings appear to contain merely brief and inadequate glimpses of the complexity of the participants' experiences. The reasons for the improper use of partograph as participants per se were interrelated and complex which included shortage of staff, negligence, not appreciating the importance of partograph, skill incompetency, lack of supervision and motivation, lack of resources and women's aspect.

CHAPTER 5: DISCUSSION

5.1 Summary of the findings

The purpose of this research study was to gain an understanding on the current utilisation of the partograph at BMU and EMMU in Malawi, assessing the extent of use and exploring the factors that influence its use.

The findings in this study show that the partograph is grossly underutilized in both units. The partographs were properly documented only in 3.9% (n=464). Individual parameters on the partograph had information properly filled in less than 5%. The findings suggest that monitoring of FHR was strongly associated with method of delivery but also foetal outcomes. A strong association was also found between assessment of descent and method of delivery but also between descent and foetal outcomes. The reasons for improper use and documentation of partograph were shortage of staff, negligence, staffs not appreciating the importance of partograph, inadequate and ineffective supervision; lack of motivation, skill incompetency, inadequate monitoring resources and women's aspect. Below follows a detailed discussion of the results.

5.2 Documentation on the partograph.

5.2.1 General performance

Documentation on the partograph which takes place in the first stage of labour is the most required activity for early and maximum detection of problems that arise during labour. The study revealed that documentation on the partograph was scarce and in some cases illegibly in both units. A lot of women delivered without proper use of partograph. Documentation forms part of communication in a continuum of care; and this study has shown that in most cases, communication through the partograph/labour chart was poor. Individual care might not have been well coordinated among staff. This scarce documentation also meant that cases that had problems could not be easily detected during the course of labour. The documentation also revealed that there was no prioritising of cases that reported in labour. Those who needed more attention did not have partographs that were more properly filled in. The health workers expressed verbally that they concentrated on high risk cases; but the documentation did not support this. With the scarce documentation, simple problems which could probably be corrected with simple interventions likely ended in complicated problems, which were

managed with costly interventions in terms of time and resources for both the staff/institution and patient. This might have contributed to foetal mortality and maternal mortality that do occur (Table 2).

Though the general performance was poor, the researcher's expectation was that health workers working in big hospitals are more familiar with use of partograph than health workers in the health centres. They manage different cases and gain wide experience. They also work in environment which at least has resources, better supervision than the health centre. Furthermore, there is good skill mix where midwives work with doctors, obstetricians and other specialists who can promote knowledge transfer hence improved performance of staff. However, the findings show improper use of the partograph in both units. This can be inferred that the health centre staff would perform poorer on the partograph. This probably explains the observation that some referred cases had incomplete or blank partographs which also existed in the partograph at the referral centres.

Unlike the findings of the study reported by Fawole et.al, where there was more use of partograph in tertiary hospitals than in secondary and primary centres. This study had found no difference in use of the partograph in secondary and tertiary hospital.⁴⁶ The partographs that were properly filled in were 3.4% (n=116) at EMMU, a tertiary unit and 4% (n=348) at BMU which is a secondary unit. Furthermore, the findings of this study on documentation of the parameters on the partograph were not different from the findings reported in previous studies.^{30-32, 48} This study had each parameter on all the three components of the partograph properly filled in less than 5%. Can the nurse at health centre use and document on the partograph better than nurse in these two study sites?

5.2.2 Completeness on documentation on the partograph.

Documentation on the partograph was less than 5% properly filled on all the parameters. This might have led to missing of problems. Regular monitoring is required for that purpose to identify problems. Correct use of partograph can help prevent problems in first stage as well as anticipated problems in second stage and postnatal period. So documentation of partograph is important as it identifies and prevents problems in first stage and can prevent morbidity and mortality that can occur in second stage and postpartum. Previous studies have also reported incomplete documentation of parameters on the partograph which led to missing of problems, late referrals, mismanagement of women and perinatal deaths.^{30-32, 39, 45-48}

Foetal condition was poorly documented in all the parameters (Table 6). FHR monitoring was strongly associated with foetal outcomes and also FHR with method of delivery ($p < 0.01$). Previous studies had shown that improper documentation of foetal condition was seen to affect the Apgar score of babies at birth.^{6, 30-31, 71} Babies with low Apgar scores were born in poorly monitored foetal condition. This partly explains the pathway of death in the three FSB in this study. In all the FSBs in this study, it was evident that the partograph was improperly used or not used at all (Table 9). In the first case where cause of death was known (foetal distress); FHR was documented four times only against unknown time spent in labour. Failing to diagnose foetal distress can be due to FHR not counted for a full minute or inconsistent or interrupted monitoring of FHR. Monitoring with use of CTG machine provides a continuous measuring of FHR, however it is argued that it can be dangerous if the staffs do not know how to interpret the pattern it produces.⁷³ The staffs at EMMU preferred monitoring FHR with CTG, but previous study reported staffs having problems to competently use it.⁷⁵ This probably contributed to the missing of the foetal distress in this case. Proper documentation of FHR can help the health worker in attendance to detect foetal hypoxia, and carry out timely decisions about the mode of delivery. Therefore, monitoring of foetal heart rate is seen to be important for good labour outcomes.

There was also improper documentation of labour progress on all its parameters (Table 6). This probably hindered early detection of problems and diagnoses were made late of CPD, prolonged labours and obstructed labours which are the common occurrences in Malawi.^{1,12} Apart from late diagnosis, lack of continuity in documentation on the partograph has been shown to lead to wrong diagnosis.⁷⁶ Monitoring descent was seen strongly associated with method of delivery and foetal outcomes. This shows that if descent is properly monitored, it would reduce incidences that lead to maternal-foetal morbidity and mortality.³⁷ Proper documentation would lead to correct and timely decisions about method of delivery and reduce foetal hypoxia, foetal asphyxia and foetal death which are common in obstructed and prolonged labours.^{7,70} Therefore, in order to have good labour outcomes, it is important to monitor descent.

The crossing of alert line was found not to be statistically significant (Fischer's exact test $p = 0.52$) with foetal outcomes, previous studies found an association.⁸ Crossing of alert line and action line was associated with foetal distress and with increased need for resuscitation. The study reported the crossing of alert and action lines as indication of risk for respiratory distress and this was also associated with fresh still births.⁸ In this study, the crossing of alert

line did not show the association but these lines only measure the rate of cervical dilatation and cervical dilatation was significant (Fischer's exact test, $p < 0.01$). The possible explanation would be that of incomplete documentation. Some partographs had a single plotting or two and this gave a picture of the lines as not crossed. But many partographs might have the lines crossed but were not plotted. So, the crossing of the lines would influence foetal outcomes thus being born alive or dead. The crossing of the lines also indicates abnormal labour which may be indication prolonged labour which can compromise foetal condition.¹

The associations found between the partograph (FHR and descent) and the method of delivery; and also between partograph (FHR and descent) and foetal outcomes, support the reservations the midwives had on use of partograph, that the action line could be the only parameter used when making decision in labour.^{14, 41} Almost all previous studies have presented their results with decisions made in labour also based on action line only.^{33-35,38-40} This is further argued that when cervix is fully dilated, cervical assessment also stops but the woman has not yet delivered. Descent continues to be graphically assessed. Descent can guide in decision making in second stage where cervical dilatation has previously shown no problem. Prolonged second stage is not diagnosed from assessment of alert or action line but from the assessment of descent.⁷⁷

This study reveals that descent and FHR are also important parameters to guide in decision making in labour. They are seen to strongly influence the outcomes. So where action line is routinely used as a guide in labour decisions, this study suggests FHR and descent should also be considered. There is also need to use experience and clinical judgement to come up with right decisions.

Misdiagnosing or mismanagement of pre-eclampsia and eclampsia were likely to be missed as a result of improper monitoring of blood pressure. Blood pressure was properly monitored in 3% (n=464) probably also missing low blood pressure in cases of PPH. Temperature which was least monitored, 1% (n=464) could lead to missing of high temperatures which clinically indicate infections or sepsis.

The findings on odds of foetal deaths and use of partograph showed weak association. The confidence intervals were widely spread. This was probably because of small number of foetal deaths that occurred. Monitoring of FHR is important and the odds of foetal deaths were reduced by 59.5%.

Time spent in labour was assessed in relation to number of observations plotted on the partograph. It was found that time spent in labour did not correspond with the number of observations which were made. Over 90% (n=464) of women spent more than 1 hour in labour but most of the observations that were carried out did not meet required measurement. It was found that some charts had a single observation. The researcher felt more observations are required because decisions cannot be made on a single observation. This can lead to mismanagement of patient.

Time spent in labour was also found to be associated with method of delivery except Breech delivery with $p=0.31$. There was also an association between time spent in labour and foetal outcomes except MSB with $p=0.10$. This could be interpreted that women who reported with intrauterine death (IUD) who delivered MSB; time spent in labour could not influence the foetal outcomes as the baby was already dead. It could also be that women were not monitored and partographs were not documented (Appendix10b). Time duration could not change the status of the foetus. Among the previous studies reviewed in this study, there was no study that had assessed the length of labour in association with frequency of observations.

The study has showed improper utilisation of the partograph which defeats the core use of using it despite the labour outcomes reported in this study. Though the study has showed poor documentation which can be directly interpreted as care not given; it is also argued that completion of the partograph is not a standard part of intrapartum care. Some previous studies reported well documented partographs but the labour outcomes were poor.^{39, 45} This probably explains the findings in this study that despite inadequate documentation on the partograph, most women delivered live babies. However, partograph is still important in the low income countries to systematically improve monitoring and documentation of observations on women in labour.

The study did not assess the Apgar score and rate of foetal morbidity was not assessed, which could have shown the direct effect of the non- use of partograph which in some cases would lead to mortality. The study shows the partograph is valuable in theory and not in practice. Since it is not properly used at the two units, the benefits of using it are not apparent.

Apart from documentation on the partograph, the other parts of the labour chart like referral and postnatal care were also poorly documented indicating that women did not receive proper care. The NSO Malawi 2010 report, had also found that 48% of women in the puerperal period did not receive postnatal check.¹³ This reveals that some women in our health facilities

might be deprived of their right to care and treatment. Postnatal assessment was lacking which should be done on every woman. Mothers who especially were not fully assessed and well monitored in the first stage; should be at least assessed in the postnatal period. Previous studies have reported case fatality being high in Malawi with more deaths occurring in the first 24 hours post- delivery.^{12, 13}

5.2.3 Fresh still births

The three FSBs had no information documented on the partograph. Previous studies have pointed out parameters on the partograph that if not monitored can lead to adverse foetal outcomes.³⁰⁻³² For example, monitoring of FHR which is important in noting deterioration of foetal condition. Labour progress is important in identifying the crossing of alert and action lines which are associated with foetal distress and foetal death.⁸ Monitoring of descent aided in early detection of CPDs hence prolonged labours were prevented that would lead to foetal asphyxia and death.⁷ Labour augmentation or termination of labour was employed where monitoring of contractions showed ineffective contractions which would also lead to prolonged labour.

The partograph is advocated for early detection of problems which can be timely referred. The emphasis on use of partograph is for early detection of problems; and prevents those problems from becoming complications. This shows the importance of carrying out accurate and regular observations; so that the health worker knows when labour is deviating from normal. The partograph is required to be filled on every part as each part complements to the effective use of partograph. It was also observed that all the cases had no observation recorded on the fourth stage of labour. It was important to observe woman during this time as the body adjusts to the pre-pregnant vital organ functioning. Monitoring is required and should continue in the entire puerperal period for early detection of problems that can rise post- delivery like PPH and sepsis of both the mother and baby.^{1, 6, 7}

5.2.4 Utilisation of findings

The NSO 2010 report indicate that 73% (of the 95% women who attended ANC) delivered in a health facility.¹³ Much that we are advocating for more women to deliver in our health facilities, they may not be receiving optimal care. The case study which was extracted is a

demonstration of mismanagement of the woman in labour (Appendix 11.) The midwife lacked critical thinking in action to reassess and then refer. The decision to perform C/S came late than when it would have been done. It is not known whether findings were accurate or not and the interpretation thereof. Other study had also found incidences of late and wrong diagnoses of obstructed labour associated with improper use of partograph.⁷⁶

The partograph serves as an 'early warning sign' and assists in early decision for transfer, augmentation or termination of labour.¹ But in this case, though the partograph was used, it did not serve as a tool advocated for early detection of abnormal labour and for timely intervention. The level of interaction between the health worker and partograph was low meaning that the health worker did not have the capacity to interpret and intervene in time. With data plotted on the partograph, the health worker should be thinking 'is this what should be happening at this point?'² A slow progress means an increasing foetal compromise as well as maternal condition. Health worker should think ahead what to expect in the next assessment which was lacking in this case.^{2, 42} This probably explains the staff expression of skill incompetency where they reported not being able to read and interpret the partograph.

In the same case study, health worker failed to act timely, and this led to an unnecessary suffering of the woman that increased the maternal and foetal exhaustion which could increase the risk for puerperal sepsis as well as low Apgar score in the baby.^{1, 7, 70} This could be viewed as lack of appreciation of partograph by staffs on how the partograph can help the woman but also increase staff efficiency in care of women in labour.

The absence of information on latent phase probably made health workers decide late for the intervention.⁷⁸ The case also happened on a night shift when staffs reported to be busier than day time, so, the health worker probably used guess work to plot on the graph.

5.3 Factors to improper use of Partograph

Several studies have recommended use of partograph in detecting abnormal labour and have also reported barriers to its implementation. The barriers to implementation of partograph in this study were mainly concerned with inadequate or nature of resources both human and material that either directly or indirectly affected the actual use of the partograph. There were varied reasons which attributed to the improper use of partograph. These included shortage of staff with a high workload, negligence, skill incompetency to carry out assessments and interpret correctly despite undergoing through a formal training; inadequate supervision, lack

of motivation and pregnant women not coming in time to labour ward. The reasons were also varied among individuals who participated in the FGD and interviews.

5.3.1 Shortage of staff

The majority indicated shortage of staff was a major problem. The shortage of staff could not be denied. This created a high workload, and this poses a challenge to use and document on the partograph, similar to findings in the previous studies.^{48, 31-32, 76} Same findings were also found in a study reported by Nyamtema et.al and Fatusi et.al where health workers carried out a range of activities and did not have time to monitor women in labour and missed problems, this ended in poor outcomes of mother and baby^{31, 79}.

The locum system seemed not to achieve the expected results. This was possibly because some staffs reporting for locum were the ones who had completed their shift; and instead of resting, they could join the next shift. They worked while tired and could not perform efficiently. Another possibility was that some were not familiar with use and documentation on the partograph especially those coming from other wards. The challenge in using staff on locum especially those from other departments was that they could just come a day. Offering an in-service education would be difficult but can have an orientation from a peer. So, the observation made by the in-charge for the need to combine health workers on duty need to be encouraged. The combination is a positive aspect for the transfer of knowledge among the peers and they can also be able to check on each other's work. This can improve the use of partograph but also total care for women. Otherwise, these gaps will continue to exist until the hospital recruits adequate staff that can be mobilised, trained and mentored in midwifery care.

The overall shortage appears to be a global issue and very acute in the sub Saharan Africa.²² Inadequate staff negatively affected use of partograph in this study. The effects of too much workload are that it produces escalating stress in health worker; consequently they may become rude, uncaring, unfriendly and unable to tolerate patients. This makes them unable to discharge their duties as expected. This led to observations not carried out on patients and partograph not documented. However, the reporting of the shortage of staff in this study was over emphasised. The health workers admitted that at times there were few patients but the partograph would still be not completed. During a preliminary feedback meeting, it was discussed and was concluded that more could be done with same health workers but only that they lacked commitment to their work.

5.3.2 Negligence

Not documenting or forgetting to document after carrying out observations as was expressed, was a form of negligence. In some cases, health workers used shortcuts and could not carry out observations, this was also negligence. These behaviours might have led to wrong decisions. Lack of complete information can make normal labours to become abnormal labours. This might have increased the C/S rate. Laziness among health workers made them not maximise the time to assess and document on the partograph. Laziness also contributed to the partial filling in of the partograph describing it to be detailed. It is the researcher's observation that whenever people settle in routines, the initial value of an activity or procedure is usually lost. So is the use of partograph at the units that it has become a routine activity that is no longer valued; and documentation may be looked at as not important rather than an extra work. The partograph paper may be viewed as any other paper, and not as a tool. This was seen in some midwives who opted for a midwife admission note which does not have a graphic presentation to measure the progress of labour.

The study in Uganda reported similar attitude towards partograph filling where the midwives failed to fill in the partograph because the partograph was described to be detailed.³² However, each information on the partograph was put with a purpose; and for maximum results each section have to be filled.

The health workers carried out partial assessments which made them uncomfortable to fill on the partograph. This was different from the findings in a study done in Mozambique. The midwives used guess and plotted the partograph without actually carrying out the observations.⁴⁵ In this study, the staffs displayed a degree of honesty when they could not plot if they did not carry out a complete assessment e.g. counting of the foetal heartbeat.

Since the introduction of partograph in Malawi, it is a policy that all health workers working in LW should use partograph in managing women in labour.²⁸ So the behaviour of the clinicians to expect nurse midwives to remind them to document on the partograph was also negligence. The partograph only becomes a tool if it is documented as required. Therefore it is the responsibility of every health worker to carry out observations and then document on the partograph.

5.3.2 Skill incompetency

Findings in the previous studies reported that health workers lacked knowledge and skills on use of partograph which led to incorrect use and documentation. The lack of knowledge on the partograph led to late diagnoses which resulted in late referrals but also wrong diagnoses.

Wrong diagnoses led to poor decisions by the health workers and patients were mismanaged.^{44, 45,47,48,76} Many of these health workers did not attain a formal training in midwifery care. In contrast to health workers in this study; all had a formal training, or were under a formal training. The two units are teaching hospitals and the newly qualified health workers may have an advantage to learn more as the institutions are busy and provide a learning environment. The management were also arranging for the in service education which tailored at specific deficiencies. Too often are the trainings loaded with theory content and do not provide opportunities for the health workers to practice. The health workers need to be trained in skills that will help them to do what they are expected to do.⁸⁰

5.3.3 Supervision and motivation

The study found inadequate supervision and lack of motivation as reasons for improper use of partograph. This means that health workers were not empowered to use of partograph as such documentation on partograph was poorly done. The findings are comparable to that reported in previous studies.^{32,44} Documentation on the partograph was complete where clinical supervision was regularly carried out. This study also demonstrates a need for constant and regular supervision despite that the partograph has been in use for years.

Because of lack of supervision, supervisors may be not acquainted with their health workers and even performance appraisal may be difficult.⁸⁰ The supervisors may be unable to know the knowledge gaps and motivation of the health workers but also they may not know whether standards are complied with. Supervision helps to set discipline and control among health workers and ensures that standards are complied with. Some routines or shortcuts as reported in this study among some health workers could easily be avoided. Routine use of partograph coupled with lack of supervision probably made the health workers to assume that women would progress and deliver even if observations were irregularly done. The health workers had settled in that inactiveness and important observations are not done. But through regular supervision, this could be discouraged. Supervision should be viewed as important by the bosses to offer guidance to staffs and will help to correct problems at their earliest occurrence.

The clinician raised a concern on supervision of locum staff at night that night superintendent rarely supervised work on the partograph. It was mentioned that this led to unnecessary C/S deliveries. The expression made by clinician was also reported in previous study that the way information is presented on the partograph affects doctors' clinical decisions made during labour.⁸¹ Doctors were more likely to intervene if the labour curve was flat. However, in this

study, with the incomplete plotting the curve could not be displayed. This affected their decisions during labour and it seemed the decisions made were inaccurate. However, if the clinicians did a thorough assessment they could rule out the mistake. Hence avert the ‘C/S without real reason’.

Late President of Malawi, Dr Bingu Wa Mutharika said: ‘The greatest asset of the government is the staff it employs... and to achieve the greatest benefit, the supervisors must take their roles and the employees also to take their roles.’⁸² The researcher agrees and strongly supports that strong leadership is essential to improving the care experience. More can be done with the same health workers and more of the same problems can be reduced. It needs commitment of both the health workers and the supervisors and having a sense of ownership over their work. Furthermore, these supervisors being leaders also mean that they have authority to act to improve the situations by setting standards and measuring those standards if they are lived up to. So supervision remains a springboard for change in the two units.

Lack of meetings among midwives was seen as a failure in supervision or motivation. The health workers reported that meetings were not conducted. During a feedback meeting on preliminary findings, the immediate bosses reported that meetings were called on, but midwives would not come even when they were not busy. This was probably a problem of communication between the bosses and health workers. The health workers had also little expectation from the meetings. This was observed from the health workers expression that their bosses were not listening to them.

The staffs also reported need for incentives to motivate them. This was also discussed in the feedback meeting that midwives were not ready to participate in the reward giving procedures. This could indicate lack of understanding between the health workers and their bosses. The health workers probably did not favour the procedure that they should choose the best health worker among and by themselves. Probably each one felt was the best. Through regular supervision and performance appraisals, bosses can know who the best is.

Meetings seemed a failure as these two parties could not assemble for an open discussion and agree on what to do.

Some health workers reported unwillingness to work in labour ward because of high workload. The researcher also felt management style employed may also influence the

behaviour. Regardless of the reasons, professional obligation to care should take pre-eminence.

5.3.4 Inadequate resources

Inadequate resources to carry out observations hindered the documentation on the partograph. Sphygmomanometers were inadequate while thermometers were not available. However, the partograph/labour chart had more parameters than what the two resources measure which were also not measured. Negligence is a major problem where lack of resources has been prominent and chronic.⁸⁰ In this study, all the parameters on the partograph were not properly documented. Shortage of resources was an excuse and was a factor disabling health workers to improve their performance. The health workers felt the shortage was a hindering factor to their performance both as individual as well as collectively. Yet assessments which did not need such resources were not initiated at all. On the other hand, the staffs seemed to have been carrying out observations but the tendency of not documenting made them as if they did nothing.

5.3.5 Conclusion

Using the partograph in monitoring labour may be of extreme importance. In these settings we do not reach this aim. The partograph was improperly used. The association found between partograph use and method of delivery and foetal outcomes suggests that proper use of partograph can improve the foetal outcomes but can also timely guide in the method of delivery before the foetal or maternal condition is compromised. Several factors contributed to the improper use, but mainly was that health workers could not take up their full responsibilities to monitor women in labour and care them after delivery. It requires commitment to produce good results which was lacking in the health workers in the two units. Therefore, the health workers have to increase their commitment and maximise the available resources.

5.4 Methodological limitations

The methodology used in this study to assess the extent of use, generated data that could not assess the quality in documenting the partograph. The questionnaire used dichotomous variables which are inadequate in themselves to describe something (Appendix5). The data collected was general as filled in or not filled and not necessarily on how regular were the observations filled in. This made it difficult to determine when the observed differences were

likely the real differences and determine the pattern and strength of association between variables.

The study conducted a retrospective review of the partographs in which some findings were difficult to understand. A prospective review of partographs could be best to understand the complexities to use of partograph than a retrospective study. However, the results of this study still stand valid that the partograph is not properly used but the reasons expressed for not properly using it need to be further explored by an observation method. In the focus group, opinions are produced through process of compliance, identification and internalisation. Sometimes it becomes risky to disagree with a point in a group, or deep issues difficult to discuss, however, in this study, these problems were controlled in the individual interviews. But even in the individual interviews, the complexity of the issue may not be well expressed. The observational method further looks into what was expressed verbally and what is actually being done as talking and doing are two different activities.

The qualitative study was done at a time when the ward rotation had just occurred. The review of the partograph was done on the work of the previous group and factors contributing to non- use were explored on the majority of the group that were less than three weeks in the labour ward. This affected the generation of data as many did not have much experience working in the environment. They probably used their general experience and not specific to the units.

5.5 Conclusion of the study.

For decades, the partograph has been used as a gold standard for monitoring labour. The main reason for using the partograph in monitoring labour is the assumption or belief that it would guide in early identification of problems during labour especially in the first stage of labour. Correct use of partograph is essential procedure in midwifery care and helps in clinical decision making during labour. Correct decisions mean correct interventions that can lead to reduction in complications in mother and baby. This study assessed the use of partograph and explored the factors for not using the partograph. The findings indicate that the partograph was not optimally used for maximum detection of problems during labour. This has an implication that problems could be missed and women could be mismanaged. Mother and baby could have complications and die, if they did not die; they had long stays in the hospitals which is a down ward trend to poverty.

The improper use of partograph was found to be because of shortage of staff, shortage of resources; lack of supervision, incompetency and negligence culminated all which also reflected lack of commitment in health workers to their work. Negligence therefore was seen as an important factor to low use of partograph. It is will and a little money that is needed to change the situation as this quote connotes:

“Healthy motherhood is still a dream for millions of women in the world, can be made a reality. The know-how is already available. We know the way. What the world needs is the will and the wallet to make it happen.” A quote from Prof. Fathalla.

PRELIMINARY FINDINGS AND PARTICIPANTS FEEDBACK

Although there were other methods of validating the findings, the researcher still thought of conducting a presentation of preliminary findings to get responses and reactions of the primary intended users of the findings. The researcher feared that she might write what the staffs might raise objection to. In that case, the findings may not persuade staff for a change. It was explained that the preliminary findings were based on the most general issues that were found and also those most striking and obvious. The presentation covered only two questions: (1) to what extent the partograph was used. (2) what factors influenced the non- use of partograph. This was so because the analysis process takes time and needs carefully working with the data to identify patterns and variations to interpret these findings. The presentation was also seen as practical utilisation of the findings by the health workers and this involved direct interaction. This provided a rich discussion and their responses provided a context and a basis for interpretation of the data. Their reactions elicited new information about issues that were not mentioned previously. The health workers came up with their own conclusions and it became clear how they made their interpretations and this also helped the researcher to develop new ideas and interpretation of the data.

It was discussed that meetings were arranged but staff did not come. It was also discussed that it was not all the times that midwives were busy though they could not attend the meetings. On motivation, the management arranged for best nurse reward but nurses were refusing and reasons not known. It was noted and discussed that clinicians had problems in filling and interpreting the partograph.

The staffs made some recommendations during the feedback. (1) To designate one staff member to review and randomly assess the partographs for quality of monitoring and

documentation and timely provide feedback to staff.(2) Provide in-service training to equip staff to complete and interpret accurately.(3) Provide full orientation to new staff in the ward. (4) Improve supervision by matrons, (5) encourage knowledge transfer between nurses and clinicians (6) The health workers in ANW should start the partograph if woman starts labour in ANW (7) Nurses and clinicians should participate in ward round and discuss together care of patient and how the partographs were completed (8) big posters to be made for LWs to display the findings so that staff can see their performance.

5.6 Recommendations

Documentation on the partograph

1. Incomplete charts which can be due to laziness of health workers, in-charges and matrons to instill professional discipline and motivate those using guess work by mentorship.
2. Conduct quarterly reviews and use charts to assess health workers performance and progress.
3. Clinicians to be sensitised on documentation of partograph and all health workers should document on the partograph.

Shortage of Health workers

1. Human resource shortage is a long standing problem but there is need for appropriate deployment and improved commitment to their work. Proper deployment will ensure right health workers with right skills to work in the right place and doing the right things.

Health worker motivation

Lack of performance-related rewards and recognition was perceived as a demotivation. Performance relies on internal motivation but external factors are also important.⁷² Motivation enables one to access her/his skills and perform the task in hand effectively and efficiently. If health workers are motivated externally, results fluctuate while if internally, results are consistent.⁷²

- Health workers need to be empowered, help them to realise their potentials and feel resourceful in the same situation through supervision, mentoring and appropriate deployment.
- Empower ward in-charges to carry out orientation of health worker and supervise them.
- Rewards can be given occasionally on exceptional behaviours.

Health worker training

Midwifery practice is based on scientific process of assessment, planning, implementing and evaluating which also implies that actions are knowledge and evidence based. The health workers are to justify their actions and responsibility. So it is important that midwife is empowered with necessary knowledge and skills that are linked to job responsibilities and roles. Therefore:

1. Offer on job training or peer mentoring which has been recommended for being cost effective because it uses locally existing expertise; is focused, relevant and contextually accurate.⁷²
2. The units to develop a system to follow up performance of health workers who have attended workshops. Find out if trainings make any difference, and with how much impact; and be able to give feedback to the organisers of workshops for any improvements or modification of the trainings, especially those locally organised trainings.
3. The Malawi Nurses and Midwives Council to consider incorporating use of partograph in the Continued Professional Development (CPD) checklist.
4. Health workers should take an initiative in themselves to search for new information from the hospitals and teaching institutions libraries not entirely wait for workshops which are limited in terms of enrolment and topics delivered.

5. Training institutions to emphasize on the importance of using the partograph.

Supervision

1. Encourage supervision at all levels.
2. Encourage peer learning among health workers and to check each other's work. When people are clear about what is expected, they take more responsibility for their behaviours.
3. The immediate bosses to share their schedules of supervision with their health workers in the wards so that health workers can also prepare on their part how they can benefit from the supervision.
4. Conduct regular meetings. Meetings are important and should be regular to educate, motivate and inspire. Meetings should keep people informed about their progress and objectives. Maternal audit results should be shared in these meetings.
5. Health workers should be encouraged to attend maternal audit meetings. Audit results should also be shared at ward level.
6. The DHO needs to strengthen the referral system by supporting and supervising the health centres; and emphasise on the health workers following correct referral procedures.

5.7 Call for future research

Future research is required to:

- Assess use of partograph in other tertiary, secondary and primary level facilities to establish pattern of utilization and documentation which would help if need be, to modify the partograph to suit the local context.
- Assess the factors for improper utilization of partograph among health workers through participant observation.
- To assess use of the partograph in relation to Apgar scores at birth to find out the rate of morbidity in new-borns.

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Appendices

Appendix 1: Application letter to Malawian Ethical Committee

Date: 2 February 2011

To: Professor Mfutso-Bengo, Chairman
College of Medicine Research & Ethics Committee
Private Bag 360
Chichiri, Blantyre 3

Re: EXPEDITED REVIEW to approve modification of/extension for Proposal 10/08/703 – Maternal mortality in Malawi: Reviews to make pregnancy safer and promote human development

Dear Professor Mfutso-Bengo,

Per the procedures, guidelines, and advice received, I write you to officially request consideration and approval of modifications to the already approved Proposal 10/08/703 – Maternal mortality in Malawi: Reviews to make pregnancy safer and promote human development through the expedited review process. The following are in need of your approval:

- **Timeline:** I gave birth to my second child (January 20, 2010). I had planned to return to Malawi and resume data collection, but while pregnant I did not want to do that. Also, after his birth I was on maternity leave for 11 months (Jan 20, 2010 to Dec 21, 2010), and during that time I did not want to travel with an infant or leave him at home since I was still breastfeeding. So the study has been postponed for almost two years. Now the completion year is 2012. Please see the modified timeline that is included in the enclosed proposal (p. 28).
- **Timeframe for data collection:** Initially data collection was approved for October – December 2008 with the contingency of needing more time based on the realities of the field. Data were collected during the approval period, but I did not finish—the facility based interviews were not conducted at that time. Attempting to interview healthcare staff on maternal deaths that occurred in 2008 may not be fruitful. They will have experienced several maternal and perinatal deaths since then, not to mention the excessive caseload. For them and their mental wellbeing, forgetting the details surrounding a maternal death is understandable. The time lapse and current situation on the ground increase recall bias. Furthermore, some of the verbal autopsies (interviews within the community) were not as complete as I had hoped. Therefore the data collection period and data collected were changed to reflect the resuming of the activity (pp. 18 & 19).
- **Focus Group Discussions:** based on informal conversations with key informants (two senior midwives, expat medical doctor, and my local supervisor) healthcare staff are reluctant to open up discuss in detail what transpired in the process of a woman dying while in their care. I would like to explore this issue by conducting three focus group discussions with them. Details are provided on pages 20 and 21.

Three issues are for your information. They are as follows:

- **Local supervisor:** Dr. Tarek Meguid is no longer in Malawi. However, he is still willing to supervise, but remotely. In his physical absence, Dr. Address Malata

has agreed to step in and be my local supervisor. Her curriculum vitae can be found starting on page 77.

- Assistance: There are two research assistants and one colleague who will assist me on various parts of the research study: a) Mrs. Jacqueline Nkhoma is a colleague (Malawian research nurse & PhD candidate) who will help conduct the verbal autopsies and transcribe the FGDs while I facilitate; b) Mrs. Margaret Khonje (Malawian nurse/midwife & Masters student) will thoroughly review maternal records, including assessing the partograms; c) Ms. Magrit Jarlsdatter Hovind (Norwegian medical student) will help track the maternal deaths and conduct the facility staff interviews. Their CVs can be found starting on page 86.
- Burnout: During the course of reviewing maternal death records for calendar year 2008 to identify facility-based factors that might have contributed to the death, a pattern emerged: the majority of deaths occurred during the evening shift or on weekends. I shared this information with the senior management and staff. They explained that lack of resources, limited supervision, limited critical decision-making skills, and negative attitudes towards patients might have influenced maternal mortality rate at the hospital. I speculated that the apparent negative attitudes may be symptomatic for something else. Therefore, I proposed to my supervisors (Drs. Tarek Meguid and Johanne Sundby) that we assess their attitudes (specifically burnout), to which they both agreed.

We decided that we would not develop our own survey because we wanted results to be comparable to other groups and other study results. So based on a quick literature review the Maslach Burnout Inventory - Human Services Survey (MBI) was selected. It is over 20 years old and is the most frequently used quantitative burnout measurement tool¹. The 22-item questionnaire relates to three constructs: a) Emotional Exhaustion (EE), b) Depersonalization (DP), and c) Reduced Personal Accomplishment (PA). Participants rated each item on a seven-point Likert-type scale for how frequently they experience the feeling, 0 being "Never" and 6 being "Every day".

Because this is a basic psychological assessment tool, we had to enlist the assistance of a psychologist. Dr. Andra Teten who works for the Centers for Disease Control and Prevention agreed to collaborate with us on this part of the study.

In addition, I adapted the Maslach Human Services Demographic Data Sheet. This sheet contains questions related to demographics, such as sex, age, religion, marital status, number of children, and level of education; and job related questions such as primary work area, number of hours per week, number of hours within current job and total years within the profession.

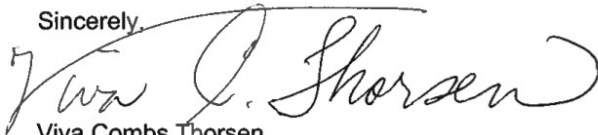
Dr. Teten's CV, her agreement letter, the MBI-HSS which is **copyrighted and should not be circulated**, along with the adapted demographic sheet are appended at the very end of the proposal.

¹ Maslach, C. & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behaviour*, 2, 99-113; Shirom, A. (2005). Reflections on the study of burnout. *Work & Stress*, 19, 263-270.

As of today, the burnout data has been analyzed. I have presented the findings several times (once even to Malawian nurse/midwives who were participating in an exchange program), and have recently submitted a manuscript (*Burnout: High rates among maternal health staff at a referral hospital in Malawi*) for publication (Journal of Psychosomatic Obstetrics and Gynaecology). I plan to present the findings during one of the ground rounds meeting and DHO monthly meetings. Of the 40+ maternal death charts of 2008 that were reviewed, we were only able to trace 11 back to the community. Those interviews were not as verbose as I had hoped, so the 2nd go round I plan to have more probing questions asked. However, the instruments themselves have not changed.

With COMREC's approval of the modifications and extension I plan to resume data collection the first week in June 2011. If you need anything clarified or any other supporting documentation, please let me know. Thank you for the consideration.

Sincerely,



Viva Combs Thorsen
IASAM, Dept of General Practice and Com. Medicine
University of Oslo
PO Box 1130 Blindern
N-0318 Oslo NORWAY
Phone: +47 22 85 0587
Fax: +47 22 85 0672
Email: v.c.thorsen@medisin.uio.no

Appendix 2: Approval letter from Malawi Ethical Committee



UNIVERSITY OF MALAWI

Principal
K.M Maleta MBBS, PhD

Our Ref.:
Your Ref.: P.10/08/703

College of Medicine
Private Bag 360
Chichiri
Blantyre 3
Malawi
Telephone: 01 877 245
01 877 291
Fax: 01 874 700
Telex: 43744

11th February 2011

Viva Combs Thorsen
C/o, Dr. B. Gombachika
Kamuzu College of Nursing
Box 415
Blantyre

Dear Ms Thorsen,

RE: P.10/08/703 – Maternal Mortality amid the HIV/AIDS epidemic in Malawi: Reviews to make pregnancy safer and promote human development

I write to inform you that COMREC reviewed your request to modify the above mentioned proposal and I am pleased to inform you that COMREC approved the following requests:

1. The addition of a local supervisor, Dr. A. Malata
2. The assistance of two Research Assistants and your colleague, Ms Magrit Jarlsdatter Hovind
3. Assistance from Psychologist – Dr. Andra Teten and her CV and letter of agreement
4. Adaption of the Maslach Human Services Demographic Data Sheet
5. The use of burnout data

As you proceed with the implementation of your study we would like you to take note that all requirements by the college are followed as indicated on the attached page.

Sincerely

Prof. J.M Mfutso-Bengo
CHAIRMAN – COMREC



REQUIREMENTS FOR ALL COMREC APPROVED RESEARCH PROTOCOLS

1. Pay the research fees as required by College of Medicine for all approved studies.
2. You should note that the follow-up committee will monitor the conduct of the approved protocol and any deviation from the approved protocol may result in your study being stopped.
3. You will provide an interim report in the course of the study and an end of study report.
4. You are required to obtain a continuation approval after 12 months.
5. All investigators must be fully registered with the Medical Council of Malawi.



Appendix 3: Approval letters from study institutions

Appendix 3.1 Approval letter from Kamuzu Central Hospital

Date: Tuesday, June 07, 2011

To: Director, Kamuzu Central Hospital, P O Box 49, Lilongwe.

From: Margaret Khonje
Department of General Practice and Community Medicine
University of Oslo
P.O. Box 1130 Blindern
N-0318, Oslo, Norway. Email: margaret.khonje@studmed.uio.no
Mobile: 0995678512

Re: PERMISSION TO CONDUCT A STUDY AT ETHEL MUTHARIKA MATERNITY UNIT

Dear Sir/Madam:

I am writing you to request for permission to conduct a study and access information in your institution.

I am a student in the International Community Health Section, University of Oslo, Norway, in the masters' degree programme. My study is entitled: Use of Partograph in urban hospitals in Lilongwe Malawi: Health workers perspective. The urban hospitals are Bwaila and Ethel Mutharika Maternity Units.

The purpose of the study is to gain an understanding of the partograph utilization in the Malawian context highlighting the barriers and facilitation of its correct use. The study will aim to answer the following questions:

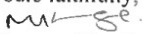
- To what extent is the partograph used and completed and how does this relate to maternal and fetal outcomes?
- What factors enhance or prevent use of partograph among health workers?
- What alternatives are used to competently manage women in labor?

This study falls within the main study entitled: Maternal Mortality in Malawi: Reviews to make pregnancy safer and promote human development which was approved by the College of Medicine Research and Ethics Committee first in 2008 and then in March 2011. (Protocol 10/08/703)

This study will review partograph retrospectively to assess utilization and completeness in the filling of the partographs and will conduct the focus group discussion and interviews with health workers to explore the factors that enhance or prevent correct use of the partograph. The study is expected to last for six months (July-December 2011).

My local supervisor is Dr. Address Malata . The Principal, Kamuzu College of Nursing.

Looking forward to hear from you.

Yours faithfully,

Margaret Khonje.

*Study Approved
Dr. Y. Mutharika
10/06/11*

Appendix 3.2: Approval letter from Bwaila District Health Office

Date: Tuesday, June 07, 2011

To: District Health Officer, Bwaila Hospital, Lilongwe.

From: Margaret Khonje
Department of General Practice and Community Medicine
University of Oslo
P.O. Box 1130 Blindern
N-0318, Oslo, Norway Email: margaret.khonje@studmed.uio.no
Mobile:0995678512

Re: PERMISSION TO CONDUCT A STUDY AT BWAILA MATERNITY UNIT

Dear Sir/Madam:

I am writing you to request for permission to conduct a study and access information in your institution.

I am a student in the International Community Health Section, University of Oslo, Norway, in the masters' degree programme. My study is entitled : Use of Partograph in urban hospitals in Lilongwe Malawi: Health workers perspective. The urban hospitals are Bwaila and Ethel Mutharika Maternity Units.

The purpose of the study is to gain an understanding of the partograph utilization in the Malawian context highlighting the barriers and facilitation of its correct use. The study will aim to answer the following questions:

- To what extent is the partograph used and completed and how does this relate to maternal and fetal outcomes?
- What factors enhance or prevent use of partograph among health workers?
- What alternatives are used to competently manage women in labor?

This study falls within the main study entitled: Maternal Mortality in Malawi: Reviews to make pregnancy safer and promote human development which was approved by the College of Medicine Research and Ethics Committee first in 2008 and then in March 2011. (Protocol 10/08/703).

This study will review partograph retrospectively to assess utilization and completeness in the filling of the partographs and will conduct the focus group discussion and interviews with health workers to explore the factors that enhance or prevent correct use of the partograph.

Date: Tuesday, June 07, 2011
To: District Health Officer, Bwaila Hospital, Lilongwe.
From: Margaret Khonje
Department of General Practice and Community Medicine
University of Oslo
P.O. Box 1130 Blindern
N-0318, Oslo, Norway Email: margaret.khonje@studmed.uio.no
Mobile:0995678512

Re: **PERMISSION TO CONDUCT A STUDY AT BWAILA MATERNITY UNIT**

Dear Sir/Madam:

I am writing you to request for permission to conduct a study and access information in your institution.

I am a student in the International Community Health Section, University of Oslo, Norway, in the masters' degree programme. My study is entitled : Use of Partograph in urban hospitals in Lilongwe Malawi: Health workers perspective. The urban hospitals are Bwaila and Ethel Mutharika Maternity Units.

The purpose of the study is to gain an understanding of the partograph utilization in the Malawian context highlighting the barriers and facilitation of its correct use. The study will aim to answer the following questions:

- To what extent is the partograph used and completed and how does this relate to maternal and fetal outcomes?
- What factors enhance or prevent use of partograph among health workers?
- What alternatives are used to competently manage women in labor?

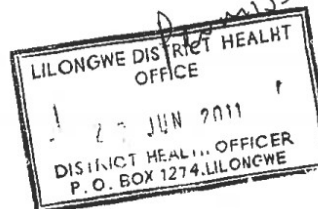
This study falls within the main study entitled: Maternal Mortality in Malawi: Reviews to make pregnancy safer and promote human development which was approved by the College of Medicine Research and Ethics Committee first in 2008 and then in March 2011. (Protocol 10/08/703).

This study will review partograph retrospectively to assess utilization and completeness in the filling of the partographs and will conduct the focus group discussion and interviews with health workers to explore the factors that enhance or prevent correct use of the partograph. The study is expected to last for six months (July-December 2011).

My local supervisor is Dr. Address Malata , The Principal, Kamuzu College of Nursing.

I am looking forward to hear from you.

Yours faithfully,
Margaret Khonje
Margaret Khonje.



Permission granted.
DRH
29/6/11

Appendix 3.3: Approval letter from Mzuzu Central Hospital

Date: Thursday, September 08, 2011
To: Director, Mzuzu Central Hospital. P/B 209, Mzuzu 2.
From: Margaret Khonje
Department of General Practice and Community Medicine
University of Oslo
P.O. Box 1130 Blindern
N-0318, Oslo, Norway Email: margaret.khonje@studmed.uio.no Mobile:
0992870163.

Re: PERMISSION TO CONDUCT A PILOT STUDY AT MZUZU CENTRAL HOSPITAL -MATERNITY UNIT

Dear Sir/Madam:
I am writing you to request for permission to conduct a pilot study in your institution.

I am a student in the International Community Health Section, University of Oslo, Norway, in the masters' degree programme. My study is entitled: Use of Partograph in urban hospitals in Lilongwe Malawi: Health workers perspective. The urban hospitals are Bwaila and Ethel Mutharika Maternity Units.

The purpose of the study is to gain an understanding of the partograph utilization in the Malawian context highlighting the barriers and facilitation of its correct use. The study will aim to answer the following questions:

- To what extent is the partograph used and completed and how does this relate to maternal and fetal outcomes?
- What factors enhance or prevent use of partograph among health workers?
- What alternatives are used to competently manage women in labor?

This study falls within the main study entitled: Maternal Mortality in Malawi: Reviews to make pregnancy safer and promote human development which was approved by the College of Medicine Research and Ethics Committee first in 2008 and then in March 2011. (Protocol 10/08/703).

Permission is sought to conduct focus group discussion and interviews with health workers to explore the factors that enhance or prevent correct use of the partograph. The pilot study is expected to last for 4 weeks.

My local supervisor is Dr. Address Malata, The Principal, Kamuzu College of Nursing.

Looking forward to hear from you.

Yours faithfully,
M-K
Margaret Khonje.

*Training
of staff in charge
maternity
unit which
please allow
now.
it is
approval
Dr. Address
12/9/11*

Appendix 4: Informed consent form

Margaret Khonje, M. Phil. RNM. Section of International Community Health, University of Oslo, Norway.

Purpose

I am conducting a study on Utilization of Partograph during labor and delivery. The purpose of the study is to find out the extent to which the partograph is utilized as a tool in labor management. The study is funded by the Norwegian Education fund. You have been invited to participate in the study because you work in labor ward where the partograph is utilized.

Procedure

You are invited to participate in a focus group discussion which will comprise eight people who are nurses, clinical officers and doctors respectively to discuss factors that influence use of the partograph. You are also invited to a single individual interview whose purpose is to gain a deeper understanding of these factors on the individual's perspective. Both focus group and interview have been estimated to last between 40 and 90 minutes. The information you will provide will be kept confidential. Only the researcher and her supervisors will have access to the information. With your permission the discussion will be tape recorded and confidentiality ensured by keeping the tape in a place which can be locked up when not in use. No names will be used. After producing a final copy of the study, the tape will be destroyed 5 years after publishing the work.

Participation is voluntary and you are free to refuse to participate or withdraw at any time you feel like.

Benefits of participating in the study

There is no direct benefit to you for your participation in the study but the information you will provide will give an insight into the current situation. These insights will help with developing or adapting interventions on how to remedy the problem. For example, planning of in-service trainings and/or resource allocation for increasing the partograph utilization.

Risks

The study will enquire on experiences and opinions on use of the partograph. If at any time will you feel emotionally upset or guilty of how at one time you had managed women in a way that was morally wrong and unprofessional in relation to use of partograph, you are free to make it known to the interviewer who will support you to express your emotions and refer you where necessary.

If you have questions or you need further information regarding the study, you can call:

+265 992870163

Declaration of Participant

I have read and understood the above information. I declare that my participation in this study is voluntary.

Participant Signature

Date

Appendix 5: Questionnaire for assessment of partographs

PARTOGRAPH REVIEW-DATA GATHERING SHEET

PERSONAL DETAILS

Have the following been recorded (**circle** yes, no or N/A based on what is or not written. Provide information where applicable)

Name	yes	no
Address	yes	no
Age	yes	no
Gravida	yes	no
Parity	yes	no

Comment: -----

ADMISSION DETAILS:

Has anything been noted in the following admission details (yes, no or N/A)

Date	yes	no
Time of admission	yes	no

Date and time of onset of labor	yes	no	
Date and time membranes ruptured	yes	no	N/A-----
Abnormal symptoms	yes	no	what was it-----

Comment: -----

EXAMINATION ON ADMISSION

Has anything been recorded regarding the first examination (**circle** yes or no)

Yes no

Comment: -----

REFERRED yes no

Reason-----

From where-----

FETAL MONITORING

Were the following monitored (**circle** yes or no, if yes write how many times plotted)

Fetal heart rate yes no -----

Method of delivery (**circle mode**) SVD, breech, V/E, Forceps, C/S or not indicated

Apgar score at 1 min	yes	no	-----
at 5 min	yes	no	-----

Status of new born (**circle**): LFT, prem, FSB, Macerated, NND or not indicated.

Sex	yes	no
-----	-----	----

Abnormalities	yes	no	-----
---------------	-----	----	-------

Weight	yes	no
--------	-----	----

Length	yes	no
--------	-----	----

Head circumference	yes	no
--------------------	-----	----

Baby to nursery	yes	no	If yes, reason for transfer-----
-----------------	-----	----	----------------------------------

Delivered by(circle if signed or not)	yes	no
---------------------------------------	-----	----

Comment: -----

THIRD STAGE OF LABOR

Were there specific variables that were filled or not under this section? (**Circle**)

Time of delivery of placenta	yes	no
------------------------------	-----	----

Mode of delivery	yes	no
------------------	-----	----

Blood loss	yes	no
------------	-----	----

Placenta	completed	not completed	not indicated
Membranes	completed	not completed	not completed

Comment: -----

PERINEUM

Was the information on perineum recorded? **(Circle)**

Yes no not indicated

POSTNATAL CHECK

Was there any documentation on postnatal period? **(Circle)**

Yes no

Any postnatal comments: -----

Evaluation:

1. Grading of labour chart

Complete: if the labour chart had information on all section including all the three components (foetal monitoring, labour progress and maternal monitoring) of the partograph

Incomplete: if there was no information in other components or sections of the labour chart.

Blank: if there was no information on the partograph or labour chart.

2. Grading of The partographs.

OK: if the three components on the partograph were completely filled in,

Adequately filled in: if the three components had information and some parameters were not documented.

Inadequately filled in: if only two components had information.

Grossly inadequate: If only one component or no information on the three components.

Note:

1. Components denote the 3 parts of the partograph (foetal, maternal and labour progress).
2. Parameters denote what is included in the components (foetal-FHR, liquor, and moulding).

Appendix 6: Focus group discussion guide.

1. Why do you use partograph?
2. When do you fill in the partograph?

Based on a review of a month's worth of partograph, we have found that maternal, foetal and labour progress but also postnatal care is not properly documented or not documented at all.

3. What could be the possible explanations for this?

-With probes where necessary.

4. What opportunities do you have in this unit to use the partograph?

Appendix 7: Interview guide

General guide for Individual Interviews

Demographic data:

What is your profession?

How long have you worked

- a. in this labor ward
- b. as midwifery care provider
- c. have you received any training on partograph use since you started working in this ward? If yes, how many, when and describe(1 day, 1 week etc.

To assess usefulness of the partograph

- Why do you use the partograph?
- Which component of the partograph do you consider most important and why?
- When do you fill the partograph?
 - At the end of the shift?
 - After delivery?
 - Soon after observations?
- How often do you use labor graph

To explore reasons for not using the partograph:

Probe

- Why do gaps exist on partograph?

Probe

- What obstacles have you faced in this hospital in using the partograph?
- Do you feel equipped to complete it and act on it correctly?

Appendix 8: Summary guide for focus group discussion

Questions for Summarizing focus group discussion

Focus group discussion.

Name of institution:

Venue: -----

Date: -----

Start time----- End time-----

Facilitator: -----

Note taker: -----

Number of participants: -----

- Was the venue suitable? Does it need to change for the next discussion?
- How many participated? How many were active? Who were they e.g. cadres?
- How was the group process and the group dynamic (acceptance of each other, interaction?)
- What were lessons learnt for the next discussion
- Did the guide work well? Any need for improvement
- What were the main themes raised in the discussion

Appendix 9: Summary guide for interviews

Questions for summarizing the interview

Name of the institution:

Place of interview:

Date and time of interview:

Duration of interview:

Name of interviewer:

Interviewee number:

Was the venue conducive for the interview? Does anything need to be changed for the next interview?

How easy was it to build rapport? Any need for improvement?

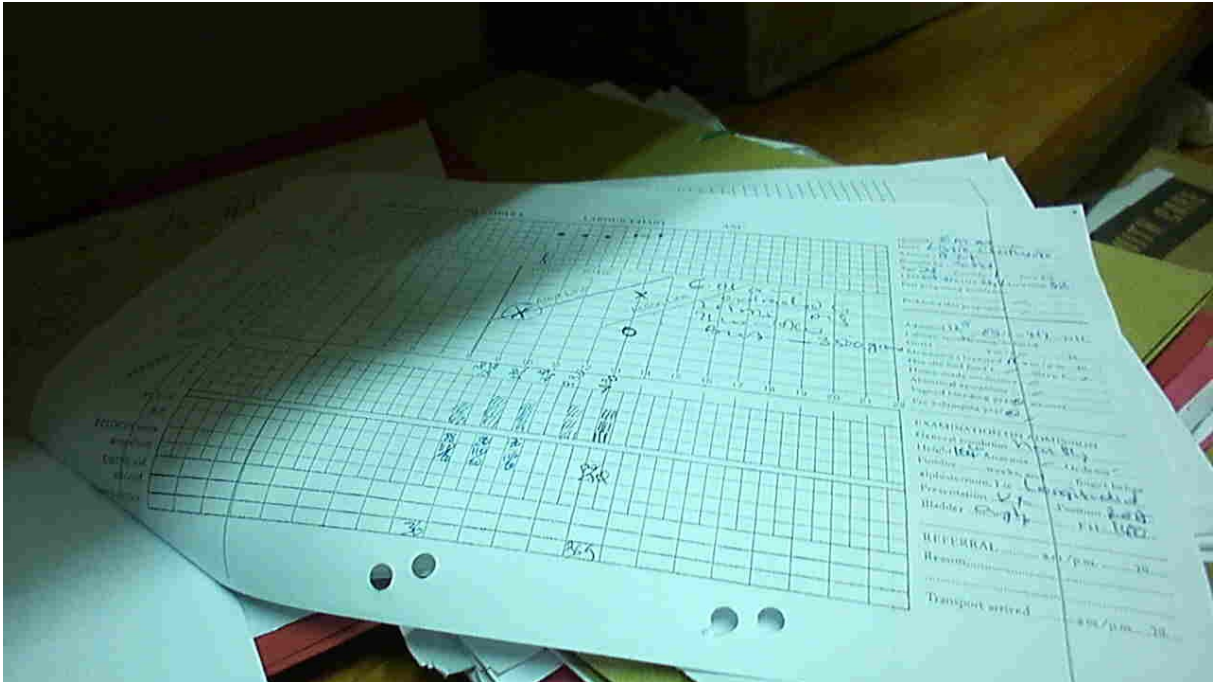
Any problems encountered? Any distractions? Was the guide followed and did it work well?

Any need to alter or add or improve to the guide for next interview?

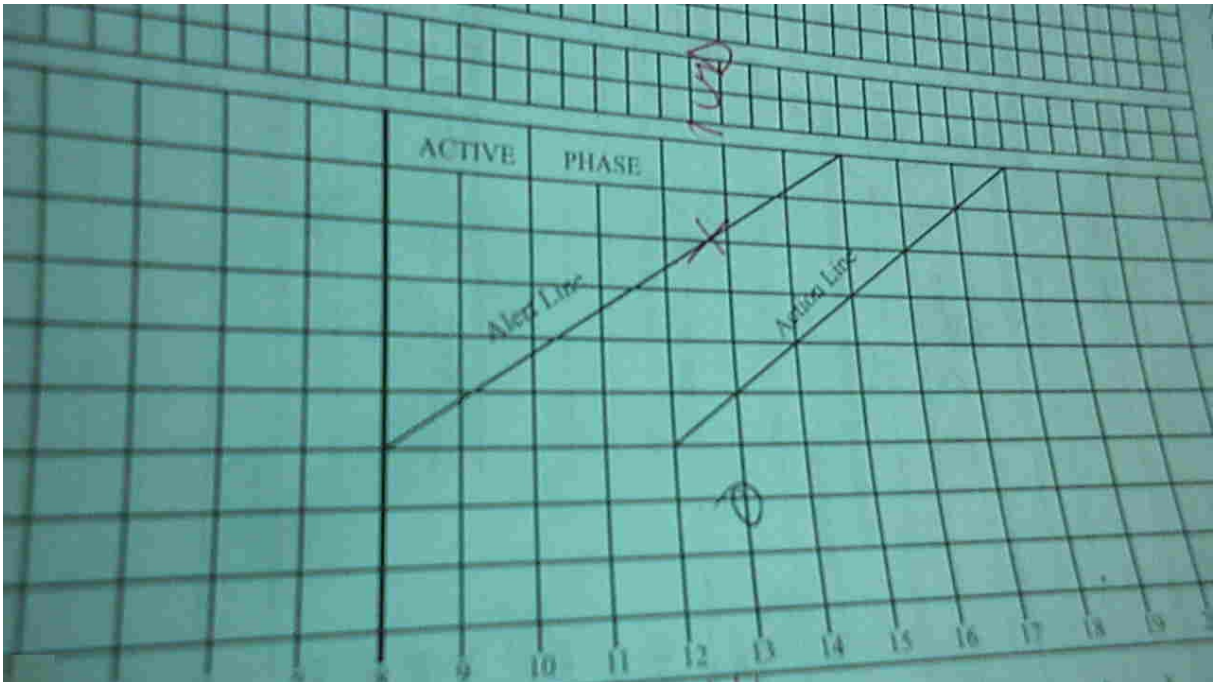
What were the main themes raised?

Appendix 10: Examples on Incomplete documentations of partographs

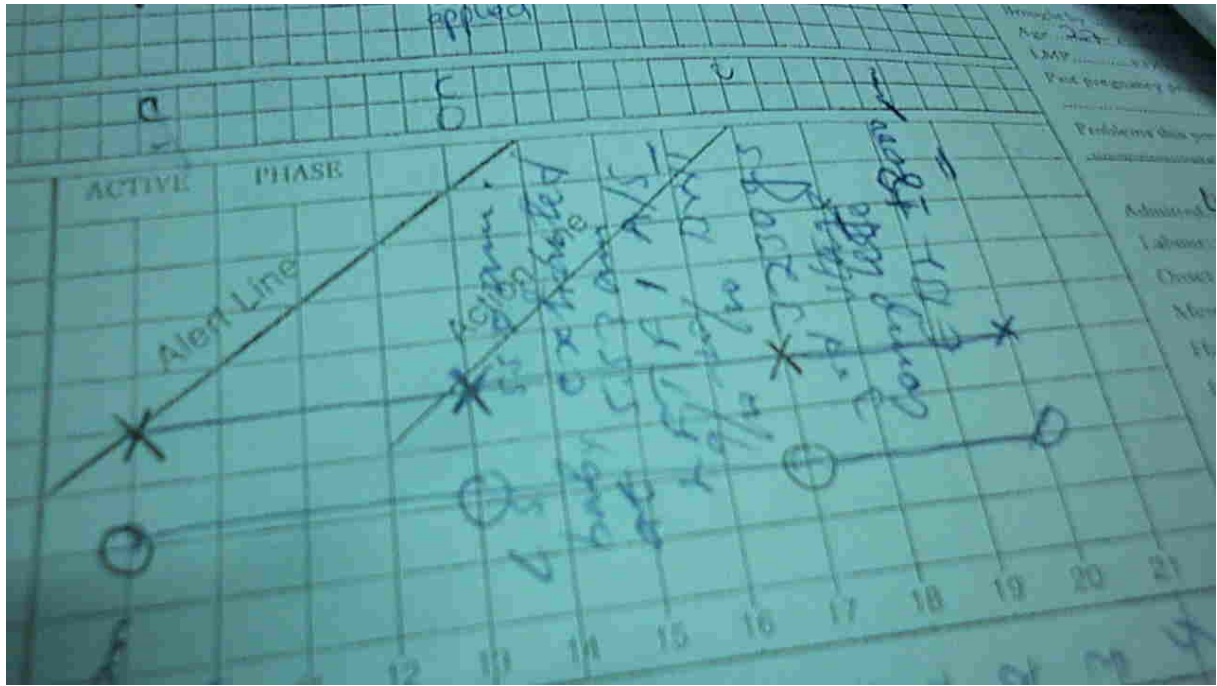
Appendix 10a



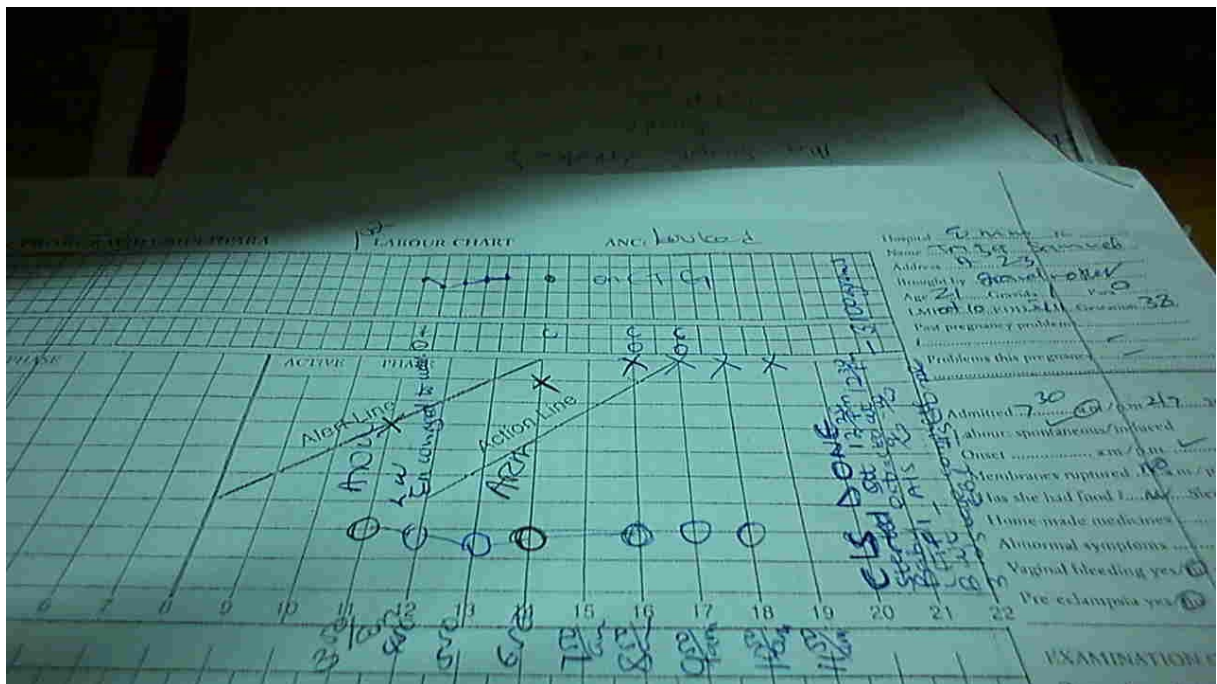
10b



Appendix 10c



10f



Appendix 11: Case study

27 years old G1P0 was admitted in labour ward while in labour at 4.00pm on 24/6 and graph plotting started at 4.00pm. On admission cervix 5cm, descent 3/5 contractions 3 moderate and liquor clear. After 4 hours at 8.00pm, cervix 5 cm descent 3/5 contractions 3 moderate and crossed the alert line. After another four hours at 12 .00 midnight, cervix 5 cm descent 3/5 contractions moderate, FHR within 120-140 beats per minute, liquor clear, no moulding. After 3 hours at 3.00am, cervix 5cm descent 3/5 contractions moderate, FHR 138b/minute, liquor was clear.

At 5.00 am, a clinician reviewed the woman and a diagnosis of prolonged first stage plus CPD was made. The woman went for C/S at 5.50 am on 25/6.

Appendix 12: Midwife admission note.

BWAILA MATERNITY UNIT

MIDWIFE ADMISSION NOTES

Name..... Age..... NOK.....

Gravida..... Parity..... 1st: SVD/CS 2nd:
3rd:..... 4th:..... 6th:..... 8th:.....

LMP..... EDD..... PMTCT..... ARVs... Y... N..... Period.....

Feeding option..... Referred Y/ N from..... Reason:.....

Date of admission..... Time..... Observation: healthy/ ill looking

Condition: Stable /Critical Anemia... Y / N... Oedema N / +/+ /+++

Admitted...due...to

Vital signs..... BP..... Pulse..... Resp..... Temp.....

Fundus..... Lie..... Presentation.....

Position..... Contractions..... FHR..... Descent.....

Genitalia inspection.....

Vaginal examination: station:..... cervical dilatation..... caput/moulding.....

Membranes: Intact / Ruptured on:..... at.....

Colour of liquor: Clear / Meconium Grade 1/ 2/ 3/Absent Presenting part.....

Impression:.....

Plan.....

Name of admitting officer..... Signature.....

Revised 02/06/2010

