

**Assessing Partograph Recordings and Perinatal Outcomes at Queen Elizabeth Central
Hospital Malawi**

MSc (Midwifery) Thesis

By

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Declaration

I, ISABELLA CHIKONDI CHISUSE, hereby certify that this thesis is my original work and has not been presented for any degree award at the University of Malawi or any other university. Due acknowledgements have been made wherever necessary.

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Certificate of Approval

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Dedication

This thesis is dedicated to the following:

My darling husband, Bennie who inspired and encouraged me to forge ahead. In times of distress, you prayed for me and offered your selfless support whole heartedly. May God bless you abundantly.

My adorable children Awiri, Kondwani and Mphatso for your love and perseverance during the period of my study. You really missed my daily motherly guidance and care and I really thank you for this.

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Abstract

The development of the partograph provides health professionals with a pictorial overview of labour progress, maternal and foetal condition and aids in early identification and management of complications such as poor progress of labour, prolonged labour, foetal distress, and, in the worst cases, obstructed labour and ruptured uterus. The aim of this study was to assess the documentation of the partograph recordings and perinatal outcomes during intrapartum period at Queen Elizabeth Central Hospital which is situated in the southern region of Malawi. A descriptive cross sectional study was conducted using a simple random sampling of 246 partographs. Using a checklist, recordings of observations on foetal, progress of labour and maternal parameters were assessed and given a grade as completely documented, adequately documented, inadequately documented and grossly inadequately documented.

Results indicated that only 1.2% of the partographs were completely documented with observations on foetal, maternal and labour progress. Foetal heart rate monitoring was documented according to standard in only 2.4% of partographs and not recorded at all in 11.8% of the partographs. There was no association between recordings of foetal parameters (foetal heart rate, status of membranes and degree of moulding) and neonatal birth outcome ($p = 0.713$). The reviewed records showed 4 fresh still births and 21 newborns who were admitted to neonatal intensive care unit with Apgar score of less than 7 at 5 minutes within a period of one month. On labour progress, cervical dilatation was the only parameter that was more documented according to standard in 33.7% ($n = 83$) of the partographs as compared to the documentation of uterine contractions which was 4.5% ($n = 11$) and of descent of presenting part which was 5.9% ($n = 14$) of the partographs. On maternal parameters, blood pressure was not documented in 65.4% of the partographs reviewed and respirations were documented in only 3.3% of the partographs. On the maternal condition, the findings did not show a significant association between partograph recordings and immediate maternal outcomes. Though not statistically significant but very important, women experienced adverse outcomes such as pre-eclampsia ($n = 4$), uterine tears ($n = 4$) and postpartum haemorrhage ($n = 13$) were experienced by the women.

There is need to investigate on possible explanations as to why the partographs were not documented according to World Health Organisation's recommended guidelines.

Key words: Partograph, Recordings, Documentation, Perinatal outcomes, Intrapartum period.

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Abbreviations

KCN	Kamuzu College Of Nursing
QECH	Queen Elizabeth Central Hospital
MOH	Ministry of Health
NSO	National Statistical Office
WHO	World Health Organisation
CEmONC	Comprehensive Emergency Obstetric and Neonatal Care
EmONC	Emergency Obstetric and Neonatal Care
HIMS	Health Information Management System
MDG	Millenium Development Goals
NAC	National Aids Commission
UNICEF	United Nations Children’s Fund

CHAPTER 1

Introduction and Background

Introduction

Intrapartum period is one of the essential components of midwifery practice. Care ranges from supporting women with normal pregnancies to those with multiple complications such as prolonged and obstructed labour. Prolonged and obstructed labour is associated with foetal hypoxia, birth trauma, postpartum haemorrhage and infection which results in both perinatal and maternal mortality and morbidity (Darmstadt et al., 2005, World Health Organisation [WHO], 2002 and WHO et al., 2012). The WHO modified partograph was designed to provide the evidence based standard way of improving maternal and perinatal outcomes through assessment of foetal, maternal and labour progress (Fatusi, et al., 2007., Javed et al., 2007., Kwast, et al., 2008., Leanza & Leanza, et al., 2011., Tayade & Jadhao, 2012., and WHO,1994). The use of the partograph enhances the quality and regularity of all observations on the foetus, mother and labour progress. Correct and complete recording and analysis of these observations can therefore, reflect the way midwifery providers are monitoring the women. Detection and management of prolonged and obstructed labour using a partograph is an important intervention towards reduction of maternal and perinatal mortality and morbidity.

In most countries, Malawi inclusive, utilization of the partograph during intrapartum at each maternity unit has been advocated in order to prevent complications of prolonged labour. Apart from provision of continuity of care and educational assistance, there is evidence to suggest that midwives in developed countries find the partograph easy to use. In addition, midwives also argue that documentation on the partograph saves time than filling many medical forms and writing other related notes (Lavender & Malcomson, 1999). Therefore, if used appropriately with other agreed management protocols, the partograph contributes to the reduction of prolonged and

augmentation of labour, Caesarian section and still births (WHO, 1994). However, the partograph does not achieve its intended goals due to incorrect use by most midwifery providers (Lavender, Hart & Smyth, 2012, Mathai, 2009 and MoH, 2010). Most parameters and observations are not monitored and recorded according to WHO standards (Farrell & Pattinson, 2005, MoH 2010, Odalapo, Daniel & Olatunji, 2006). In addition, findings on the partograph are not well interpreted and deviations are not corrected. As a result, actions required to save lives are not always instituted (Farrell & Pattinson, 2005).

Queen Elizabeth Central Hospital (QECH) maternity unit is one of the tertiary teaching facilities and provides Comprehensive Emergency Obstetric and Neonatal Care (CEmONC) to women from all surrounding health centres in Blantyre district. According to 2010 Emergency Obstetric and Neonatal Care (EmONC) assessment report, QECH contributed 88% of all direct maternal deaths in Blantyre district and 23 % of the total maternal deaths nationally (MOH, 2011). In addition, in 2012, the facility registered a perinatal mortality rate of 34 deaths per 1000 deliveries [QECH, Health Information Management System (HIMS), 2013]. This proportion was for both fresh still births and very early neonatal deaths. The institutional perinatal mortality rate was higher when compared to national statistics which is at 29.35 deaths per 1000 deliveries (MOH, 2010).

At QECH, it was not established how the partographs were documented and their effect on neonatal and maternal outcomes. The large number of obstetric and perinatal complications and deaths that occur at this largest referral and teaching facility in the country prompted the researcher to assess how partographs were being documented during intrapartum and determine whether there was an association between partograph recordings and perinatal outcomes.

Background Information

There is evidence that prolonged labour is associated with foetal hypoxia, obstructed labour, uterine rupture, maternal exhaustion, postpartum haemorrhage, puerperal sepsis and obstetric fistula (Magon, 2011, WHO, 2002 and WHO et al, 2012). Each year, foetal hypoxic injuries are responsible for an estimated one million still births and also 814,000 neonatal deaths globally. Furthermore, complications of prolonged labour have caused one million disabled survivors with long term neuro development injuries including cerebral palsy, mental retardation, blindness, long term intellectual impairment and behavioural (Lawn, et al, 2005., WHO, 2005., & Maulik, et al., 2007). On maternal health, in the year 2000, about 8% of all maternal deaths were estimated to be due to obstructed labour. Similarly, an estimated 2,951, 000 disability adjusted life years were lost owing to obstructed labour (WHO, 2005).

Malawi is one of the Sub-Saharan countries that has experienced high maternal and neonatal mortality and morbidity ratio due to complications of labour. In 2008, obstructed labour, ruptured uterus and prolonged labour were the leading direct causes that contributed to 36%, 11% and 4.1% of maternal deaths respectively. The current maternal mortality ratio was estimated to be at 675 per 100, 000 live births (NSO, 2010). This ratio exceeded the 2015 Millennium Development Goal's target which was supposed to be at 155 per 100, 000 live births. On the status of neonates, about 16, 000 neonatal deaths occur annually with 50 % of the deaths occurring within the first day of birth and 75% within the first week of life (MOH, 2005). Asphyxia and infection are among the leading causes of morbidity and mortality contributing to 22% and 30% of all the deaths respectively. In addition, the institutional still births and very early neonatal deaths within 24 hours of birth is at an alarming ratio of 37 per 1000 deliveries against a national ratio of around 29 per 1000 live births (NSO, 2010).

The partograph is a graphical printed paper form which has three distinct sections where observations on foetal condition, labour progress and maternal condition are recorded and contain pre - printed alert and action lines (WHO, 1994). The first graphical presentation of labour progress was developed in 1955 in the United States of America by Friedman who was an obstetrician. In his study of 100 primigravidae women of American origin, Friedman focused on plotting cervical dilatation against the number of hours a woman was in labour and this was characterized by an S- shaped curve which is found in all normal labours (Friedman, 1959). The study revealed major clinical features of labour which were frequency, intensity and duration of the uterine contractions, the descent of the presenting foetal part and the effacement and dilatation of the cervix. This newly developed tool formed a basis for which researchers have based most of their work in order to provide a scientific understanding of the process of human labour and delivery. Using Friedman's partograph, Hendricks et al (1970) observed that there was a difference in the cervical dilatation between primigravidae and multigravida and there was no deceleration phase at the end of the first stage of labour. He then developed a concept of defining the starting time of labour and added some information on foetal and maternal condition.

In the developed countries, Philpott and Castle (1972) added assessment of the descent of the presenting part on Friedman's partograph. In their study conducted in Central and Southern Africa on 624 primigravida women, results revealed that there could be deviations from the normal expectation of labour progress. These deviations were identified by introducing the alert and action line on the partograph that would help to identify maternal or foetal compromising factors and labours that did not follow a normal progress. Similarly, the ability of the partograph to detect abnormal labour was also found by Studd et al (1973) who introduced the partograph in United Kingdom. This discovery provided a sound scientific basis for promotion of early recognition of dystocia, prevention of prolonged labour and referral of women from remote areas

into facilities that could provide alternative choices of modes of delivery particularly those in low resource areas.

Though developed in the 1970's, there was still lack of conviction by decision makers regarding usefulness of the partograph. The existence of so many varieties of the partograph also brought conflicting assumptions and recommendations and many authors had different views on the usefulness of whether or not to include the latent phase on the partograph (Cardozzo et al, 1990, Durjadin et al, 1992, Lavender et al, 1998 and WHO, 1988). Furthermore, there were also conflicting reports from randomized controlled trials on whether 2 or 3 or 4 hour action lines contributed to the better outcome for mother and neonate (Cardozzo et al, 1990., Lavender et al, 1998, Lavender et al., 2006 & Orhue et al., 1997). In order to address these challenges of the partograph, the WHO informal technical working group developed a simplified partograph that synthesized all the essential features. The team also came up with the recommendations that would maximize the greater acceptability of the partograph by decision makers and further research on investigating the impact of the partograph on labour management and on adverse outcomes of labour (WHO, 1988 & WHO, 1991). Following the launch of the world wide Safe Motherhood Initiative in 1988, WHO recommended the partograph as an international standard in the management of labour.

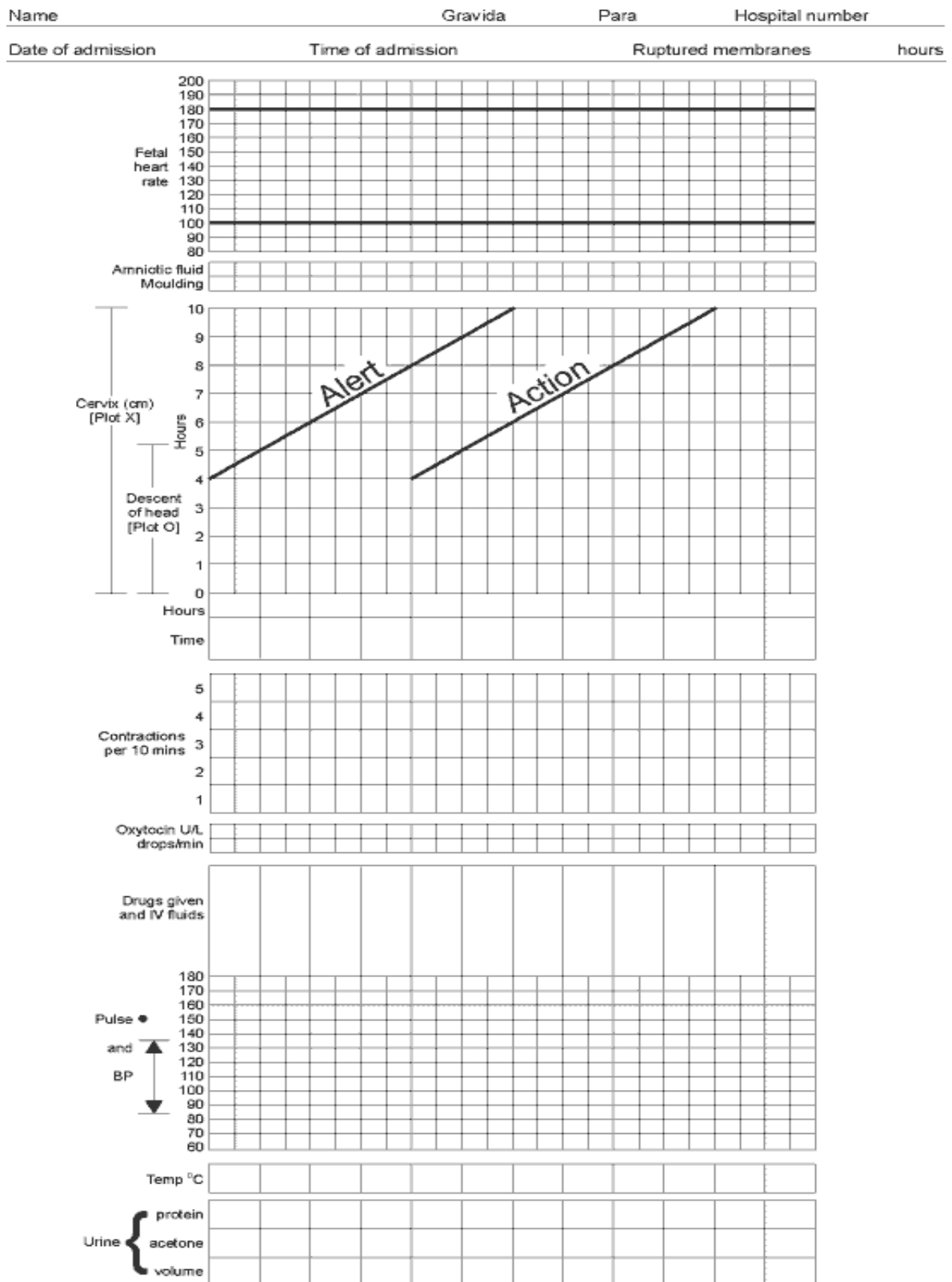


Fig 1: The WHO modified partograph (<http://hetu.org/resources/reproductivhealth/impac/images>).

According to WHO (1994), the first upper component of the partograph involves monitoring of foetal condition which are heart rate, colour of liquor, moulding and formation of caput. Foetal heart rate is observed and documented at half hourly during first stage of labour and quarter hourly during second stage. Quality and colour of liquor is documented when there is rupture of membranes or during every time of conducting a vaginal examination. Other parameters that are also monitored are degree of moulding and presence of caput which are documented at each time of a vaginal examination. A vaginal examination is done either when there is rupture of membranes or three hourly for a primigravida and four hourly for a multigravida.

The second middle component of the partograph is used for monitoring progress of labour which involves assessment on cervical dilatation, descent of presenting part and pattern, duration and strength of uterine contractions. Documentation of findings of cervical dilatation is done whenever there is a vaginal examination. Observations on descent of presenting part and uterine contractions are documented every hour. The component also records all drugs that have been given during intrapartum to either stimulate or strengthen weak uterine contractions. The third lower component of the partograph records hourly observations of maternal parameters like respirations, pulse rate and blood pressure. Body temperature recordings are done and recorded every four hours. Records on amount and examination of urine is also filled in this component.

The partograph gives providers objective information on which to base their clinical decisions. However, there is need to follow management protocols which address issues as when and what action should be taken when labour reaches alert and action lines, when and how to perform amniotomy or oxytocin augmentation and caesarian section. Protocols also describe

when and how to make referrals of women for further management. Furthermore, the WHO (1994) model of partograph is also based on the following criteria for management of labour:

- Plotting of a partograph for a laboring woman should start after ruling out any complications of pregnancy that require immediate action.
- The active phase of labour commences at 4 cm cervical dilatation.
- For normal labour, the cervical dilatation should not go beyond the alert line. Charting should be along or to the left of alert line.
- When assessing uterine contractions, frequency of contractions should be assessed for 10 minutes and documentation is presented by shading on a partograph with dotting, half shade and total shade depending on strength and duration of each contraction.
- If labour goes beyond the action line, immediate intervention should be implemented.

These protocols were applied in WHO multi centre trial on the use of a partograph and they gave good perinatal outcomes. WHO also recommended that local adaptations such as inclusion of other parameters to be assessed and timing of assessments may be made to suit the setting (WHO, 1994).

In Malawi, the partograph was introduced in the 1970's through a baseline study that was also conducted in Zimbabwe. In Malawi, the baseline study conducted by Burges (1986) showed a reduction of prolonged labour from 14% to 3% after introduction of the partograph. The rate for Caesarian section was also reduced from 12.3% to 9.5%. Consequently, perinatal mortality rate was also drastically reduced from 53 % to 3.8 %. However, though the partograph has been utilized for more than 4 decades, there is evidence to show that prolonged labour is still a significant cause of maternal and neonatal mortality rate in our population (NSO, 2010).

As a way of promoting an effective role in the reduction of prolonged and obstructed

labours, several interventions have been designed to enhance correct and complete documentation of the partograph. Firstly, the partograph has been made as a mandatory tool in all the health facilities that provide labour and delivery services. The expectation is that during labour a midwifery provider will be able to monitor the foetal, maternal and progress of labour with the aid of a partograph. In addition, the midwifery provider who is also a trained skilled birth attendant is also expected to document, analyse and act promptly when deviations from normal labour are existing. In 2010, the Malawi Demographic Health Survey indicated that at least 71 % of hospital deliveries were conducted by a skilled birth attendant (NSO, 2010). But, it is not known whether these skilled birth attendants documented the observations of labour in a regular manner as well as its outcomes on maternal and neonatal wellbeing.

Another intervention is the introduction of standards for provision of quality intrapartum care by Ministry of Health (MoH, 2006). The standards include appropriate use of a partograph in the management of labour. During Performance and Quality Improvement assessment of facilities, the partograph is assessed for correct documentation, interpretation and corrective measures taken in cases of deviations from the anticipated normal recordings. A minimum score of 80 % is given to a facility if the midwifery providers are adhering to the recommended standards. It is therefore, a prerequisite that the midwifery provider plots information correctly and timely on the partograph.

Studies conducted in developing countries including Malawi that focused on the utilization and knowledge of the partograph concluded that there is underutilization and low levels of knowledge on the use of the partograph (Abebe et al., 2012, Fawole et al., 2010, Khonje 2012, Kamanga (unpublished), Opiah, 2012 and Qureshi et al., 2010). A study conducted in two public urban maternity units in Malawi aimed at assessing the health worker's perspective on the use and documentation of the partograph and factors affecting utilization. The study focused on

how the labour chart was being documented. The study concluded that the partograph was not optimally utilized as evidenced by incomplete documentation. The study went further to reveal barriers to use of the partograph that included shortage of staff among other things (Khonje, 2012). Similarly, another unpublished study conducted in the same central health zone found that the partograph was not well utilized even at health centre level (Kamanga, unpublished). This study also focused on factors that affect the utilization of the partograph. However, both studies did not critically review whether pattern of the documentation on the partograph had any implications on foetal and maternal outcomes.

The present study therefore, attempted to understand how observations of labour were recorded on a partograph and whether there was an association with perinatal outcomes at QECH. In the study, neonatal outcome was assessed in terms of Apgar score at 5 minutes, still births, early neonatal deaths and immediate admission in the neonatal intensive care unit. Immediate maternal outcome was assessed in terms of postpartum haemorrhage, preeclampsia and eclampsia and other related complications.

Problem Statement

Documentation of a partograph provides a picture that assists midwifery providers to prevent, identify and manage prolonged and obstructed labour. But despite MoH's efforts to reduce maternal and neonatal morbidity and mortality through implementation of various WHO recommendations, correct and adequate use of partograph during labour remain a challenge in many health facilities. Correct use means correct documentation, interpretation and correct and timely actions following assessment of women in labour in order to have good perinatal outcomes.

Though QECH is a tertiary and teaching institution, statistics for neonatal complications and deaths have been alarming for some time back. In 2009, Metaferia & Muula (2009) conducted a study for a period of 12 months in order to establish the rate of perinatal deaths. The study

revealed that out of 10,700 deliveries, 7.9 % (n = 845) were still births and very early neonatal deaths. Findings also showed 22.7% of the still births occurring during the process of labour and delivery whilst 565 of the perinatal deaths were very early neonatal deaths.

Similarly in 2012, between the months of April and September, QECH HMIS registered 1813 admissions in the neonatal intensive care unit. Asphyxia which is a perinatal complication contributed 36% (n =661) of these admissions. In addition, asphyxia was also the leading cause of neonatal deaths with a rate of 12% (n = 218) of the total admissions (QECH, HIMS, 2013). In 2013, the trend continued as there were 93 fresh still births and 23 very early neonatal deaths from a total of 5720 deliveries which occurred within a period of 7 months from January to July, 2013 (QECH, HIMS, 2013). With similar trends of perinatal deaths in other developing countries, Shrestha, et al (2006) suggested that these high rates of still births and very early neonatal deaths may be considered as indicators of the quality of intrapartum care.

In relation to maternal indicators, the QECH Maternal Death Audit report for 2009 – 2011 indicated that observation of women in labour without action, delay in starting treatment, inadequate monitoring and incomplete initial assessment were some of the contributing factors to the maternal and neonatal deaths and complications during intrapartum period (QECH, HIMS 2012). Furthermore, during the same period of 2012, the hospital managed women with emergency obstetric complications totaling to 37 % of the total deliveries. Complicated deliveries are expensive for the institution because there is a high risk of mothers and neonates to experience adverse outcomes that will need prolonged admissions for management of the complications. These indicators and observations are of great concern as they could be so many contributing factors in the intrapartum period that may include poor utilization of the partograph. In Malawi, studies have analysed midwifery care that is provided during antenatal, postpartum and neonatal period. In relation to the partograph, studies have focused on the factors affecting

utilization of a partograph. There is dearth of information on how observations in labour are being documented on a partograph and its outcome on both the mother and neonate. At Queen Elizabeth Central Hospital, it was not known how the partograph is documented and its association on perinatal outcomes. Therefore, there was need to do a definite study which would describe the partograph recordings and perinatal outcomes.

Significance of the Study

When documented correctly and consistently, a partograph has shown to be a reliable tool that can reflect the quality of labour monitoring. The high rate of maternal and neonatal complications at QECH demanded for the assessment of association between documentation on the partograph and perinatal outcomes. The study findings will help the institution to evaluate how recordings of observations are made on the partograph and whether they relate to outcomes for both mother and baby. The evaluation will then assist in planning for interventions that would improve maternal and neonatal care. The WHO strategic Agenda for 2008-2013 promoted evidence based decision making at all levels of the health system through enhanced capacity to generate and utilize information. Hence the findings will add to a source of information that will be used for further research on improvement of utilization of a partograph at the institution understudy and elsewhere.

Aims of the Study

The aim of the study was to assess the recordings on the partograph and determine if there was an association with neonatal and immediate maternal outcomes during intrapartum period.

Specific Objectives of the Study

The specific objectives of the study were to:

1. Determine the proportion of partographs that were documented according to standard for

women delivering at QECH.

2. Determine whether there was an association between the recordings on the partograph and neonatal outcomes among women delivering at QECH.
3. Determine whether there was an association between the recordings on the partograph and immediate maternal outcomes of women delivering at QECH.

Research Questions

The following were the research questions which were answered by this study:

1. What was the proportion of partographs that were documented according to standard for women delivering at QECH?
2. Was there an association between the partograph recordings and neonatal outcomes for babies being delivered at QECH?
3. Was there an association between the partograph recordings and immediate maternal outcomes among women delivering at QECH?

Definition of terms

Emergency Obstetric and Neonatal Care

Package of medical interventions identified by WHO, UNICEF and UNFPA required to treat the major direct obstetrical and newborn complications. These services are necessary to save the lives of women and neonates who experience obstetric and neonatal birth complications respectively.

Comprehensive EmONC Facility

A hospital which provides all the nine signal functions that are necessary to save the lives of women and newborns with obstetric and neonatal complications respectively. These services are: administration of parenteral antibiotics, parenteral oxytocic drugs, parenteral anticonvulsants,

manual removal of placenta, removal of retained products (manual vacuum aspiration), assisted vaginal delivery (vacuum extraction), caesarian section, neonatal resuscitation, and blood transfusion.

Midwifery care providers

They are qualified providers for midwifery care and in Malawi, they include midwives, doctors, clinical officers and medical assistants.

Skilled Birth Attendant

A skilled Birth Attendant is defined by WHO as a medically qualified provider such as midwife, doctor or Clinical Officer who has been trained to proficiency and has acquired midwifery skills to manage women during labour childbirth and immediate postnatal period.

Maternal Death

Death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of its duration and site, from any cause related to or aggravated by the pregnancy or its mismanagement, but not from accidental causes.

Still births

These are foetuses which were viable at the time of admission of a woman in labour, and who are subsequently born without viability.

Very Early Neonatal Death

This is death of liveborn infant occurring within 7 days from time of birth.

Maternal Mortality Ratio

Number of maternal deaths per 100,000 live births, due to complications of, or medical conditions aggravated by pregnancy, childbirth, or postnatal period up to 42 days after delivery.

Perinatal Mortality Rate

This is a summation of still births and very early neonatal deaths per number of deliveries.

Standard

This is a measure of the level of quality or achievement that is thought to be acceptable when providing midwifery care during ante partum, intrapartum or postpartum as recommended by World Health Organisation.

Recordings/ Documentation

This is written information on the partograph by a skilled birth attendant that provide evidence of interventions that were done to the women during labour and delivery.

Outcome

This is the situation that exists at the end of labour and delivery process for both the neonate and the mother. In a neonate, a good outcome is a live baby with Apgar score of more than 7 at 5 minutes. In a mother, a good outcome is when the mother is well and did not experience any birth complication. A maternal adverse outcome includes death of the woman and any birth complication such as Post-partum haemorrhage, Pre-eclampsia, uterine tears, e.t.c. A neonatal adverse outcome includes still birth, immediate neonatal death, Apgar score of less than 7 at 5 minutes and admission of a neonate to nursery with asphyxia related conditions.

Summary

This chapter has presented the introduction, the background, significance and the aim of the study as well as the objectives which guided the study. The next chapter discusses the literature that was reviewed on the recordings on a partograph and perinatal outcomes.

CHAPTER 2

Literature review

Introduction

This chapter presents a review of both national and international literature on the partograph. The main objective of the review was to analyse different literature on documentation of observations during labour on a partograph and its association with maternal and neonatal outcomes. The search strategy used the term “Partograph” OR “Partogram” in Medical Subject Headings (MeSH) in order to come up with search items. The search terms were partograph/partogram AND recordings/documentation AND perinatal outcomes OR neonatal outcome AND maternal outcome and were limited to English language only. The data bases utilized were Pubmed, Ebscohost, Hinari, Google scholar, Medline and online journals. Hand search on proceedings of major conferences on use of the partographs, bibliography of relevant articles, reviews and chapters in standard textbooks of obstetrics were also conducted. The study articles searched were primary sources and included those published from as early as 1970’s to date in order to learn the origin of the partograph.

The literature review covered three sections as follows: documentation and completion of recordings on a partograph; documentation of partograph recordings and its association on neonatal outcomes and documentation of partograph recordings and its association on maternal outcomes. The first part of the section presented a review of studies that looked at the general documentation and completion of parameters (foetal, maternal and labour progress) on a partograph. Review of studies that looked at documentation on each specific parameter were also presented. Finally, the literature also presented a review of studies on the association of partograph recordings and neonatal and maternal outcomes.

Documentation of Parameters and Completion of a Partograph

In recognition of the importance of documentation of observations during labour, WHO tested the feasibility of such an activity in a multicentre trial study of 35,484 women from South East Asia. The aim of the study was to scrutinize the accuracy with which partographs were being documented and completed and the diligence with which the recommended labour management protocols were followed. The results showed that 91.7% of the partographs were correctly documented and completed and the examinations of women in labour were performed at recommended intervals. The errors noted, in most cases did not have major implications for labour management (WHO, 1994). Since the study was conducted in South East Asia which comprised of developing countries that have similar higher maternal and neonatal mortality and morbidity rates like Malawi and other Sub Saharan African countries, the findings meant that it was possible to document and complete the current WHO partograph even in low resource settings.

Other studies have also shown that documentation and completion of a partograph during labour is very low (Burkhalter et al., 2006., Jere, 2014, Markos and Bogale (2015) and Regional Centre for Quality of Health [RCQHC], 2008). A retrospective survey was done by Regional Centre for Quality of Health [RCQHC] (2008) in collaboration with the African Midwives Research Network and the ministries of Health in 18 purposively sampled health facilities in Kenya and Uganda. The aim of the study was to review the use of the partograph in monitoring labour. The study found a very low rate of the use in the 2 countries with only 14% of the partograph records having correct documentation of the events in labour. Similarly, an operations research study involving 245 women was conducted in 14 hospitals in Benin, Ecuador, Jamaica and Rwanda with the aim of assessing the quality of obstetric care. The general findings showed that quality of completed partographs as well as the general quality of labour monitoring was

poor in all the 4 countries. Frequency of monitoring and documentation of labour parameters was below the rates that are recommended in all the four countries and in 26 % of the cases, no labour indicators were documented that they were being monitored (Burkhalter et al., 2006). Likewise, in a retrospective review of records of 360 women delivering at a facility in Malawi, results showed that only 48% (n =148) of the partographs were documented in all the three sections of labour. In addition, the results also showed that only 10% (n =16) of these partographs had information correctly and completely filled on each component of the three parameters (Jere, 2014). All these findings are emanating from studies that were conducted in low resource settings where the partograph has been recommended and advocated that it should be utilized (Lavender, et al., 2006).

During labour, monitoring and documentation of observations begins when the woman is admitted irrespective of at what stage of labour. This is done so that anticipated complications can be detected earlier. But in a study conducted in South Africa by Voce et al (2006), labour records showed that 24% of women that presented with early labour were not monitored and observations not recorded at all during the labour process. Of the women that were monitored, a median score of 40% was obtained for filling in the partograph and correct filling of the partograph was only 21%. On the recording of parameters, filling of foetal condition was in 40%, progress of labour was in 51% and maternal condition was 22% of the partographs. Complications in labour can arise at any moment regardless of how the labour has advanced, hence lack of observational notes during early labour can make the midwifery providers to miss early warning of deviations and implement interventions late.

Documentation of a partograph has also been observed to be done in a retrospective way in certain labour units as well as in some teaching hospitals (Asp, 2011, Delvaux, 2007 and Gans – Lartey, 2012). In a quantitative study conducted in Côte d'Ivoire, where completion of the

partograph was only 5% of the cases, the partograph was completed after delivery in more than 60% of the deliveries (Delvaux et al, 2007). Similarly a study with the same design and methodology conducted by Asp (2011) in Nigeria also showed that foetal heart rate was monitored irregularly and later documented retrospectively on the partograph. In Ghana, a retrospective review of 1847 charts was done at Korle – Bu teaching hospital with the aim of assessing the adequacy of partograph use by skilled attendants and the timeliness of action taken if the action line was crossed (Gans – Lartey, 2013). Findings revealed that only 25.6% (472) of the partographs had complete documentation and some data appeared to be entered retrospectively. These findings from both studies appeared to suggest that the partograph was being used only for record keeping rather than a monitoring and decision making tool in labour. Continuous accurate documentation on the partograph is not only for record keeping but also helps in the provision of necessary interventions. Therefore, it is not known whether partographs that have been plotted or filled in after delivery can be evaluated to determine the type or quality of care that was given to women in labour.

Proportion of Partographs with Complete Documentation of Foetal Parameters

Monitoring and documentation of observations on foetal wellbeing is part of the essential care during intrapartum period. However, other studies have shown that levels of documentation of foetal parameters on a partograph during labour are low (Abebe et al., 2012, Jere, 2014., Qureshi, 2010., and Yisma, 2013). In Ethiopia, though Abebe et al., (2012) found that foetal heart rate was recorded in 79.3% of the charts that were reviewed, other parameters of foetal monitoring had lower recordings. Status of membranes was documented in only 63.8% whilst colour of liquor was documented in only 51.7% of the charts. In this study, the rate of documentation of foetal parameters was higher than in a quantitative study that was conducted by Yisma (2013) in the same region of Ethiopia. In the study, findings showed that foetal heart rate

and colour of liquor were documented in only 30.7% and 26.9% respectively. Furthermore, the degree of moulding of foetal head was documented in only 13.3%. Though these studies were conducted in the same country, rate of documentation might have differed possibly due to healthcare provider's knowledge, skill and attitude on the partograph and differences in study set up. In Kenya, a similar trend of documentation of foetal parameters was also observed (Qureshi et al., 2010). In a rapid assessment of the partographs, it was found that there were minimal recordings of state of liquor and moulding as compared to foetal heart rate which was documented in 53 -90% of the partographs. These studies that looked at documentation of foetal condition in labour are demonstrating that foetal heart rate was the component which had higher rate of documentation unlike other components on foetal monitoring. But in contrast, Jere (2014) found out that foetal heart rate which was documented in 20% of the partographs was the least completely documented parameter as compared to moulding (56%) and colour of liquor (60%). The possible explanation for this contrast might be differences in study set up, availability of modern equipment in other countries which is used to monitor foetal heart rates and operationalization of utilization, correct and complete documentation of a partograph in different maternity units.

The standard way of monitoring foetal condition is by observing foetal heart rate every 30 minutes during active phase of labour and every 15 minutes during second stage of labour. Moulding and colour of liquor is observed during a vaginal examination. But studies that aimed at determining whether the documentation or recordings were done according to standard have shown that most foetal parameters were not documented according to the recommended time (Khonje, 2012., Jere, 2014., Maimbolwa, 1997 and Ogwang, 2009). The study that was conducted by Jere (2014) showed that 20% of the partographs had complete documentation of foetal heart rate according to recommended timing. But in the rest of other studies, the rates were

lower. Studies conducted in Malawi and Uganda by Khonje (2012) and Ogwang et.al, (2009) respectively, found that foetal heart rate was completely recorded according to standard in only 2% and 3% respectively. Khonje's study also revealed that moulding and colour of liquor was not documented according to standard in 41% and 24 % of the partographs. In addition, in a study conducted in Zambia by Maimbolwa et. al., (1997), it was found that there were inconsistencies in foetal monitoring on the partographs that were reviewed. The inconsistency of recordings on foetal condition by midwifery providers cannot provide the relevant evaluation of foetal adaptation in labour and as such foetal distress which leads to asphyxia cannot be detected earlier for prompt interventions.

Proportion of Partographs with Complete Documentation of Labour Progress

Monitoring and documentation of observations on labour progress involves assessment of foetal descent, uterine contractions and cervical dilatation. There are studies that have specifically shown that levels of documentation of these parameters was very low (Abebe, 2013., Burkhalter, 2006., Khonje, 2012., Mdoe, 2012., Ogwang et al., 2009., Quresh, 2010., and Yisma, 2013). In a retrospective chart review conducted in Ethiopia, it was found that both cervical dilatation and uterine contraction were recorded according to standard in 60.3% of the partographs whilst descent had a lower recording of 41% of the partographs (Abebe, 2013). The rate was higher as compared to findings in a study by Yisma (2013), who found that cervical dilatation and uterine contractions were recorded in 32.9% and 20.7% of the partographs. Furthermore in a related study conducted in Uganda (Ogwang et al., 2009), the study assessed on how well were the documentation of observations on labour progress. Findings showed that documentation of cervical dilatation and uterine contractions were recorded according to standard in only 44 % and 24% respectively. Poor documentation was also noted on findings of descent of the foetal head as all these studies showed substandard recording of the parameter. But documentation of all these

parameters was found to be the lowest in a study conducted by Khonje in Malawi where cervical dilatation, uterine contractions and foetal descent was correctly recorded in only 4% of the partographs. In addition, Burkhalter et al., (2006) also identified that 50% (N =245) of the cases did not have any information on observations of uterine contractions. If midwifery providers do not document cervical dilatation, contractions and foetal descent, it means they cannot be able to detect signs of cervical dystocia, uterine inertia and cephalopelvic disproportion respectively which will complicate and cause prolonged and obstructed labour.

Proportion of Partographs with Complete Documentation of Maternal Parameters

Monitoring and documentation of maternal vital signs have also been found to be the parameter that has been poorly documented in some studies (Burkhalter et al., 2006., Jere (2014) and Ogwang et al., (2009). The operations research conducted in Benin, Ecuador, Jamaica & Rwanda showed that maternal pulse rate was never checked in 40% of the partographs with more than 60% of the cases in Benin and Rwanda. But blood pressure was the only maternal parameter that was checked and documented more frequently (0.63 times per hour) than the countries' recommended rate of once in four hours. However, the pattern of incomplete documentation of maternal parameters was also observed in a study conducted in Uganda by Ogwang et al (2009) where blood pressure was not recorded in 48 % of the partographs and only 9.8% had recordings according to standard. On how well, these parameters were documented, Jere (2014) found that blood pressure, and pulse rate were either incompletely documented or not documented at all in 95.1% whilst temperature recordings were incomplete in 88.9% of the partographs.

In all these studies that looked at documentation of different parameters on a partograph, findings show that maternal vital signs are the least documented parameter on the partograph. The studies have also shown that cervical dilatation, foetal heart rate and uterine contractions are the most likely parameters to be documented though not up to a standard level. These findings

may imply that probably health workers have preference on which parameters to document depending on how much time is spend to conduct these specific assessments. It seems that assessment of moulding and descent might be difficult as these need experience and demands more time inorder to make an accurate finding unlike cervical dilatation.

An Association between Partograph Recordings and Neonatal and Maternal Outcomes

Consistent and complete documentation on the partographs has been found to influence decision making in the management of women in labour which has further improved outcomes for both mother and baby (Fawole and Fadare, 2007 and Gans- Lartey, 2012). In a retrospective study conducted at University College Hospital in Ibadan, Nigeria, the aim was to determine documentation of a partograph and its influence on decision making among 445 women who were monitored using a partograph. Findings showed good monitoring and high documentation of parameters. When tracing crossing of alert line in 31.2% of the cases, augmentation of labour was more often resorted to than emergency caesarean section. When tracing action line in 10.1% of the cases, intervention was significantly more likely to be emergency caesarean section than augmentation of labour (88.2% versus 11.8%). The study concluded that the use of the partograph significantly influenced decision making and associated with a positive labour outcome such as good Apgar scores and less maternal complications among both low and high risk parturients. Fawole & Fadare (2007) then suggested that poor documentation and completion of a partograph is the result of poor monitoring which comes because of inadequate assessment and interpretation of findings.

In another related study conducted at a teaching hospital in Ghana, correct and consistent documentation of the partographs was associated with less neonatal injuries. In addition, timely decisions that were taken in only 48.7% (N=472) of the partographs were associated with less assisted delivery and a fewer low Apgar score and admissions in the Neonatal Intensive Care

Unit (Gans –Lartey, 2012). Both studies were done at a teaching facility where the number of health workers is increased due to the availability of student midwives and medical doctors. At a teaching facility, close monitoring and documentation of observations is mostly done by students under supervision of their lectures. It is not known whether the partographs that were reviewed during the study period included those that were filled by students. A true reflection of the study results could be well assessed if all the partographs that were filled by students were excluded from the sample.

On the contrary, substandard recording of parameters can have undesirable outcomes for both mother and baby. Possible relationships have been identified in studies that tested the hypothesis of whether substandard monitoring through incomplete documentation of notes on labour has an effect on maternal and neonatal outcomes (Burglund, 2010., Chalumeau et al., 2002., Khonje, 2012., Kitila et al., 2014., Mdoe, 2012., Nyamtema et al., 2008 and Pirke et al., 2012). In a quantitative retrospective partograph review study conducted in Tanzania by Nyamtema et al., (2008), the aim was to assess the quality of partographs used to monitor labour in Dares Salaam hospitals. Findings showed that 50 % (N = 367) of the partographs had no records of duration of labour. Although cervical dilatation and foetal heart rate were recorded in 97 % and 94% of the partographs respectively, 63% and 91% of these were judged to be substandard as they had inconsistent recordings. The study further revealed that the substandard monitoring of foetal heart rate was strongly associated with poor neonatal outcome such as Apgar score of less than 7 at 5 minutes ($p < 0.001$). Similarly as only 3.9 % of partographs were correctly filled in two of the major health facilities in Malawi, Khonje (2012) found that there was a strong association between foetal heart rate monitoring and neonatal outcomes. The odds of foetal deaths were significantly reduced by 59.6% if foetal heart rate was monitored according to standard. Substandard monitoring of liquor increased the odds of neonatal death by 53.5%.

Khonje also observed that when monitoring of uterine contractions was not done and alert line crossed, the odds of foetal death were significantly increased by 7.5 and 7.3 times respectively. The study used mixed method approach which enhanced the reliability and validity of the findings. However, both study sites were in urban. It is not known whether results from the rural health facility could have been the same. The studies did not measure maternal outcome.

In another retrospective document review on 1051 partographs at Muhimbili National Hospital in Tanzania, low Apgar score and admission of neonates to intensive care unit were some of the adverse perinatal outcomes that were experienced due to substandard recording of foetal, progress of labour and maternal parameters (Mdoe, 2012). On the association between quality of partograph recordings and perinatal outcomes, results showed that substandard records of foetal heart and uterine contraction were associated with Apgar score of less than 7 at 5 minutes. There were 17 fresh still births and 53 newborns had low Apgar score. Furthermore meconium stained liquor was strongly associated with adverse neonatal outcomes as 29 out of 169 babies of those with meconium stained liquor had adverse outcomes compared to 31 out of 697 of those with clear liquor. In relation to maternal outcome, the study found that out of 22 women who got complications during labour, 20% had partographs with substandard records of maternal parameters. However, there was no significant association between substandard partograph recordings and immediate adverse maternal outcomes ($p = 0.8615$). The study was able to give out the effect of substandard recordings on the wellbeing of mothers and neonates.

Inconsistent and incomplete documentation on the partographs has also been found to influence inappropriate and untimely decisions and disrupt continuity of care (Kim et al., 2012., Landry et al., 2014 and Rotich et al., 2011). In the study by Rotich et al (2011), midwives were observed managing a total of 234 women using a partograph at two main referral hospitals in Kenya. Results showed that every partograph used was either incomplete or incorrectly

documented. There were also minimal considerations of the recorded data in determining whether to intervene in the course of labour. For example, the alert line was crossed for 17.1% of the partographs with no intervention being instituted. Furthermore, 2.6% of the partographs showed a waiting time of 3- 16 hours after crossing the action line before interventions were carried out. Though the study did not measure outcome of labour, delays in decision making and implementation of interventions could have an effect on the outcome of both mother and baby.

In a related cross sectional study conducted in Nigeria, a non-participant observation method on 63 mother baby pair was utilized to assess perinatal care at two maternity centres in Lagos (Asp et al., 2011). On plotting of observations, results showed a high rate of plotting parameters with correct intervals on a partograph. Findings also showed that interpretation of the findings and timing of interventions was a challenge. Other cases were found to have been managed with two partographs during the active phase of labour and lasted for more than 12 hours. In addition, only 20.8% of the partographs were documented regarding the crucial points identified. Furthermore, parameters on foetal condition were also monitored and documented retrospectively on the partograph. These malpractices resulted in 2 still births and 2 early neonatal deaths during the study period. These observations were also similar in a study conducted by Fatusi et al., (2007) where despite 76.9% of the partographs being correctly plotted, inappropriate action based on the partograph occurred in 6.6% of the reviewed partographs. The inappropriateness of the actions caused women to experience prolonged labours which affected the Apgar scores of neonates.

In another related clinical audit study conducted by Landry et al., (2014) in five low income countries (Guinea, Mali, Niger, Uganda and Bangladesh) it was noted that rates of partograph use were low as 0 to 23.9 % of the patients files had completed partographs. In addition, among those partographs, only 2.1 to 65.1% of the partographs were correctly

completed. Information on both foetal and maternal parameters was missing in up to 40% of patient's files. Furthermore, in 1.5% to 46.5% of cases, when the action line was crossed, partograph findings did not translate into action. On the neonatal outcomes, findings of the study showed that still births ranged from 23.8% to 98.4 % from all the sites and early neonatal deaths from 3.6% to 52.9%. The primary recorded cause was asphyxia and birth trauma. On the maternal outcomes, a total of 7 maternal deaths occurred in the intrapartum and the commonly recorded complication was anaemia. Since the methodology of the study relied on audit of partographs, lack of complete information on these partographs did not provide all the necessary information that was required during the study period. Improved good and complete documentation could facilitate routine monitoring, reporting and evaluating the care that was offered. These documents can also assist the facility during times of conducting audit of care and identification of problems that would require an improvement or change of practice.

Disruption of care was also noted in a study conducted in Afghanistan at 78 health facilities involving 173 caesarean section deliveries (Mi Kim et al., 2012). Findings showed that only 28% of cases were managed with a partograph. In the management of women, health care workers could fill the registers but fail to correctly enter data on the partograph. Findings showed that although registers and logbooks may have been complete, many charts that were reviewed were missing data on patient characteristics, indications and operative or postoperative procedures. Information on observations on the partograph was missing in 38 % of the cases, information on parity was missing in 23 % of cases, indications for caesarean section was also missing in 9 % of the cases, information on foetal outcomes was missing in 2% of the cases. In the study, it was difficult to justify the decisions for the instrumental deliveries because the partograph had incomplete information. This implies that these incomplete records do not provide an opportunity for continuity of care which has an effect on the quality and outcome of

mothers and babies. Though the studies did not measure neonatal and maternal outcomes, it is a known fact that poor monitoring, interpretation and inappropriate actions can have an effect on the outcome.

In an effort to increase knowledge on the occurrence of substandard care during labour in Sweden, studies on retrospective review of charts over a 10 year period were conducted (Berglund et al., 2010 & Berglund et al., 2011). In a population based study conducted in Stockholm country, Sweden, 313 infants with Apgar score of less than 7 at 5 minutes born in the period of two years were compared with 313 randomly selected controls with a good Apgar score of more than 7 at 5 minutes. Results showed that 62% of the cases and in 36 % of controls were subjected to some form of substandard care during labour. The study also revealed that in half of the cases and in 12% of controls, CardioTocoGraphy (CTG) was noted to be abnormal for more than 45 minutes before births and no interventions were carried out in order to save the situation. The study also found out that oxytocin was provided without signs of uterine inertia in 20% of both cases and controls. As such, uterine contractions were hyper stimulated by oxytocin in 29% of the cases and in 9% of controls (Berglund et al., 2010). Similarly, a nationwide case control study on infants with low Apgar score in a general obstetric population was conducted in the same region of Sweden (Berglund et al., 2011). The aim was to propose suggestions for improvements in care based on conclusions from studies on low Apgar score and substandard care during labour. Results showed that the common flaws were related to misjudgments among midwives and physicians in relation to insufficient foetal surveillance, defective interpretation of CTG tracings and not acting in a timely fashion. This made it difficult for the providers to diagnose foetal distress which led to babies being born with asphyxia and low Apgar scores.

On the relationship between monitoring of maternal parameters and progress of labour with neonatal outcome, some studies found an existing relationship between these variables

(Chalumeau et al., (2002), Kitila et al., (2014) and Mmbanga, 2013). In a survey conducted in 7 urban areas in Ivory Coast, Mali, Niger, Mauritania and Burkina Faso, the aim was to find out whether risk factors for late still births are detectable principally shortly or during labour (Chalumeau, 2002). Data was collected from a prospective population based study in about 20,326 pregnant women. Results identified intrapartum hypertension and dystocia among other factors as the principal risk factors that contributed to 19,870 singleton stillbirths with a rate of 26 per 1000 total births. In the study, it was revealed that inadequate monitoring of maternal blood pressure and cervical dilatation during labour on the partograph was associated with these poor neonatal outcomes. In a related cross sectional retrospective study with 340 delivery records, the partograph was only utilized in 6.9% of the files. The documentation of maternal parameters was done in only 10.5% whilst overall documentation of majority of parameters in 84.2% was substandard (Kitila et al, 2014). The findings showed that 15 women developed Post-Partum Haemorrhage and 12 women had blood transfusion. In addition, results showed that 60 (19.2%) neonates had Apgar score of less than 7 at 5 minutes. There were 24 (7.7%) neonatal deaths during the first 6 hours of delivery and 44 (14.1%) neonates were admitted to nursery. In another related survey conducted on pregnancy and perinatal health outcomes in Tanzania by Mmbanga (2013), the results show that preeclampsia / eclampsia and obstructed /prolonged labour contributed to 88 % and 82 % of the perinatal deaths respectively. Complete documentation of observations can provide an early warning when deviations such as high blood pressure and uterine inertia are occurring in a woman during labour.

Summary

This chapter covered a review of literature on the documentation of a partograph and perinatal outcomes. In order to generate data on documentation, many studies utilized retrospective review of partographs whilst few studies used observational method. In addition,

other studies used randomized and quasi-randomised designs with a small sample size which made it difficult to make generalization of the findings.

The review has shown that though the partograph was developed six decades ago documentation is among the challenges that are affecting correct use. The review has also shown that most studies that were reviewed were from other countries and there is scanty literature on the documentation of the partograph in Malawi.

The studies reviewed demonstrated that foetal, maternal and labour progress parameters are not correctly and completely documented in most partographs during management of women in labour but this is little known in Malawi. These studies have also shown an existing relationship between documentation of observations on foetal, maternal and labour progress parameters and perinatal outcomes. In Malawi, little is known on studies that specifically assessed whether the recordings done on a partograph during labour have an effect on the neonatal and immediate maternal outcomes. This prompted the researcher to carry out a study on partograph recordings and perinatal outcomes.

CHAPTER 3

Methodology

Introduction

Research methodology is a strategy of the study from identification of the topic to dissemination of findings (Burns & Grove, 2011). This section presented a description of the study design, setting, sample size and sampling methods. In addition, the section also described the data collection process, analysis of findings, ethical considerations and study limitations. The study aimed at assessing partograph recordings and perinatal outcomes during intrapartum at QECH in Malawi.

Research Design

According to Burns & Grove (2011), a research design is defined as a blue print for conducting a study which guided in planning and implementation stages in order to achieve the intended goals. The study design was a facility based descriptive cross sectional study that used quantitative methods of data collection and analysis. Descriptive designs are used to collect information about characteristics of phenomena in a particular study field (Burns & Grove, 2011). The design among other things describes the frequency with which something happens, identify problems in current practice, establish associations between variables and provide a true picture of situations (Polit & Beck, 2008; Burns & Grove, 2011). This study described the pattern of how partographs were documented during labour and tried to establish whether there was an association between the pattern of recordings and perinatal outcomes.

The study used cross sectional design because it allowed the researcher to collect data on all relevant variables at one time. The design also allowed collection of information on important health related aspects of people's knowledge, attitude and practices. Therefore, the study tried to

answer the research question of what was the proportion of partographs that were documented according to standards by the providers.

Data were collected from a review of partographs that were used to monitor women in labour during the period from January to February, 2014. The review was done in order to establish the nature of recordings that were done and assess the recorded outcomes for both mother and neonate. The study used quantitative data collection and analysis methods because they provided evidence that describe a phenomenon and explain or predict relationship among variables to determine causality (Schmidt & Brown, 2012).

Setting

The study was conducted in labour and postnatal ward of Queen Elizabeth Central Hospital. The facility is the biggest government tertiary institution in Malawi and is situated in the commercial city of Blantyre. The hospital was opened in 1957 and offers free services like any other government hospital in the country. The services offered include both Basic and Comprehensive Emergency Obstetric and Neonatal care (BEmONC and CEmONC). In the same city there are also other two private hospitals that offer maternity services namely Mwaiwathu and Blantyre Adventist Hospitals. Since there is no government district hospital to provide secondary level of care, the facility receives referrals of women with obstetric complications from health centres located in Blantyre district as well as from districts in the South West Zone. In addition, people living in urban areas near the hospital directly access maternity services without being referred. This, however, has adversely contributed to the congestion of women that exceeds its bed capacity at Queen Elizabeth Central Hospital.

The department of Obstetrics and Gynecology has 7 wards and includes two postnatal wards and one neonatal nursery. During the time of data collection in January through

February, there was only one postnatal ward which was functional as the other ward was having major renovations. Postnatal ward keeps women who have just delivered and are observed for a minimum of 48 hours before discharge. Women who had instrumental deliveries like Caesarian section and other delivery related complications spend more days in the ward depending on their rate of recovery. During the period of data collection, the labour ward had 19 nurse midwives working in day and night shift. There was an average of 7 nurse/ midwives per shift. The availability of part time remuneration package at the facility also allows for more nurse midwives from other departments as well as other hospitals within Blantyre to come and work in the labour ward. This arrangement increases the number of midwives per shift such that sometimes it reaches up to 12. In addition, there is one consultant, registrar and one intern per duty shift.

In the labour ward of QECH, nurse midwives are responsible for admitting women in labour, conduct assessments, interpret findings, make appropriate consultations, conduct normal deliveries and Vacuum Extractions. Clinicians are responsible for conducting assessments, conducting difficult deliveries and performing Ceasarean Sections. Regardless of cadre, all this team of staff is responsible for making appropriate assessments, interpretation of findings and document the observations on a partograph.

The site was chosen because it has the ability of providing Comprehensive Emergency Obstetric and Neonatal Care. Furthermore, QECH is a teaching institution to medical and midwifery students from colleges within the country and is expected to provide high standards of midwifery and obstetric care. The hospital policy also advocates that all women who deliver at the hospital are supposed to have a partograph included in their health records. In addition, since the study was not funded, it was cost effective to reach this facility during data collection because of reasonable transport costs.

Study Population

The study population were all the women who had delivered in the past 24 hours. Reviewing of the partographs at the facility was done from 20th January to 18th February, 2014. The review took two months because on a daily basis, a review was done on partographs of women who had delivered in the previous 24 hours and have met the inclusion criteria. The sample of 246 partographs was therefore reached at on the 18th February, 2014.

Inclusion Criteria

Inclusion criteria are characteristics that each participant (in this case a partograph) must possess to be included in the sample and these characteristics are used to clearly identify the participants of the study (Schmidt and Brown, 2012). In the study, the population were all women who delivered at the hospital and did not present with complications upon admission during the study period of 20th January to 18th February, 2014. These women had an opportunity to have a normal routine monitoring of labour, foetal and maternal progress until delivery. Partographs of women which showed deviations from the normal monitoring of labour after being monitored for at least four hours were also included in the population.

Exclusion Criteria

Exclusion criteria include all characteristics of individuals that should not be included in a sample (Schmidt and Brown, 2012). In this study the exclusion criteria were all partographs that were used for women who presented the following on admission into the labour ward; second stage of labour, cervical dilatation of or greater than 8 cm, antepartum haemorrhage, preeclampsia/ eclampsia, previous uterine scar, IntraUterine Foetal Death (IUFD), elective caesarian section and foetal distress. The partographs were excluded because these women did not have a normal routine monitoring of labour hence did not have the recordings of parameters

according to standards. These partographs therefore did not show a true pattern of how recordings were documented.

Sampling and Sample Size of Partographs

Polit and Beck (2010) describes sampling as a process of choosing a proportion of the population to represent the entire population. The study used a simple random sampling technique which involved the selection of sample partographs from a sampling frame.

The MOH reproductive health standards for intrapartum care stipulates that for a facility to be recognized as providing quality intrapartum care during routine hospital assessments, the score has to be at least 80% of the required verifiable observable indicators of maternity services (MOH, 2008). This score includes availability of equipment and drugs, correct documentation of a partograph, analysis and prompt actions in case of deviations from normal recordings of parameters on foetal, maternal and labour progress. Based on the expected score of 80%, the researcher made an assumption that out of 100 partographs that will be sampled, at least 80 of them will have complete documentation and correct assessments according to the set intrapartum care standards. Therefore the study used an assumption of 80% as a proportion of partographs that have correct and complete recordings. A sample size of 246 partographs based on the assumption of 95% confidence interval and a 5% desired accuracy or standard error was then used in the study. Thus, the sample size was calculated using the following formula: $n = Z^2 P (1-P) \div e^2$ (Lemeshow, Hosmer, Klar & Lwanga, 1990) where n is the required sample size, Z is the value of a normally distributed variable which at 95% confidence interval it takes the value of 1.96, P is the estimated proportion of partographs that have correct and complete recordings and takes 80% and e is the standard error or precision at 5%.

$$\begin{aligned}\text{Therefore number of partographs} &= 1.96^2 \times 0.80 (1-0.80) \div 0.05^2 \\ &= 3.841 \times 0.80 \times 0.2 \div 0.0025\end{aligned}$$

$$= 0.61456 \div 0.0025$$

$$= 245.824$$

$$N = 246$$

The recruitment process.

The investigator reviewed partographs of women who had just delivered in the previous 24 hours. i.e on 20th January, 2014, the investigator sampled and reviewed partographs of women who delivered on the 19th January, 2014. On a daily basis, all the partographs of women delivered within the previous 24 hours and were meeting the inclusion criteria had their admission numbers written on different pieces of paper.

In order to get a random and not a convenient sample, these papers were then mixed in a bowl and one available ward staff member was then asked to handpick 50% of the papers from the bowl in order to get a sample for the day. Written consent was then sought from the women whose partographs were sampled in order for the researcher to get approval of reviewing the partographs. The case record form used to document information from partographs were then given a research number and audited for completeness and adequacy of information on foetal, labour and maternal monitoring of parameters. Data on documentation of maternal and neonatal outcomes was also assessed. The process of sampling and reviewing records continued until a sample of 246 partographs was reached and completed on 18th February, 2014.

Data Collection Tool

Data were collected using a checklist that contained 62 items on monitoring foetal, maternal and labour progress (see Appendix II). The checklist was categorized into 9 sections and was adapted from the recommended World Health Organisation (1994) modified partograph and Malawi's Reproductive Health Standards (2006). The first section on the checklist contained brief personal information of women whose partographs have been sampled for the study. The

second part of the checklist contained information on how foetal parameters had been documented. The foetal parameters assessed were foetal heart rate, quality of liquor, state of membranes, degree of moulding and caput. The third section contained information on documentation of labour progress parameters. The assessment was on strength and frequency of uterine contractions, rate of cervical dilatation and rate of descent of presenting part. The fourth section had information on documentation of maternal parameters like pulse rate, blood pressure, temperature and urine output. The fifth section on the checklist was to assess the documentation of information on vaginal and pelvic examination. The sixth and seventh sections contained information on documentation of delivery notes, status of the new born and state of perineum. A response of **Yes** was given where there was information available for each item under each section and a response of **No** was given where there was no information available on each item. The eighth and ninth section contained assessment of documentation on summary of labour and the grading criteria for each partograph.

On the partograph, the main study variables of interest were foetal, labour progress and maternal components and what was included in each component. Data on foetal monitoring component were obtained by assessing the availability of hourly documentation on foetal heart rate; and information on status of membranes, quality of liquor, moulding and caput formation at each time of a vaginal examination. Data on labour progress monitoring component were obtained by assessing the availability of hourly documentation of uterine contractions and descent of presenting part; and information on cervical dilatation at four hour's interval during active phase of labour, whenever there was spontaneous rupture of membranes and when need arise according to management protocols. In addition, monitoring of labour progress also included information on whether there was documentation when alert and action lines were crossed during labour. Data on maternal monitoring component were assessed through hourly

documentation of respirations, blood pressure and pulse rate, and four hourly documentation of body temperature.

Data on neonatal birth outcome were obtained through assessment of documented information on the neonate soon after delivery and condition of the neonate at the time of reviewing the partograph. The parameters that were assessed were documentation of Apgar score at 5 minutes, still birth, immediate neonatal death, and admission of baby to neonatal nursery. The Apgar score at 5 minutes is the most significant parameter that determines the outcome of the neonate. Data on condition of the mother were obtained through assessment of documented information on immediate maternal outcome such as good or adverse (postpartum haemorrhage, perineal tears and any complication). Other important information that was checked for documentation included personal information like name of the woman, admission number, gravidity, age, date of admission, onset of labour and summary on duration of labour.

After filling the checklist with responses obtained from individual partographs, a grade was given to each partograph depending on the proportion of the components and parameters that were documented or not. In the study, components of a partograph were foetal, labour progress and maternal whilst parameters were details that are found in each component. The foetal component was comprised of foetal heart rate, colour of liquor and degree of moulding as parameters that were assessed. The component of labour progress was comprised of the following parameters: dilatation of the cervix, intensity of uterine contractions and descent of presenting part. The partograph was then graded as completely documented when all the three components (foetal, labour progress and maternal) had information on all the parameters according to standard. A grade of adequately documented was given to a partograph when the three components of foetal, labour progress and maternal had some but not complete information. The partograph was graded as inadequately documented if only two components such as foetal and labour progress or

maternal had information filled in. A grade of grossly inadequate was given to a partograph that had no information on all components or had information on one component only such as foetal or labour progress or maternal.

Data Collection Process

This process involves a systematic gathering of information relevant to the aim of the research, specific objectives, questions or research hypothesis (Burns and Grove, 2011). Data was collected on day shifts from 20th January to 18th February, 2014. Permission was sought from both the unit matron and ward in-charge in order to have an access to the wards. The researcher consulted the ward in-charge and ward clerk of both labour and postnatal wards on modalities of retrieving all files of women admitted and delivered in labour ward on each particular day during the data collection period. Admission numbers of the retrieved files were cross checked with the delivery and postnatal registers in order to ensure that all women who had delivered have been captured in the study population. A written consent was then obtained from the women whose files had been sampled on a particular day. In order to avoid repetition of reviewing the sampled file several times, the woman's file number was recorded on the checklist (Appendix II). The researcher then audited the sampled partographs by inspection of documentation and accuracy of recordings of the parameters.

Validity

Validity of an instrument determines how well the instrument reflects the abstract concept being examined (Burns and Grove, 2011). In order to ensure validity of the tool, the study tool used was based on recommendations from World Health Organisation checklist on how to use a partograph and reproductive health standards developed by Ministry of Health (MOH, 2008). In addition, before the instrument was put into use, it was reviewed by academicians, research

experts and maternal and neonatal health experts.

Reliability

Reliability of an instrument means the degree of consistency with which it measures the attributes it is supposed to measure and be able to give same results each time it is being used (Schimdt and Brown 2012). In the study, the pretesting of the tool was done from 9th to 11th January, 2014 at Mwanza District Hospital maternity unit. A total of 25 partographs which represented 10% of the sample size were reviewed. After pretesting, some questions were rephrased, added and removed in order to refine the tool. The pretest assisted in refining the instrument and check whether the checklist for the partograph would give the researcher similar responses between different settings. In addition, the pretest also informed the researcher if the items on the checklist were accurate and worthy for a study. The exercise also enabled the researcher to determine whether review of partographs was a feasible and practical way of generating data.

Data Management

Information was collected using a checklist which had a number for easy coding. At the end of each data collection day, every completed checklist was rechecked for completeness before leaving the site so that any missing information could be gathered from the partographs. The completed checklists were filed in lever arch file and kept in a lockable drawer for safety and confidentiality. The computed data were kept in the researcher's computer that had a password.

Data Analysis

This refers to the systematic organization and synthesis of research data (Polit and Beck, 2010). In the study, data were coded and entered into Statistical Package for Social Science (SPSS) version 16.0. Before analysis, data were cleaned by running frequencies of all variables to check for incorrect coded and missing data. Missing and incorrect data were cross checked with raw data on the checklist and corrections were made.

Frequencies and percentages were computed for age and gravidity characteristics and the degree of completion of documentation of neonatal, maternal and labour parameters. These have been presented in chapter four. The Chi-square test was used to investigate association among all the variables at 5% level of significance.

Plan for Dissemination of Results

The researcher plans to present the results at a national research dissemination conference that is usually organized by College of Medicine. The results will also be disseminated during staff meetings at maternity department at QECH. In addition the study will be submitted for peer review, and if accepted, it may be published locally and internationally. Copies of the research findings will also be submitted to Kamuzu College of Nursing Library as well as the College of Medicine Research and Ethics Committee.

Ethical Considerations

The study proposal was presented for review to College of Medicine Research and Ethics Committee and a clearance was granted (Appendix III). In addition, the researcher also obtained a written clearance from the District Health Officer for Mwanza district hospital (Appendices IV and V) and from the Director of Queen Elizabeth Central Hospital (Appendix VI). During data collection, staff in both postnatal and delivery units were notified about the research through the

unit matron. There was minimal consultation with the ward staff on matters relating to data collection. This was done in order to ensure that patient care was not affected and interrupted. Since the study involved review of patient's documents, all the information obtained from the partographs remained confidential. Names of women whose partographs were reviewed were not used and their files were identified by allocating a research number. There was no concentration on names of providers who conducted deliveries or filled the partograph. In addition, during the data collection period, patient's files were being returned to the right hospital authorities (data clerks) immediately after extracting the required information. There was also no access of raw data to other health providers and after data collection, nobody had access to the data apart from the researcher. After data analysis the research instruments were kept in lever arch file and will be destroyed after completion of study.

Study Constraints/Limitations

The first limitation of the study was that it was confined to partographs that were used at Queen Elizabeth Central Hospital (QECH) maternity unit. Therefore, the findings may not be generalized to other maternity facilities. Finally, the study was undertaken in part of the partial fulfillment of academic requirements, as such it had limited time factor.

CHAPTER 4

Study Results

Introduction

This chapter presents findings of a descriptive quantitative study which was conducted to assess partograph recordings and perinatal outcomes during intrapartum period at Queen Elizabeth Central Hospital. The findings are presented according to the study objectives which were to: describe the proportion of partographs which had complete documentation of parameters according to WHO standards, determine whether there was an association between partograph recordings and neonatal outcomes and determine whether there was an association between partograph recordings and immediate maternal outcomes.

During the data collection period, there were 834 deliveries and all of them utilized a modified WHO (1994) partograph which was attached to each patient's file. A total of 504 partographs met the inclusion criteria and 246 partographs were sampled and reviewed. The first part of the presentation describes the age group and gravidity characteristics of the partographs that were reviewed.

Age Group and Gravidity Characteristics of the Women Whose Partographs were Reviewed

The study population comprised 55.3 % (n = 136) of partographs of multigravida as compared to primigravida (44.3%, n = 109). Out of 109 primigravidas, 68 (82.9%) were below 20 years of age. The other age group and gravidity characteristics have been summarized in Table 1.

Table 1: Age group and gravidity characteristics of women whose partographs were reviewed (N = 246)

	Total	Partographs of Primigravida		Partographs of Multigravida		Not indicated	
		Frequency	%	Frequency	%	Frequency	%
Total	246	109	44.3	136	55.3	1	0.4
< 20 years	82	68	82.9	14	17.1	0	
21 - 34	147	40	27.2	107	72.8	0	
> 35 years	16	1	6.3	15	93.8	0	
Not Indicated	1	0	0.0	0	0.0	1	

Modes of delivery in relation to parity

The modes of delivery for women with different parity are summarized in Table 2. There were 59% (n = 90) multigravida women who had Spontaneous Vertex Deliveries. There was no much difference in delivery through Caesarian section between primigravida (52 %, n = 34) and multigravida (48% n = 32).

Table 2: Mode of delivery in relation to parity (N = 246)

	Total	Partographs of Primigravida		Partographs of Multigravida		Not indicated	
		Frequency	%	Frequency	%	Frequency	%
Total	246	109	44.3	136	55.3	1	0.4
SVD	152	62	41	90	59	0	
V/Extraction	20	10	50	9	45	1	5
Caesarian Section	66	34	52	32	48	0	
Breech	8	3	38	5	62	0	

Degree of Completeness of Documentation on the Partograph

During labour and delivery, information is generated through documentation of personal details and observations on the following components: progress of labour; foetal and maternal condition. Observations on progress of labour involve checking and documenting parameters on cervical dilatation every four hours, when membranes rupture and when need arise. In addition, uterine contractions and descent of presenting part are also checked and documented hourly. Observations on foetal condition involve half hour checking and documentation of foetal heart rate. State of membranes, quality of liquor and degree of moulding are checked and documented during each vaginal examination. Observations on maternal condition involves checking and documentation of parameters of blood pressure, pulse rate and respirations hourly; and checking and documentation of maternal body temperature four hourly.

In this study, documentation on each partograph was summarized and given a grade of **complete, adequate, inadequate and grossly inadequate** according to the extent of the information that was contained on each component. Partographs were graded as **complete** if they had complete documentation of details and observations on all the three components. Partographs were graded as **adequate** if all the three components had information but lacking some information in some parameters. Partographs were graded as **inadequate** if only two components had information filled in. Finally a grade of **grossly inadequate** was given to a partograph if only one of the three components of a partograph had information or when all the three components did not have information.

Overall, it was observed that most of the charts were not documented completely with observations that are supposed to be done during labour and delivery. Only 1.2 % (n = 3) of the partographs had complete documentation of information on all the three components (foetal,

labour progress and maternal) according to guidelines. A summary of the proportion of partographs with varying degrees of completeness of recordings is shown in Table 3.

Table 3: Degree of completeness of documentation on partographs (N = 246)

Grading	Frequency	Percentage
Complete	3	1.2
Adequate	77	31.3
In adequate	142	57.7
Grossly inadequate	24	9.8

The following section presents the proportion of partographs that had complete recordings under each component namely personal, foetal, labour progress and maternal.

Proportion of Partographs that had Complete Recordings on Personal Details

The partographs were checked if they had complete information on the component of personal details such as name, age, parity and gravidity. Documentation of information on date and time of admission of a woman in labour and time of onset of labour was also checked. The component was graded as standard if it had all the necessary personal information. The component that did not have complete information on personal details was graded as substandard.

About 71.5 % (n = 176) of the partographs were completely filled with information on personal details. About 18.3% (n = 45) of the partographs did not have information on time of onset of labour whilst 7.7% (n = 19) of the partographs did not have details on time of admitting a woman in labour and delivery ward.

Proportion of Partographs that had Complete Recordings on Foetal Condition

During labour, observations on foetal condition involves monitoring of foetal heart rate half hourly. The status of membranes, quality of liquor and degree of moulding is monitored at every vaginal examination. In the study, documentation of these findings was graded as not recorded when the partograph had no information on monitoring of foetal condition; substandard when the observations were not done according to the recommended timing and standard when they were done according to the recommended timing.

The study revealed that 85.8%, (n = 211) of the partographs were graded as substandard because foetal heart rate was not documented according to the recommended timing. The grading of other parameters of the foetal condition such as moulding and status of membranes is shown in Table 4.

Table 4: Grading and documentation of partograph on foetal parameters (N = 246)

Characteristic	Not recorded	Substandard	Standard
Foetal heart rate	29 (11.8%)	211 (85.8%)	6 (2.4%)
State of membranes	40 (16.3%)	199 (80.9%)	7 (2.8%)
Degree of moulding (n = 234)	54 (23.1%)	143 (61.1%)	37 (15.8%)

Adverse Neonatal Birth Outcomes

The reviewed partographs showed that out of 246 births, 4 of the neonates were fresh still births whilst 35 neonates were admitted in neonatal nursery for various reasons (Table 5).

Table 5: Reasons for Neonates Admission to Neonatal Nursery (n = 35)

Characteristic	Frequency
Low Apgar score	21
Not recorded	6
Congenital anomalies	4
Observations	3
Meconium Aspiration	1

Proportion of Partographs that had Complete recordings on Progress of Labour

Parameters

Monitoring progress of labour involves observation of rate of cervical dilatation every four hours or when need arise; observation of intensity, strength and duration of uterine contractions every hour and observation of descent of foetal head hourly. A summary of the documentation was graded as not recorded when there was no information; substandard if it was not done according to recommended timing and standard if it was documented according to recommended timing.

The results showed that cervical dilatation was the parameter that was mostly documented according to the required standard (33%, n = 83) of the partographs when compared to others as presented in Table 6. Progress of labour is also determined through documentation of observations on the timing, interpretation of alert and action lines. The partograph has an action line that show slow progress and indicates the timing of interventions for failure to progress or prolonged labour. During labour when the action line is reached, health providers are supposed to carry interventions that would correct any deviations from the normal labour. Results of the study

show that 35.4% (n = 87) of the partographs indicated that labour reached action line and required interventions to correct the deviations. Only 75.6% (n = 65) of those partographs indicated that decisions for further management of labour were made.

Table 6: Grading of the partograph on recordings on labour progress (N = 246)

Characteristic	Not recorded	Substandard	Standard
Cervical dilatation	13 (5.3%)	150 (61%)	83 (33.7%)
Contractions	19 (7.7%)	216 (87.8%)	11 (4.5%)
Descent (n=239)	20 (8.4%)	205 (85.7%)	14 (5.9%)

On the timing of interventions, 13.8% (n = 34) of the partographs indicated that it took more than 2 hours before decisions to intervene were made. Only 5.3% (n = 13) of the partographs showed a waiting time of less than 30 minutes before decisions were made. Furthermore, it also took more than 2 hours for these already made decisions to be implemented in 18.7% (n = 46) of the cases. Only 4.1% (n = 10) of the partographs showed a less waiting time of 30 minutes before implementing the interventions for further management of labour. The most intervention that was taken by health workers when labour had passed action line was planning for an emergency caesarian section (19.5%, n = 48). Other interventions were augmentation of labour with oxytocin (5.3%, n = 13), artificial rupture of membranes (1.2%, n = 3) and Vacuum extraction (0.8%, n = 2)

Proportion of Partographs with Complete Documentation on Maternal Parameters

Table 7 summarises the documentation of maternal parameters. Documentation of maternal condition was checked in terms of monitoring of blood pressure, pulse rate and respirations hourly. Maternal body temperature was checked if documented at every four hours. The overall recordings on parameters on maternal condition were graded as not recorded if there was no information on the partograph; substandard if recordings were not documented according to the recommended timing and standard when the recordings were documented according to the recommended timing. Results showed that blood pressure was the most parameter that was recorded in a substandard way (31.3%, n = 77) as compared to other parameters.

Table 7: Documentation and grading of partograph on maternal parameters (N=246)

Characteristic	Not recorded	Substandard	Standard
Blood pressure	161 (65.4%)	77 (31.3%)	8 (3.3%)
Pulse rate	172 (69.9%)	66 (26.8%)	8 (3.3%)
Temperature	216 (87.8%)	21 (8.5%)	9 (3.7%)
Respirations	222 (90.2%)	16 (6.5%)	8 (3.3%)

Immediate Adverse Maternal Outcomes

Immediate adverse outcomes occurred in 11% (n = 27) of the women whose partographs were reviewed. Postpartum haemorrhage (48.1% n = 13) was the commonest adverse outcome as compared to others as presented in Table 8.

Table 8: Adverse maternal outcome (n = 27)

Characteristic	Frequency
Post-Partum Haemorrhage	13
Third degree tear	5
Cervical /uterine tear	4
Pre-eclampsia/Eclampsia	4
Bladder injury	1

Comparison between Partograph Recordings and Neonatal Birth Outcome

The results showed that the components of the partograph (foetal, labour and maternal) that had parameters which had recordings documented according to required standard yielded less number of neonates that experienced adverse effects unlike the parameters that were not documented according to standard. In the study, good outcomes were defined as Apgar score of more than 7 at 5 minutes. Adverse outcomes were defined as still birth, immediate neonatal death, Apgar score of less than 7 at 5 minutes and admission to neonatal nursery with asphyxia related conditions. A comparison of partograph recordings and its perinatal outcomes is shown in Table 9.

Table 9: Comparison of partograph recordings and neonatal outcomes

Characteristic	Neonatal Outcome			
	Good		Adverse	
	Frequency	%	Frequency	%
Foetal heart rate (N=246)				
Standard (n = 6)	5	83	1	17
Substandard (n =211)	181	86	30	14
Not recorded (n =29)	25	86	4	14
Moulding (n =234)				
Standard (n =37)	36	97	1	3
Substandard (n =143)	119	83	24	17
Not recorded (n =54)	46	85	8	15
Descent (n =234)				
Standard (n =11)	8	73	3	27
Substandard (n = 202)	173	86	29	14
Not recorded(n =21)	18	86	3	21

Determination of an Association between Partograph Recordings and Neonatal Outcomes

A Chi – square test ($p \leq 0.05$) was used to determine a statistical association between partograph recordings and neonatal birth outcome. There was no association between recordings of foetal parameters (foetal heart rate, status of membranes and degree of moulding) and neonatal birth outcome ($p = 0.713$) as shown in Table 10.

Table 10: Association between recordings of foetal parameters and neonatal birth outcome

Value (x ²)	df	p-value
.675	2	0.713 **

** Not significant at 5%

Determination of an Association between Partograph Recordings and Immediate Maternal Outcome

A Chi – square test ($p \leq 0.05$) was used to determine whether there was a statistically significant association between quality of recordings of maternal parameters in labour and immediate maternal outcome (adverse or good). The results showed that there was no association between recordings of maternal parameters in labour and immediate maternal outcome ($p = 0.651$) as presented in Table 11.

Table 11: Association between partograph recordings and immediate maternal outcomes

X²	df	p value
.858	2	.651**

**** Not significant at 5%.**

The present findings suggest that there is no association between how recordings of maternal parameters are documented on the partograph during labour and the immediate maternal outcome and that the two variables are independent of each other.

Summary

This chapter presented findings for the study on assessing of partograph recordings and perinatal outcomes. The study results have shown that most parameters for both mother and neonate during labour are either not recorded or recorded in a substandard manner by revealing that only 1.2% (n=3) of the partographs were properly and completely documented according to WHO (1994) standard. The results also revealed that there was poor interpretation of partograph findings as well as long observation of deviations without taking proper and prompt action to correct them. On the maternal outcomes, the study did not find an association between partograph

recordings and immediate maternal outcomes and results were not significant ($p \leq 0.05$). Though results were not significant, most women experienced adverse outcomes such as preeclampsia, post-partum haemorrhage and uterine tears.

CHAPTER 5

Discussion

Introduction

This study focused on the assessment of partograph recordings and perinatal outcomes during intrapartum at Queen Elizabeth Central Hospital. The objectives of the study were to describe the proportion of partographs which had complete documentation of foetal, maternal and progress of labour parameters according to standard; determine if there was an association between partograph recordings and neonatal outcome; and determine if there was an association between partograph recordings and immediate maternal outcome.

In the chapter, a discussion on the results has been presented in the following manner; the proportion of partographs with complete documentation of foetal, labour progress and maternal parameters in general. Specifically, the discussion has also looked at the proportion of partographs with complete documentation for each parameter on the partograph separately. Association of partograph recordings with neonatal and immediate maternal outcomes has also been presented. Study recommendations, implications and limitations are also presented in the chapter.

Proportion of Partographs with Complete Documentation on Foetal, Maternal and Labour Progress

This section covered the proportion of partographs that had complete documentation of all the three parameters of labour (foetal, maternal and labour progress) in general. The section also covered proportion of partographs that had complete documentation on the specific parameters of labour. The study had found that there was a small proportion (1.2%) of partographs that were completely and correctly documented on all the parameters of labour according to standard. A

high proportion of partographs (57.7%) had incomplete information on all the three components of labour (foetal, maternal and labour). The documentation of the partograph has been seen to be a challenge not only in this study but also in other studies that were done to assess the completion of documentation of a partograph in labour (Burkhalter et al., 2006 and Regional Centre for Quality of Health [RCQHC]), 2008. In a study conducted in Kenya and Uganda, results showed that only 14 % of the partograph records had correct and complete documentation of the events in labour according to standard (Regional Centre for Quality of Health [RCQHC], 2008). But this rate of completion was higher than in similar studies done in Malawi, Ethiopia., Nigeria, and Tanzania (Khonje 2012., Yisma et al. 2013., Opia et al., 2012., Rotich.et al., 2011., Ogwang et al.,2009., & Nyamtema et al., 2008). The studies showed completion of partographs ranging from 2% to 8.9% and most parameters were found to be documented in a substandard manner.

This was in contrast with a multicenter trial study that was conducted by WHO (1988) where correct completion on a partograph was high (91.7%) suggesting that it was practical and feasible for a health provider to document the parameters according to the set standard (WHO, 1994). The differences with the present study could be due to different study set up and the provision of orientation of providers on the use of a partograph before the study was conducted. Studies have demonstrated that provision of training, coaching and mentoring have assisted in improving knowledge, skill and attitude of health care workers on how to document the partograph correctly and completely (Abebe, 2012., Fadhy & Chongsuvivatwong, 2005 and Petterson et al., 1999). In Indonesia, a cluster randomized control study of 20 midwives was conducted in the management of 304 women in labour. The results showed that 92.4% of the partographs were completely filled following training of the midwives. In addition, midwives were also able to analyse and interpret the alert and action lines as they were early detections and

referrals of complicated cases to the next level of care in 65% of the intervention group.

Similarly, in a related study in Angola, Petterson et al., (1999), found that after in-service education of the health workers, 7 out of 10 measured variables on each partograph (N=50) were correctly documented according to standard.

During labour, partographs are part of medical records and they require good record keeping. According to Pirke, Dumont, & Zunzunegui (2012), good record keeping which comprises of both the documentation and archiving of medical information assists in the management of patients while serving vital educational and epidemiological purposes. Studies on the quality of medical records have demonstrated that problems in documentation highlight the link between adequate recordkeeping and quality of care and incomplete records are viewed as not reliable resources for good medical care (Pourasghar et al., 2008 & Landry et al., 2014).

Incomplete documentation of parameters contributes to lack of coordination and continuity of care when multiple personnel and shifts of personnel are involved in the care of the women. During change of shifts, health care providers might resort to verbal transmission of information if records of observations are incomplete. The disadvantage of verbal transmission of observations in labour is that it is not reliable and does not reach all staff. In the present study, some women spent more than 8 hours in the labour ward which is beyond one working shift. It is possible that there was verbal exchange of information during the change of shifts. It is difficult to establish whether providers relied on the incomplete information on the partographs or verbal information from fellow providers when they were providing the care. Findings of the study cannot conclusively determine whether the incompleteness on the documentation of the partograph was due to poor management of labour or simply inappropriate completion of the instrument. However, if one is to go by the recordkeeping, it could indicate that most women

were not properly managed during labour and delivery.

Proportion of partographs with complete documentation of foetal parameters.

In relation to documentation of observations on foetal condition, the study revealed that 11.8% (n = 29) of the partographs did not have any recordings on observations of foetal heart rate during labour. The number of partographs with no records on foetal heart rate was much lower in this study as compared to a similar study conducted in Brazil where 29 % of the partographs did not have records of foetal monitoring (Giglio, 2007). Although the study had revealed that 85.8%, (n = 211) of the partographs had records of observations on foetal heart rates, these observations were also not completely documented. Only 2.4% of the partographs had complete documentation as recommended by WHO (1994). Different partographs lacked one or more details on foetal monitoring such as heart rate, degree of moulding, state of membranes and colour of liquor (Table 4). Other partographs showed that timing of observations and documentation of foetal heart rate was beyond the WHO (1988) recommendation of 30 minute's interval. The trend was also similar to studies conducted in Uganda and Tanzania where foetal parameters were documented in 2% and 32.3% of the partographs respectively (Ogwang et al., 2009 & Mdoe, 2012). Foetal heart rate and state of liquor are two most important parameters which are used to detect foetal distress. Since partographs lacked details of foetal monitoring, there was a probability that signs of foetal distress could not have been detected on time. In Malawi, foetal distress is one of the three major birth complications and contributes to 22% of neonatal deaths (NSO, 2010).

Proportion of partographs with complete documentation of labour progress.

During the study period, each woman admitted in labour ward was monitored and managed using a partograph. Though each woman had a partographs (N = 246), the study

showed that details on the time of onset of labour and time of admitting a woman in labour ward were not documented in 18.3% and 7.7% of the partographs respectively. Lack of information on onset of labour was also highlighted in a study conducted in Tanzania which showed that 50% of the partographs did not have records of duration of labour (Nyamtema et al., 2008). Information on time of admitting a woman in labour as well as onset of labour aids the providers to monitor the duration of labour and prevent the woman from experiencing prolonged labour. Prolonged labour has been found to be associated with different complications such as asphyxia and obstetric birth trauma on both neonatal and maternal respectively (Dangal, 2006; Friedman et al., 1969; Gupta, 1987 and Kwast, 1973). In Malawi, prolonged labour is one of the direct causes that contributes to 4.1% of maternal deaths (NSO, 2010).

During labour, assessment of contractions helps in identifying regularity, duration and intensity of how the uterus is responding to labour. In addition, contractions have also an effect on cervical dilatation. In this study, only 4.5 % of the partographs were completely documented on progress of labour (contractions, cervical dilatation and descent). This proportion is much lower when compared to the findings of a study done in Brazil where almost 50% (N = 404) of the reviewed partographs had no evaluation of uterine dynamics (Giglio et al., 2007). The difference could be a gap of time between the studies, different hospital policies and availability of evidence based interventions that enhance the use of partograph for improved intrapartum care. Failure to show how the uterus is contracting may lead to failure to detect slow progress of labour by midwifery providers. Coupled with lack of information in some partographs on time of labour onset (18.3%) and admission of women in labour (7.7%) it was evident in the study that some women stayed in labour for prolonged hours. Furthermore, failure to record how the uterus was contracting may have made some midwifery providers to use oxytocin for augmenting

labour among laboring women (n =13) without making a correct and evidence based diagnosis of uterine inertia. Therefore, it might not be surprising to note that some women experienced complications of prolonged labour such as postpartum haemorrhage (13) uterine ruptures (n =4) and bladder injury (1). These maternal complications were also found to be similar to a study conducted in Tanzania that aimed at determining if there were immediate maternal adverse outcomes for women whose partographs were not documented according to the standard guidelines (Mdoe, 2012).

On the same progress of labour parameters, cervical dilatation was the only parameter that had a higher (34%) frequency of documentation according to WHO (1994) recommendations as compared to documentation of contractions and descent which were recorded in 11 % and 14 % of the partographs respectively. This high frequency of recording cervical dilatation in this study as compared to other parameters was similar to the findings of the studies in Malawi, Uganda and Kenya where cervical dilatation was observed in more than 75% of the reviewed partographs (Jere, 2014, Ogwang et al., 2009 & Rotich et al., 2011). Findings seemed to reflect that focus on the recording of the progress of labour on the partograph was much directed on the dilatation of the cervix unlike other parameters such as uterine contractions and descent of presenting part. Probably midwifery providers find it easier to monitor cervical dilatation because it is done every 3 or 4 hours or when need arise unlike assessments for descent and contractions which are supposed to be done every hour.

The partograph has alert and action line that determines the progress of labour. Interpretation and decision making on findings on these two lines may have an effect on the outcomes of labour on both mother and foetus. The alert line on the partograph is a prompt indicator that shows early deviations from labour progress and the ability for prompt recognition

of these deviations must be well demonstrated by the midwives and other obstetric staff. On the other hand, the action line provides an opportunity for correcting the deviations by the staff with the requisite skill. In the study, results showed that 35.4% (n=87) of the partographs had indicated that labour crossed action line. Out of these 87 partographs, only 74.7 % (n = 65) indicated that decision for further management of labour were made when the action line was crossed. The remaining 25.3% (n = 22) of the partographs meant that decisions were not made after labour crossed action line. In this study, failure by midwifery providers to make decision when labour crossed action line was probably related to the development of birth complications such as asphyxia and low apgar score in 31 % (n=35) of the neonates. In a study that was conducted in peripheral maternity clinics in Senegal, results showed that the alert line was crossed in 9.8% of the cases (N = 1022) and had a predictive value of 17% for neonatal resuscitation (Dujardin, et al., 1992). Further findings showed that when alert line was crossed, neonatal resuscitation was 4 times more than the normal labour group. In addition, when the action line was crossed, the rate for fresh still birth was 10 times higher than normal labour. These findings may suggest that the timing of the intervention at the action line is the determinant of the outcome.

Proportion of partographs with complete documentation of maternal parameters.

Documentation of information about vital signs (blood pressure, pulse rate, respiration and temperature) varied in the partographs that were reviewed. The results showed that only 3.3% of the partographs had information on blood pressure monitoring whilst 65.4% (n=161) of the partographs did not have any record of blood pressure of women even on admission. These results were similar in studies conducted in Tanzania and Afghanistan's maternal health facilities where there was low compliance of recording data on maternal vital signs (Broughton et al.,

2013., Nyamtema et al., 2008., & Urassa, 2003). Globally, hypertensive disorders contribute to 14 % of all maternal deaths and early detection and treatment of these disorders are the key elements in prevention of complications such as preeclampsia and eclampsia (Dolea & Abouzahr, 2003., Khan et al, 2009 & WHO, 2012). In a study conducted in Tanzania, Urassa et al (2003) identified counselling, asking about danger signs for hypertensive disorders and checking blood pressure as the two key screening elements in the detection and prevention of complications. Both activities are easy to perform. In this study, the process of checking and documenting records of blood pressure was not done according to the WHO recommended standard of checking the component every hour. By documenting only 3.3% of the partographs, almost over 90% of women missed an opportunity of being screened from hypertensive disorders on admission. This could have contributed to few (n = 4) women to develop complications such as preeclampsia and eclampsia during labour. Probably, these could have been detected during admission leading to a better course of action. In related studies within Sub Saharan Africa and elsewhere, maternal hypertensive disorders such as preeclampsia/ eclampsia have been found to be the leading cause of the maternal conditions that contributed to perinatal deaths (Mmbaga et al., 2012, Schimiegelow et. al., 2012 & Ben Hamida Nouaili et al., 2010). In Malawi, severe pre-eclampsia/ eclampsia is among lethal complications for the mother and contributes to 1.8% of the cause- specific case fatality rates (MoH, 2010).

In the study, pulse rate, temperature and respirations were not recorded in 69.9%, 87.8% and 90.3% of the partographs respectively. During labour, monitoring of pulse rate, respirations and body temperature of women helps in determining whether there are signs of maternal exhaustion. Most of the partographs did not present continuous recordings of these vital signs therefore it was difficult to determine whether women developed maternal exhaustion during

labour. Maternal exhaustion is commonly present in cases of prolonged labours and it has a negative effect on outcomes of labour. In a related study conducted in Iran among 100 women who were being monitored in labour, it was found that there was a significant relationship between maternal fatigue and uterine contraction as the return time of a contraction from its peak to its baseline (fall) increased with increase in severity of fatigue. The findings also showed that the length of the fall time was longer in prolonged labours than in normal labours (Ebrahimzadeh et al., 2012). Therefore based on these findings, it can be assumed that probably a small sample of women who experienced signs of prolonged labour was due to maternal fatigue which was not easily detected and acted upon promptly. Availability of adequate information on these observations of maternal vital signs could have helped the midwifery providers to offer strategies that would prevent maternal exhaustion and reduce its related complications.

Determination of an Association between Partographs Recording and Neonatal Outcomes

During labour, deviations in all the parameters can affect the foetus or neonate. As observed from the study, incomplete documentation of foetal wellbeing could have the potential to adversely impact decision making and care during labour. From the findings of the present study, the presence of partographs with either no or incomplete records on foetal monitoring during labour, may suggest the reason for occurrence of still births (n=4) and increased number of neonates (n = 22) who were admitted to neonatal intensive care unit with asphyxia related conditions. The review of the partographs did not clearly show at what point asphyxia was detected or identified during labour. These findings may suggest that probably signs of foetal distress may not have been detected on time. Early detection and timely intervention on obstetric complications are the most important activities to prevent maternal and perinatal mortality and morbidity (Lawn et al, 2005). Apart from causing still births and early neonatal deaths, foetal

hypoxic injuries are responsible for more than one million disabled survivors with long term neurodevelopment injury including cerebral palsy, mental retardation, blindness, long term intellectual impairment and behavioural problems (Lawn, et al., 2005; WHO, 2005; & Maulik, et al., 2007).

The study also showed that foetal heart rate was not recorded in 11.8% of the partographs and it was recorded in a substandard rate in 85.8% of the partographs. In the study, there was no statistical significant association between substandard recordings of foetal heart rate with adverse neonatal outcome ($p = > 0.05$), which could have been due to a smaller sample size ($N = 246$). However, the presence of asphyxia related neonatal admissions in the study may indicate that during labour there could have been some signs of foetal distress which were not detected due to irregularities of monitoring and documenting of foetal heart rates. However, in other related studies conducted within the Sub-Saharan region that used larger sample size and conducted over longer period of time, there was an association between substandard foetal heart rate monitoring during labour and Apgar score of less than 7 at 5 minutes and still births (Jammeh et. al., 2010., Kidanto et al., 2009., Mdoe, 2012., Nyamtema et. al., 2008 and Yisma, 2013). Similarly, other related studies conducted in developed countries (Sweden) and low resource settings outside Sub Saharan region (Nepal) have also demonstrated that low Apgar Scores and still births occurred because of substandard monitoring of foetal condition during labour (Berglund et al., 2008, Berglund et al., 2010 & Jammeh et al., 2010). Findings of these studies further showed that the main reasons for substandard care were related to misjudgments among midwives and physicians relating to foetal heart rate patterns, inadequate foetal monitoring and failure to recognize foetal distress. The second contributing factor was when midwives/obstetricians were unable to act in a timely and appropriate manner when foetal heart

rate patterns indicated foetal distress. According to a study conducted by Landry (2014), routine monitoring, documentation and partograph use were important elements of quality improvement for maternity service as they reduced rates of perinatal mortality such as stillbirths or early neonatal deaths.

Determination of an Association between Partograph Recordings and Maternal Outcomes

Though the study did not find an association of partographic recordings and immediate maternal outcomes, there were delays in both decision making and acting upon promptly when decisions were made during labour. The study has shown that though 74.7% (n = 65) of the cases had decisions made on further management of labour when labour crossed action line, 29 women waited for more than 2 hours before the planned interventions were implemented. Delays in decision making could be attributed to lack of documentation on observations which made providers not to have a quick clear pictorial view and interpret how labour was progressing. As a result, women stayed in labour for prolonged hours than anticipated hence putting them at risk of developing adverse outcomes such as bladder injuries and other traumas. Late detection of complications during delivery and delay in adequate treatment and management in the hospital are the 'third' type of the three main delayed factors that contribute to maternal morbidity and mortality (Barnesh – Josiah, et al., 1998). The consequences of third delay in receiving care were also found to have an impact on adverse perinatal outcomes in verbal autopsy studies done in India, Tanzania and Kenya (Bapat et al., 2012., Mbaruku, et al., 2009, Rotich, et al., 2011 & Schiemiegelow et al., 2012). In another related study, there was a high risk of uterine rupture after the partographic alert line was crossed in women who were undergoing trial of labour following previous Caesarian section (Khan, Rizvi & Rizvi, 1996). As a central referral hospital that provides both Basic and Comprehensive Emergency Obstetric and Neonatal care, there is

always an expectation that all these services will be provided in a timely manner. In addition, the central hospital staff is comprised of personnel with appropriate experience and different expertise and it is expected that quick decisions are to be made and acted upon based on the expertise and skill of providers.

Conclusion

The partograph assists midwifery providers to recognize any deviations from normal labour and manage these deviations promptly. Therefore during labour, good record keeping is key to the validity of any assessment of foetal, maternal and progress of labour parameters. The principle of clinical audits assumes that what was documented was actually performed and what was not documented was not performed.

Results of the study showed that most of the partographs had recorded observations on foetal, maternal and labour progress below the recommended WHO (1994) guidelines. Although it is believed that the partograph if used consistently can improve perinatal outcomes, incompleteness of recordings on the partograph makes midwifery providers miss danger signs which might result in adverse outcomes for both mothers and neonates.

Recommendations

Findings of this study have the following implications to various stakeholders in improving proper recording of observations on the partograph:

- Some studies conducted elsewhere have demonstrated that poor documentation of a partograph was related to inadequate resources, limited personnel and lack of supportive supervision of personnel working in labour ward. Since at QECH, it is not known as to why documentation of partographs was incomplete, there is need to investigate on the reasons as to why the partographs were not being properly documented at QECH.

- There is need for the facility to conduct clinical maternal and neonatal deaths audits regularly in order to create an opportunity for reviewing the progress on improved documentation. These audits should cover both normal and abnormal labours and their complications (i.e. maternal deaths, still births) and they should involve all staff working in labour ward.
- The facility needs to develop and paste standard operating procedures in strategic places within the labour ward which would serve as reminders to all workers in the ward. These Standard operating procedures must be in line with the recommended WHO (1994) guidelines on use of a partograph.
- Since the study has found that most partographs were incompletely documented, there might be more noncompliance with other Standard Operating Procedures in the management of women in labour. Therefore, there is need to conduct a wide evaluation of provider's compliance with other management protocols in the monitoring of women in labour.
- The regulatory bodies of Medical and Nurses/midwives should consider incorporation of correct documentation of a partograph as part of CPD checklist.

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Appendices

Appendix I - A: Participant's information sheet and consent form

PART A: Information sheet

Assessing partograph recordings and perinatal outcomes during intrapartum period at Queen Elizabeth Central Hospital

I wish to ask you to take part in a research study on assessing quality of partograph recordings and perinatal outcomes during intrapartum period at Queen Elizabeth Central Hospital. Before you decide to participate in the study, it is important for you to understand why research is being done and what will it involve. Please feel free to ask anything that is not clear to you or where you want information.

I am Isabella Chisuse, a student at Kamuzu College of Nursing pursuing Masters Degree in Midwifery. I am conducting a study in partial fulfillment of this qualification. The study is aiming at assessing the quality of partograph records and their effects on maternal and neonatal outcomes. The findings of this study will help to evaluate the documentation of the partograph in relation to the birth outcomes of neonate and mother. This will eventually help to improve health of women and neonates.

I wish to ask for permission to access and review your case file that includes a partograph which is a medical sheet that was used for your care in the labour ward. Information on how care was provided and the outcome of the care will be reviewed and documented on the data collection guide sheet.

Since participation is voluntary, you are free to allow your case file to be studied or not. You can also withdraw at any time you feel like without giving reasons. Your refusal to take part in this study will not affect the services that you are receiving from the health care providers.

If you agree to take part you will be asked to sign a consent form. Information about you

will be confidential and no names will be written on the data collection guide. Code numbers will be used instead of names. Upon completion of the study, all data collection guide sheets will be destroyed. In addition, study findings from all participants will be combined and analysed. They will be presented to QECH, Ministry of Health and Kamuzu College of Nursing and College of Medicine. They will also be published in any scientific journal. The data will be presented for the group hence you will not be identified individually in any report of the study.

There are no known physical risks associated with the study. The probable risks include the psychological risks that might come due to the fact that your medical information is being accessed by the individual who was not involved indirect provision of your care. There are no monetary benefits to you or your neonate from participating in the study. However the findings of the study will assist in evaluating the utilization of the partograph at this facility so that strategies and modifications are put in place in order to improve quality care of women and new borns.

If you have complaints that relate to the study and concerns violation of your rights and Treatment either from the researcher or research assistant during the course of study can be

Forwarded to: **Secretariat, COMREC**, Private Bag 360, Blantyre. Tel 01989766.

Part B: Consent Form

Please read and sign this form if you are taking part in this study

1. I have read and (or have had another person read to me) the information concerning this study and have understood the content of the information. I have been given the opportunity to ask questions, where deemed necessary, about the study procedures.
2. I understand that I am free to participate or withdraw anytime without giving reasons and this will not jeopardise the midwifery care that I am receiving.
3. I know that I do not have to suffer any injury or harm during the research process.
4. I understand that my information will be kept confidential and will only be accessed by the researcher or those people directly concerned with this study.
5. I understand that baby and I will not benefit financially.
6. I know how to contact the researcher if I need.
7. I voluntarily agree to participate in the study by allowing the researcher to review my medical records.

.....
Participant's Name	Signature	Date

.....
Researcher's Name	Signature	Date

THANK YOU FOR TAKING PART IN THIS STUDY !!!!!

Appendix I - B: Chichewa version of participant's information sheet and consent form

Kalata yopempha chilolezo Kwa anthu otenga nawo mbali mukafukufuku

Mutu wakafukufuku: Zotsatila pa umoyo wa mwana wobadwa kumene ndimayi pounika zolembedwa zapachikalata choyang'anira amayi m'chipinda chochilira.

Ndine Isabella Chisuse ndipo mukupemphedwa kuti inu ndi mwana wanu amene wabadwa kumene mulowe nawo mukafukufuku amene akuunika zotsatila paumoyo wamayi ndi mwana wongobabwa kumene pounika zolembedwa zachikalata choyang'anira amayi m'chipinda chochilira. Musanalowe kafukufukuyu, muyenera kudziwa chifukwa chimene kafukufukuyu akuchitika ndizomwe zidzachitike mukafukufukuyu. Ngati muli ndima funso, muli ndi ufulu kufunsa.

Cholinga chakafukufukuyu ndikuona ngati zolembedwa zapachikalata choyang'anira amayi m'chipinda chochilira zikhoza kukhudza zotsatila paumoyo wamwana wobadwa kumene komanso mayi. Zotsatira zakafukufukuyu zidzathandiza ogwira ntchito pachipatala cha Queen Elizabeth komanso malo ena kusintha pakagwiridwe kawo kantchito yothandiza amayi apakati ndi ana obadwa kumene pogwilitsa ntchito bwino chikalata choyang'anira amayi m'chipinda chochilira. Izi zithandiza kupewa mavuto ndi imfa zimene zimakhudza ana ongobabwa kumene komanso amayi panthawi yochila.

Mukafukufuku ameneyu, mudzapemphedwa kuti chikalata chanu chimene chinagwilitsidwa ntchito pokusamalirani m'chipinda chochilira chionedwe ndiochita kafukufukuyu. Muli ndi ufulu kuvomera kapena kukana kuti mulowe nawo mukafukufukuyu. Mulinso ndi ufulu kutuluka kafukufukuyu nthawi ina iliyonse mutalowa kale mukaona kuti ndipofunika kutelo. Kusalowa kapena kutuluka mukafukufukuyu sikudzakhudza thandizo limene mwana wanu kapena inu

mukuyenera kulandila. Chinsinsi chanu chidzasungidwa pa zonse zimene zidzapezeke pakafukufukuyu. Dzina lanu silidzalembedwa pamapepala alionse akafukufukuyu. Palibe choopsa chodziwika chokhuzana ndikafukufukuyu. Komwa mwina mukhonza kudelapo nkawa pongoganiza kuti chikalata chokhudza chitsamaliro chanu chikuonedwa ndi anthu amene sanatenge pombali pokutsamalirani panthawi imene munali m'chipinda chochilira. Palibenso phindu lamakobili ngati mutalowa mukafukufukuyu. Koma zotsatila zakafukufukuyu zithandiza kukonza ndondomeko zothandiza amayi apati ndi ana obadwa kumene pogwilitsa ntchito bwino zolembedwa zapachikalata choyang'anira amayi panthawi yochila.

Zotsatila zakafukufukuyu zidzaunikidwa bwino lomwe ndikuyikidwa pamodzi ndipo zidzapelekedwa kuchipatala chino cha QECH, unduna wa zaumoyo, komanso kusukulu yophunzitsila anamwino ndi madotolo. Zotsatilazi zizasindikizidwanso m'mabuku a zaumoyo.

Ngati mutakhala ndima funso kapena nkawa ndikafukufukuyu mutha kupeza anthu awa:

COMREC Secretariat, Private Bag 360, Blantyre. Telefoni: 01989766.

Appendix I –C: Kalata yovomeleza kulowa mukafukufuku

Ine.....ndikutsimikiza kuti

ndamvetsa zakafukufukuyu. Ndikuzindikila kuti chinsinsi changa chidasungidwa.

Ndikudzindikilanso kuti nditha kutuluka mukafukufuyu nthawi iliyonse nditaona kuti ndipofunika

ndipo kuti kutero sikudzakhudza thandizo limene ine kapena mwana wanga tikuyenera kulandila.

Ndikudziwanso kuti sindidzalandila makobili pakutengapo gawo pakafukufukuyu.

Ndikuvomeleza kutengapo gawo pakafukufukuyu.

Sayini ya mayi kapena chidindo chachala chachikulu.....

Tsiku.....

Sayini yawochita kafukufuku.....

Tsiku.....

Zikomo chifukwa chotenga nawo mbali pakafukufukuyu ! ! ! !

Appendix II: Questionnaire for auditing a partograph

Checklist number:

A. Personal details

Have the following information been recorded on the partograph. Tick **Yes**, **No** or Not Applicable.

Number	Item	Code	Comments
A01	Name	Yes [1] No [2]	
A02	Age	Yes [1] No [2]	
A03	If yes to question A02, state the years	< 20 years [1] >20 years [2] 20 – 35 years [3] >35 years [4] Not applicable [99]	
A04	Gravida	Yes [1] No [2]	
A05	If yes to question A04 , state the gravidity	Primigravida [1] Multigravida [2] Not applicable [99]	
A06	Date and time of onset of labour	Yes [1] No [2]	
A07	Time of admission	Yes [1]	

		No [2]	
A08	Grading data on personal details	Not recorded [0] Substandard [1] Standard [2]	

Monitoring of foetal condition

Were the following parameters documented. Tick Yes, No or Not applicable.If yes, how often)			
Number	Item	Code	Number of times
B01	Foetal heart rate	Yes [1] No [2]	
B02	Grading of Foetal heart rate recordings	Not recorded [0] Substandard [1] Standard [2]	
B03	State of membranes	Yes [1] No [2]	
B04	Grading of state of membranes recordings	Not recorded [0] Substandard [1] Standard [2]	
B05	If yes to question 04, what state of membranes	Intact [1] Ruptured [2] Not applicable [99]	
B06	Quality of liquor	Yes [1] No [2] Not applicable [99]	
B07	Degree of moulding	Yes [1] No [2] Not applicable [99]	

B08	If yes to question B07,what degree	No moulding [1] Slight moulding [2] Severe moulding [3] Not applicable [99]	
B09	Grading of documentation on moulding	Not recorded [1] Substandard [2] Standard [3]	
B10	Grading of documentation on foetal monitoring	Not recorded [0] Substandard [1] Standard [2]	

Monitoring of labour progress

Were the following labour progress indicators recorded? Tick either Yes, or No. If yes, write how often			
C 01.	Cervical dilatation	Yes [1] No [2]	
C 02.	Grading of cervical dilatation	Not recorded [0] Substandard [1] Standard [2]	
C.03	Descent	Yes [1] No [2]	
C.04	Grading of descent	Not recorded [0] Substandard [1] Standard [2]	
C.05	Contractions	Yes [1] No [2]	
C.06.	Grading of documentation of recordings on labour progress	Not recorded [0] Substandard [1] Standard [2]	

Interpretation of findings on progress of labour

D.01.	On the progress of labour, was the alert line crossed on the partograph?	Yes [1] No [2]	
D.02.	If yes to q.D.01 above, how long was the alert line crossed?	Less than 30 minutes [1] Between 1 to 2 hours [1] More than 2 hours [2] Not applicable [3]	
D.03	If yes to q.D.01 above, what actions were taken on alert line?	None [1] Augmentation of labour with artificial rupture of membranes [2] Augmentation of labour with Oxytocin [3] Emergency Caesarian section [4] Other [5] Not applicable [6]	
D.04	On the progress of labour, was the action line crossed on the partograph?	Yes [1] No [2]	
D.05	How long was the action line crossed before making a decision for the management of labour?	Less than 30 minutes [1] Between 1 to 2 hours [2] More than 2 hours [3] Not applicable [99]	
D.06	How long did it take for the planned decisions to be implemented?	Less than 30 minutes [1] Between 30 minutes to 1 hour [2] More than 2 hours [3] Not applicable [99]	

D.07	What actions were instituted?	None [1]	
		Augmentation of labour with artificial rupture of mebranes [2]	
		Augmentation of Labour with Oxytocin [3]	
		Emergency Caesarian section [4]	
		Other [5]	
		Not applicable [6]	

Monitoring of maternal condition

Were the following maternal indicators recorded?(Tick either Yes or No) If Yes, indicate number of times			
E.01	Blood pressure	Yes [1]	
		No [2]	
E.02	Grading of documentation of blood pressure	Not recorded [0]	
		Substandard [1]	
		Standard [3]	
E.03	Pulse rate	Yes [1]	
		No [2]	
E.04	Grading of documentation of pulse rate	Yes [1]	
		No [2]	
E.05	Temperature	Yes [1]	
		No [2]	
E.06	Grading of documentation of temperature	Not recorded [1]	
		Substandard [2]	
		Standard [3]	
E.07	Respirations	Yes [1]	
		No [2]	

E.08	Grading of documentation of maternal recordings	Not recorded [0] Substandard [1]	
------	---	---	--

Details of second stage of labour (tick either yes or no if documentation of the following was indicated

F.01	Date and time of full cervical dilatation	Yes [1] No [2]	
F.02	Date and time of delivery	Yes [1] No [2]	
F.03	Method of delivery	Yes [1] No [2]	
F.04	If Yes to q.G.03 above, state the type of delivery	SVD [1] Vacuum Extraction [2] Caesarian Section [3] Not applicable [99]	
F.05	Apgar score at 1 minute	Yes [1] No [2]	
F.06	If Yes to q. F.05 above, indicate the score		
F.07	Apgar score at 5 minutes	Yes [1] No [2]	
F.08	If Yes to q. F.07 above, indicate the score		
F.09	Grading of Apgar score	Good [1] Adverse [2]	
F.10	Status of the new born	Yes [1] No [2]	
F.11	If Yes to q. F.09 above, indicate the status	Alive [1] Fresh still birth [2]	
F.12	Any resuscitation done	Yes [1] No [2]	

		Not applicable [99]	
F.13	Admission of the neonate in nursery for special care	Yes [1] No [2] Not applicable [99]	
F.14	If Yes to q G.12 above, state the reason for admission	Reason not documented [1] Low Apgar score [2] Prematurity [3] Low birth weight [4] Others, specify [5] Not applicable [99]	
F.15	Name of skilled birth attendant conducting the delivery	Yes [1] No [2]	

G. Immediate maternal outcome

G.01	Was the information on immediate postnatal check documented?	Yes [1] No [2]	
G.02	If yes to q. G 01, above, state the parameters that were documented	Total blood loss [1] State of perineum [2] State of uterus [3] State of placenta and membranes [4] Vital signs [5]	
G.03	Grading of immediate maternal outcome	Good [1] Adverse [2]	
G.04	If adverse, state the outcomes		
G.05	What actions were implemented inorder to manage the adverse outcomes stated above	PPH [1] 2 nd /3 rd or 4 th degree perineal tear [2] Ruptured uterus [3] Preeclampsia/eclampsia [4]	

		Others, specify	[5]	
		Not applicable	[99]	

H Summary of labour

H.01	Was information on summary of labour documented?	Yes	[1]	
		No	[2]	
H.02	State the duration of labour			

I Grading of the partograph

	Grossly inadequately documented (If only one component had information or no information on three components on a partograph)		[1]	
	In adequately documented (If only two components on a partograph had information)		[2]	
	Adequately documented (If the three components on the partograph had information and some parameters were not documented)		[3]	
	Completely documented (If all the three components on the partograph were completely filled in)		[4]	

Appendix III: Certificate of Approval from COMREC



Appendix IV: Permission Letter to Mwanza District Health Office

University of Malawi,

Kamuzu College of Nursing,

P.O BOX 415,

BLANTYRE.

25th October, 2013.

The District Health Officer,

Mwanza District Hospital,

P.O.BOX 30,

MWANZA.

Dear Sir,

PERMISSION TO CARRY OUT A PRETEST RESEARCH STUDY

I write to request for your permission to carry out a pretest study at your district hospital.

I am a student currently studying a Masters of Science degree in midwifery. In partial fulfillment for the degree, I am supposed to carry out a research study on the topic that is related to midwifery practice. The title of my research project is “**Assessing quality of partograph recordings and perinatal outcomes**”

Looking forward to your favourable response and assistance.

Yours faithfully,

ISABELLA CHISUSE (MRS)

Appendix V: Clearance Letter from Mwanza District Health Office

Our Ref: MN/H/ADM

Tel: 265 01432211/901/213
Fax: 01 432 349

Communications to the:
District Health Officer



Ministry Of Health
Mwanza District Hospital,
PO Box 80,
Mwanza.

30th October, 2013

The Chairperson
COMREC
Private Bag 360
Chichiri
Blantyre 3

Dear Sir / Madam

Re : PERMISSION TO CONDUCT A PRETEST STUDY AT MWANZA DISTRICT HOSPITAL

This is to inform you that management has no objection for Isabella Chisuse to conduct a pretest study entitled "**Assessing Quality of Partograph Recordings and Perinatal Outcomes**" at Mwanza District Hospital.

We have advised her to provide the hospital a copy of her findings.

Yours faithfully

A handwritten signature in black ink, appearing to read 'R. Piringu', is written over a red rectangular stamp. The stamp contains the text 'District Health Office', 'Mwanza District Hospital', and 'P.O. Box 80 Mwanza'.

Raphael L. Piringu
DISTRICT HEALTH OFFICER

Appendix VI: Clearance Letter from Queen Elizabeth Central Hospital

Telephone: (265) 01 874 333 / 677 333
Facsimile: (265) 01 875928
Email: queenishosp@globeinfo.net

All communications should be addressed to:
The Hospital Director



In reply please quote **No.**

QUEEN ELIZABETH CENTRAL HOSPITAL
P.O. BOX 95
BLANTYRE
MALAWI

Ref No. QE/10

29th October 2013

The Chairperson
COMREC
Private Bag 360
Chichiri
BLANTYRE

Dear Sir,

RE: PERMISSION TO CONDUCT A STUDY AT QUEEN ELIZABETH CENTRAL HOSPITAL

This is to inform you that management has no objection for Isabella Chisuse to conduct a study entitled "Assessing Quality of Partograph Recordings and Perinatal Outcomes" at Queen Elizabeth Central Hospital.

We have advised her to provide the hospital a copy of her findings.

Yours faithfully,



Theresa
T.N. Soko (Mrs.)
DEPUTY HOSPITAL DIRECTOR-NURSING
For: HOSPITAL DIRECTOR

Matron Chantels
Accept and assist
Isabella Chisuse accordingly
she wants to do research in
Postnatal ward.
Theresa
CWO
14/11/14