USE AND COMPLETENESS OF PARTOGRAPH AND ASSOCIATED FACTORS IN MWANZA REGION, TANZANIA

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By

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A Dissertation Submitted in (Partial) Fulfilment of the Requirement for the Degree of Master of Sciences (Applied Epidemiology) of

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CERTIFICATION

The undersigned certify that I have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled***:*** **‘‘Use and completeness of partograph and associated factors in Mwanza Region Tanzania’’,** in (partial) fulfillment of the requirements for the degree of Master of Science in Applied Epidemiology of the Muhimbili University of Health and Allied Sciences.

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DECLARATION AND COPYRIGHT

I, **Jane E. Mcharo**, declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other university for similar or any other degree award.

Signature……. **Date**…….

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I would like to praise and glorify the Almighty God who is the base for my courage, strength and source of inspiration in my entire life. Sponsorship from the Tanzania Field Epidemiology and Laboratory Training Program (TFELTP) is acknowledged. Special thanks are extended to Prof. Rose Mpembeni, Dr. Diana Faini, and Dr. Ahmed Abade and other TFELTP staffs, and Department of Epidemiology and Biostatistics, School of Public Health and Social Sciences (Muhimbili University of Health and Allied Sciences) for their valuable advice, support and encouragement during my studies. I appreciate the cooperation of Mwanza region Authorities for their support during data collection period. Many thanks to my fellow cohort 10 residents for their support during the dissertation stage processes.

DEDICATION

This dissertation is dedicated to my beloved husband David Emmanuel Ng'wenda who has been a source of support and inspiration throughout this study. I also dedicate all midwives who believe in the quality of care rendered for the promotion of maternal and neonatal health.

ABSTRACT

Background: There is scientific evidence that proper use of the partograph reduces maternal and foetal morbidity and mortality. In 2015 the use of partograph in selected regions in Tanzania was approximately 50%. In Mwanza and lake zone as a whole there is reported high maternal mortality but there is inadequate information on the use and completeness of partograph. Therefore, this study aimed to determine use and completeness of partograph and associated factors in Mwanza region.

Methodology: A cross-sectional study was conducted in all public/designated hospitals in Mwanza region from January to March 2019All the deliveries which occurred in this hospitals in December 2018 were assessed for their corresponding partographs to determine partograph use. A random sample of Partographs for deliveries which occurred in these hospitals in December 2018 were reviewed to assess completeness using a standard checklist. Characteristics of midwives who conducted the deliveries was obtained by using a pretested structured questionnaire. Data was entered and cleaned using Epi info v7.2.2, and analyzed using Stata v13. Measures of central tendency and dispersion were used to summarize continuous variables while frequency distributions were used for categorical variables. Logistic regression was used to calculate Odds ratios and their associated 95% confidence intervals as a measure of association between Partograph completeness and the independent variables. .

Results: Of the 3103 deliveries that were conducted in these hospitals in December 2018, 2408 (77.6%) had partograph filled. 853 partographs were randomly selected to be reviewed. Three hundred seventy three (43.5%) were completely filled. One hundred and fifty midwives were involved in the study and of them 134 (89.3%) had good knowledge on partograph. Significant difference was found with regards to completeness of partograph between regional/zonal and district/designated hospitals. Factors associated with partograph completeness included level of education of health workers with degree level having higher odds [aOR 7.49 (95% CI)2.10-26.66] compared to those with lower levels of education, experience in labour ward where by midwives with long experience were more likely to complete partography [aOR 3.93(95% CI)1.62-9.51] compared to those with few years of experience, sex of provider [aOR8.38(95%CI)6.46-31.99)],

Training on Emergency Obstetric care [aOR1.36(95%CI)0.81-2.29] and, Knowledge on partograph [aOR2.37(95%CI)1.39-4.04)]. Providers who responded to have partographs forms, guidelines and policy to use partograph in their hospitals had 470(63%) and 478(61%) respectively of partograph completeness

Conclusion: There is inadequate use of partograph, and completeness of vital parameters in the Partographs is low especially in the districts/ designated hospitals. There is need for regular mentorship and onjob training to newly employed health providers

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LIST OF ABREVIATIONS

CEmONC	Comprehensive Emergency Obstetric and Newborn Care
EmONC	Emergency Obstetric and Newborn Care
FHR	Fetal Heart Rate
MDGs	Millennium Development Goals
MOHCDGEC	Ministry of Health Community Development Gender Elderly and Children
PPH	Post partum Haemorrhage
UNICEF	United Nations Children's Fund
WHO	World Health Organization

DEFINITION OF TERMS

Partograph

Is a preprinted paper form with a graphical presentation of Observations made on woman and fetus during the course of labour.

Use of partograph

Midwives who monitored labour progress by using partograph.

Completeness of partograph

Partographs parameters recorded in standard.

1. Standard protocol is defined based on the time interval as follows:
    i. Cervical dilatation, moulding of fetal head ,descent of fetal head, Blood pressure, pulse rate, and Temperature should be monitored every four hourly.
    ii. fetal heart rate and uterine contractions should be monitored half hourly
    iii. Condition of the baby after birth such as birth weight, Apgar score, should be recorded on the partograph.
    iv. Maternal outcome whether alive or dead should be recorded on the partograph.

Substandard

Parameters inadequately filled according to standard protocol.

Not recorded

No documentation on the parameter.

Standard

Parameters well documented according to standard.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Partograph is a pre-printed paper form with a graphical representation of observations made on woman and foetus during the course of labour (1). It was designed by Fried man in 1954 who used it to monitor cervical dilatation and so called cervicograph. In 1972 it was further improved by Philpot into partograph which became practical tool for recording all intrapartum observations in addition to cervical dilatation. Philpot designed the alert and action lines which helped to detect prolonged labour (2). In 1988, Safe Motherhood Initiative launched the use of partograph as an International standard practical tool in monitoring progress of labour and preventing prolonged labour. In 1994 WHO extensively tested its efficacy and established its scientific basis and rationale for its use in prevention of prolonged labour and was declared universal application of the tool in all settings (3). The focus of using partograph in developing countries is on the prevention of maternal and fetal morbidity and mortality related to obstructed labour, while in developed countries is on early identification and management of dystocia in order to offer appropriate intervention (4).

Partograph helps health providers record, interpret, analyze, and use data to make clinical management decisions while labor is in progress (5). Appropriate use of the tool helps in early identification of the problems and timely interventions can be initiated and thereby preventing morbidity and mortality. In 1989 Tanzania adopted the WHO partograph and its use in labour is obligatory to all levels of maternal care services. In 2015, approximately 216 maternal death per 100,000 live births were reported with 99% of the deaths coming from developing regions. Sub-Saharan Africa accounted for 66% of these deaths (6). These death could be averted with proper use of partograph. In Tanzania the maternal mortality ratio stand at 556 per 100,000 live births which is among the highest in the world with a resultant failure to attain Millennium Development Goal 5 (7). Eighty-five percent of the deaths can be prevented with skilled delivery care before, during, and after childbirth, as most of the deaths are due to direct causes of deaths such as hemorrhage, infection, unsafe abortion, hypertensive disorders of pregnancy, and obstructed labor (8).

Obstructed labour is one of the major cause of maternal mortality and usually occurs as a result of neglected prolonged labour (9). The partograph is recommended for routine monitoring of the 1st stage of labour to help the skilled birth attendant identify slow progress of labour and prevent prolonged labour and its complications. Partograph promotes reduction of prolonged labour by 41%, oxytocin augmentation by 54% emergency caesarian section by 3% and rate of vaginal examination which lead to reduced rate of sepsis (9).

The use of partograph is a specific skill for Midwives to prevent and manage prolonged and obstructed labour by early identification of a risk factor. Midwives have to acquire competency in partograph use during pre service training (5).There are several National policy guidelines and protocols targeting improvement of reproductive and child health services, which include maternal and newborn care that have been developed (10).

In hospitals, Midwives have more contact than other professionals with the woman during childbirth and her family and hence Midwives have influence on shaping the childbirth experience of both the woman and her family (11). Competent use of the partograph can save lives by ensuring that labor is closely monitored and that life threatening complications are identified and treated. It requires a Midwife to be capable of attending normal labour and birth, performing abdominal examinations to determine fetal descent and vaginal examinations to determine cervical dilatation and plotting the information on partograph. However, most parameters on the partograph has shown not to be monitored , and if so documentation of findings on partograph after reviewing a woman in labour is not done. Hence progress of labour may not be closely monitored or labour monitoring may not be translated into actions required when need arises (12).

1.2 Problem Statement

Despite partograph being a simple and inexpensive tool in monitoring mother's and fetal condition during labour, and helps in early identification of prolonged and obstructed labour it is not widely used as recommended by the WHO. Inconsistence use of the tool and high proportion of incompleteness has been reported.

In Tanzania Partograph was found to be used by 50%. In Mwanza region partograph completeness was about 35% which shows a gap of quality of care during labour and delivery (13). This leads to missed opportunities in identifying problems and addressing complications in a timely manner. Complicated deliveries may cause severe psychological and physical harm to women, serious economic and social change as well as adverse maternal and foetal outcomes, thus managing complications is expensive for both the mother and the institution. In 2016, Tanzania had reported an estimated maternal mortality ratio of 556/100,000 live births against the MDG target of 193 deaths per 100000 live births and neonatal mortality of 21/1000 live births against the National target of 19 per 1000 live births. Regions in the lake and Western zones were found to have high maternal, new born and child mortality. Approximately 9.8% of deaths in Lake and Western zones was due to obstructed labour and almost 35.9% of the deaths was estimated to occur in hospitals. Mwanza is one of the region in Lake zone which had reported to have almost 68.8% of maternal deaths which had occurred in hospitals.

Complications of obstructed labour that is ruptured uterus constitutes highest case fatality rate of 21.6 (13). These deaths might be prevented by proper monitoring of labour by using partograph. However there was little information on partograph use in Mwanza Region, hence this study intends to determine level of utilization of the tool and factors that hinders its utilization.

1.3 Conceptual Framework

The conceptual framework in fig 1 shows factors that have been found in various studies to be associated with the use and completeness of partographs. The factors are divided into Health facility factors, Health provider factors and Maternal factors.

Answers to these questions are important to improve partograph utilization and hence improve maternity care services in Mwanza Region.

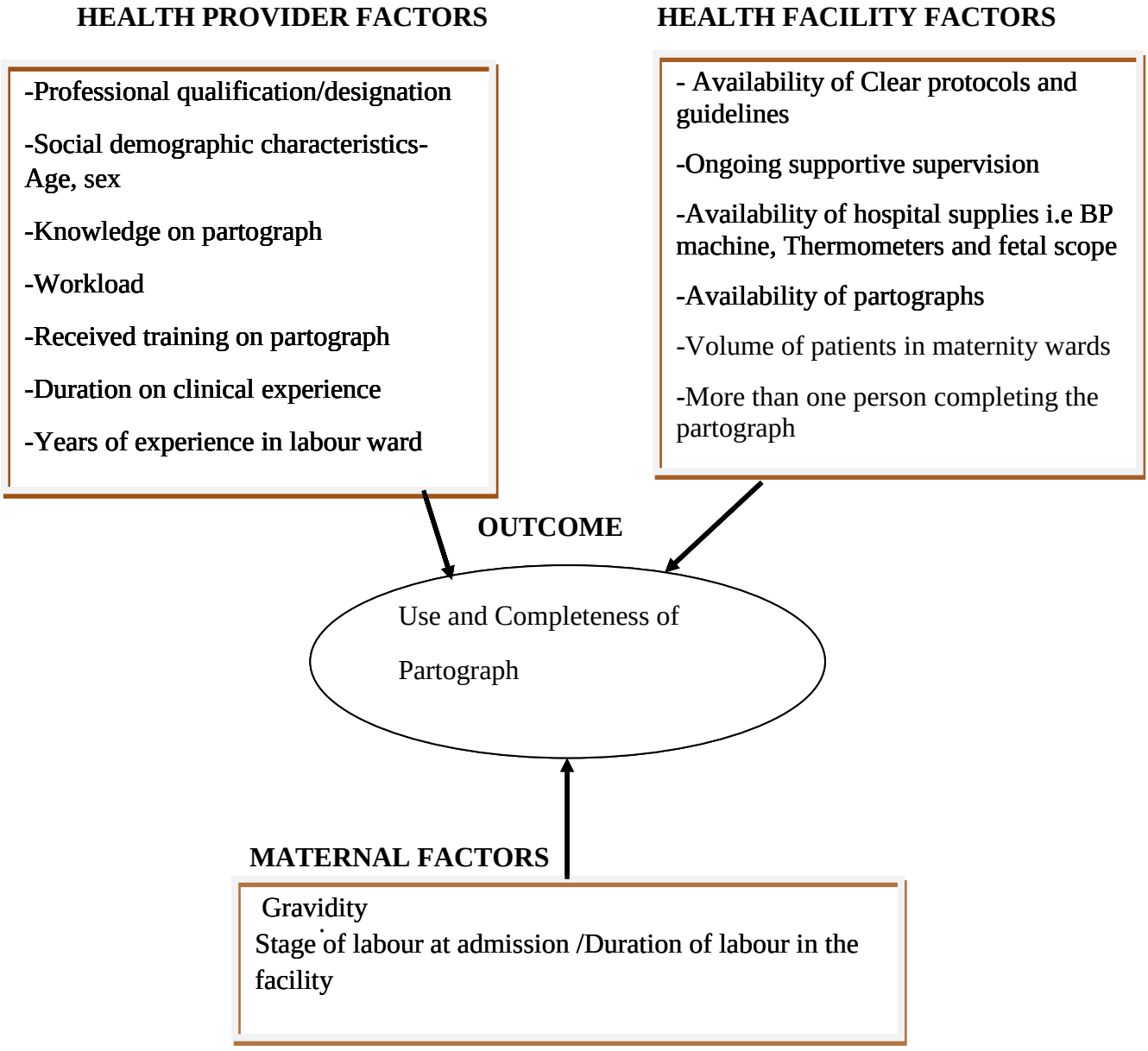

Figure 1: A conceptual framework illustrating the factors associated with the use and completeness of partograph

1.5 Rationale of the study

In Tanzania training on the partograph has been done to health workers but still partograph use is reported to be 50%. Partograph use has shown to promote reduction of prolonged labour by 41% and helps in early identification of the problems, assists in early decision making and timely interventions which can reduce maternal and foetal morbidity and mortality. Due to its huge benefits, WHO recommends that partograph should be used on all laboring women, but it is not widely used in Tanzania. Therefore, results of this study, will help to determine the level of partograph utilization and identify the factors that hinders its utilization and hence improve its utilization.

1.6 Research Questions

1. What is the proportion of deliveries with partograph filled in 10 Public/Designated Hospitals in Mwanza region?
2. What proportion of partographs are completely filled as per guideline?
3. What are the provider related factors influencing completeness of the partographs?
4. What health facility related factors influence completeness of the partographs?

1.7 Objectives

1.7.1 Broad objective

To determine use and completeness of partograph and associated factors in 10 Public/Designated hospitals in Mwanza Region

1.7.2 Specific objectives

1. To determine the proportion of deliveries with partograph filled in 10 public/Designated hospitals in Mwanza region
2. To determine the proportion of complete partographs as per the National guideline.
3. To determine health provider related factors influencing completeness of the partographs
4. To determine health facility related factors which influence completeness of the partographs

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Overview of the Partograph

Partograph is one of the tools used to monitor labor and prevent prolonged and obstructed labor. The tool provides information about deviations from the normal progress of labor and abnormalities of maternal or fetal condition during labor. It alerts midwives when a woman may need an intervention (e.g., referral to a higher-level facility, labor augmentation, and cesarean section) and facilitates ongoing evaluation of the effects of those interventions. Its purpose is to help health care providers record, interpret, analyze, and use data to make clinical management decisions while labor is in progress. The midwife must use critical thinking skills to interpret this information and then make appropriate clinical decisions based on evidence and established protocols (14).

2.2 Proportion of deliveries with partograph filled worldwide and Tanzania

Partographs was introduced to assist in rural settings with limited medical input or resources (1). In developing world partograph is of value as it helps to indicate the correct time of transferring a woman whose labour is prolonged from peripheral centre, and also indicating the correct timing of certain interventions in central units. Despite this, use of partograph was found to be very low among health providers in developing countries (15).

The proportion of partograph utilization in monitoring labour progress by health professionals in India was only 6% while in Southern, Eastern , Western and Northern Ethiopia is 5.7 % , 92.6% , 6.9% and 45.3% respectively (11,16–18). Similarly a study done in urban referral public health institutions in North and Southwest Cameroon on use of partograph showed only 32.4% of providers routinely used partograph in monitoring labour (6). In contrast a study conducted on knowledge and utilization of partograph among Obstetric care givers in the University of Calabar Nigeria showed 66% of the care givers used partograph for monitoring labour (19). In Rwanda partograph utilization was 37.5% (14), and in Ghana was 54% (9). Joyce et.al reported utilization of 93.3% in Malawi's study on Use of partograph in women in labour at Mulanje District hospital , (20). Uganda reported partograph use to be 69.9% (21). Also a study done in Kenya which

involved 9 health facilities from 4 provinces revealed 7(78%) out of the 9 health facilities used partograph (22). A study done in 2011 at Muhimbili hospital found that partograph was used to all women with spontaneous labour, although results of the assessment done in Lake and Western zones of Tanzania identified inconsistence use of partograph in majority of health facilities with approximately 60% of the facilities not using partograph (13,23).

Correct and consistent use of partograph has benefits that go beyond effective labor monitoring to improve overall quality of care for women and their babies during childbirth. The tool can enhance communication among providers, increase interaction between providers and the laboring women, promote continuity of care across providers, and encourage teamwork (5).

2.3 Proportion of complete partographs as per National guideline

Partographs parameters should be recorded in accordance to standard of care. Studies shows that most of the parameters are not monitored and most of the health care workers do not document their findings after reviewing a woman in labour thus the progress of labour may not be closely monitored (24). A study done in Addis Ababa found completeness of the partograph was very low. Only 30.7% fetal heartbeat, 32.9% of cervical dilatation and 20.7% of uterine contractions plots according to the protocol and 18.6% of maternal blood pressure recorded based on the standard (25). Similarly, study in Cameroon on use of partogram identified that, of the 383 partographs reviewed , Only 29.5% had records of the progress of labor, 43.6% and 93% respectively had no records of Fetal heart rate and state of the liquor on the partographs while only 2.1% of the partographs had all the parameters of maternal monitoring recorded to recommended standard (26). Also report from Rwanda showed that completeness of partograph according to standard is 41% (14), while in Ghana , those parameters pertaining to labour progress, fetal and maternal wellbeing were monitored to standard in 55-60%, 30-50% and 40% respectively (27). Apart from Ghana, Malawi reported suboptimal use of partograph evidenced by completeness of only 3.9% and properly filled parameters of less than 5% (24). Recently Joyce Atuweni Jere from Malawi reported 10% of completeness of the three components of partograph parameters (20).

However a study done in Uganda on assessment of partograph during labour, identified that out of 1674 deliveries across the health facilities only 2% had fetal heart beat recorded, 43.9% of the cervical dilation 23.6% of uterine contractions plotted and 18% of blood pressures were monitored to standard (21). In contrast with a report from Kenya revealed low partograph use, where by uterine contractions, Fetal heart rate, and cervical dilation are recorded as 30-80%, 53-90% and 70-97% respectively, also other parameters like liquor, molding, descent and other maternal condition parameters were minimally recorded (22). A study from Muhimbili hospital in Tanzania reported only 8.9% of partographs parameters which were recorded in standard, And also an assesment report of EMONC from Lake and Western zone shows that Mwanza and Kigoma had low completeness of partograph parameters of about 40% and 50% respectively (13).It is very important to monitor Foetal and maternal condition in order to determine their wellbeing. If foetal condition is compromised, even if the mother is healthy, normal labour may also be discontinued by an intervention to save the life of the baby. Foetal Heart Rate (FHR) monitoring is assumed to identify babies being at risk of running short of oxygen (hypoxic). State of membranes show the risk of baby and mother to ascending infections if ruptured for long. The state of colour of liquor can tell whether the foetal life is compromised or not. Study done in Malawi reported that the filling of partograph influence the status of the new-born (born alive or dead). It was found that delivering a dead foetus will be reduced by 59.5% and 32.4% when monitoring fetal heart rate and moulding. Monitoring of liquor and descent of fetal head reduced the risk of dying by 53.5% and 99.7% respectively, however failure to monitor contractions increase the risk of fetal death by 7.5% (24).

Assessment of partograph use in Uganda confirms that a partogram when used to monitor labour progress determines the foetal outcome (28).In addition monitoring of cervical dilatation helps to assess Labour progress as whether precipitated, normal or prolonged. Precipitated and prolonged labours are potential risks of Post-Partum Haemorrhage (PPH) which is also a leading cause of maternal mortality.

2.4 Health provider related factors influencing use and completeness of the partographs

There are several health workers factors that have been reported to influence use of the partographs as evidenced by several studies. A study done in Ethiopia showed that lack of knowledge on proper filling of partograph and staff commitment influences completeness of partograph (29).while similar study in Egypt on Knowledge ,Attitude and utilization of partograph to professional birth attendants reported gross deficiency of knowledge about partograph parameters to both nurses and half of the physicians with positive attitudes towards using of the tool to both physicians (97.1%) and nurses (91.3%) respectively (11). Health workers who provides care during labor and delivery should be knowledgeable on normal and abnormal processes of labor and birth, have appropriate technical skills; communicate and collaborate well with the health care team, and possess the necessary judgment, self-confidence, and skills to cope with stressful, emergency conditions (11). Magreth Khonje from Malawi in her study on use and documentation of partograph reported shortage of staff, negligence ,lack of appreciation of the tool, lack of motivation and skill incompetency were among the factors influencing completeness of partograph (24).Another report from Nigeria on knowledge and utilization of partograph among midwives reveled that midwives years of professional experience influences completeness of the partograph (30)

2.5 Health facility related factors which influence use and completeness of the partographs

Several health facility related factors that influence the use and completeness of partograph have been documented in different parts of the world. It has been shown that ineffective use of the tool caused by several factors ranging from health system to in adequate availability of tool may result from the contextual challenges of fragile health systems than from deficiencies in the tool itself. Institutions must have the basic financial resources to support training and to ensure a dependable supply of partograph forms and other necessary supplies. Leaders and supervisors within institutions need to ensure correct and consistent use of the tool in labor monitoring. In order for the tool to be effective, partograph implementation requires champions in professional associations, at regional and national levels, and within facilities (5). There are several health facility factors influencing

completeness of the partograph as shown by several literatures. A report from Egypt revieled that, not obligating partograph in hospital policy ,absence of in service training, lack of partograph copies in labour ward, and lack of supportive supervision influences completeness of partograph (11,26). Also non availability of preprinted partograph and workload pressure were among the challenges reported by Mathew in implementation of the partograph (31). In addition a systematic review of literature of studies done in low and middle income countries reported that a supportive professional environment from peers and leaders with quality assurance systems together with empowerment of women to expect better care with delivery at health facility and earlier admission would likely promote partograph completeness (32). A report from Cross river state in Nigeria revieled poor managerial support regarding procurement of necessary supplies such as BP machines, thermometers, fetal scope ,urine strips and also lack of motivation of health workers constitute major obstacles in the use of partograph (33).

CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 Study design and study period

This was a hospital based cross sectional study which involved review of partographs for deliveries which were conducted in December 2018.

3.2 Study area

The study was carried out in Public/Designated hospitals in Mwanza region in Tanzania. The hospitals were Bugando, Sekotoure, Nyamagana, Misungwi, Bukumbi, Nansio, Ngudu, Sumve, Magu and Sengerema. The distribution of the hospitals was 1 zonal hospital, 1 Regional hospital, 3 district designated hospitals and 5 District hospitals.

Mwanza region has a population of 2772,509 (census 2012).It has 8 districts councils which are; Kwimba Dc, Magu Dc, Sengerema Dc, Ukerewe Dc, Misungwi Dc, Buchosa Dc, Ilemela Mc and Nyamagana Mc. The region has a total of 346 health facilities of which are 19 hospitals, 52 health centres and 294 dispensaries .Among the hospitals 6 are public, 5 faith based organization/Designated hospitals and 7 are private. Of the Dispensaries 228 are public, 13 FBO and 42 are private and 11 parastatal, of the Health centres 32 are public, 5 FBO and 14 are private owned. Out of the 346 facilities 325 (94%) provides Labour and delivery services. Maternal and Newborn Health indicators for 2016/17 are as follows; Antenatal care 1st visit is 93.3% while fourth visit ANC attendance was 45%,also facility delivery was 53.3%,Neonatal mortality rate was 23/1000 live births (34), Estimated maternal mortality was 150/100,000 live births, and haemmorhage being the main cause of the death (DHIS 2017).

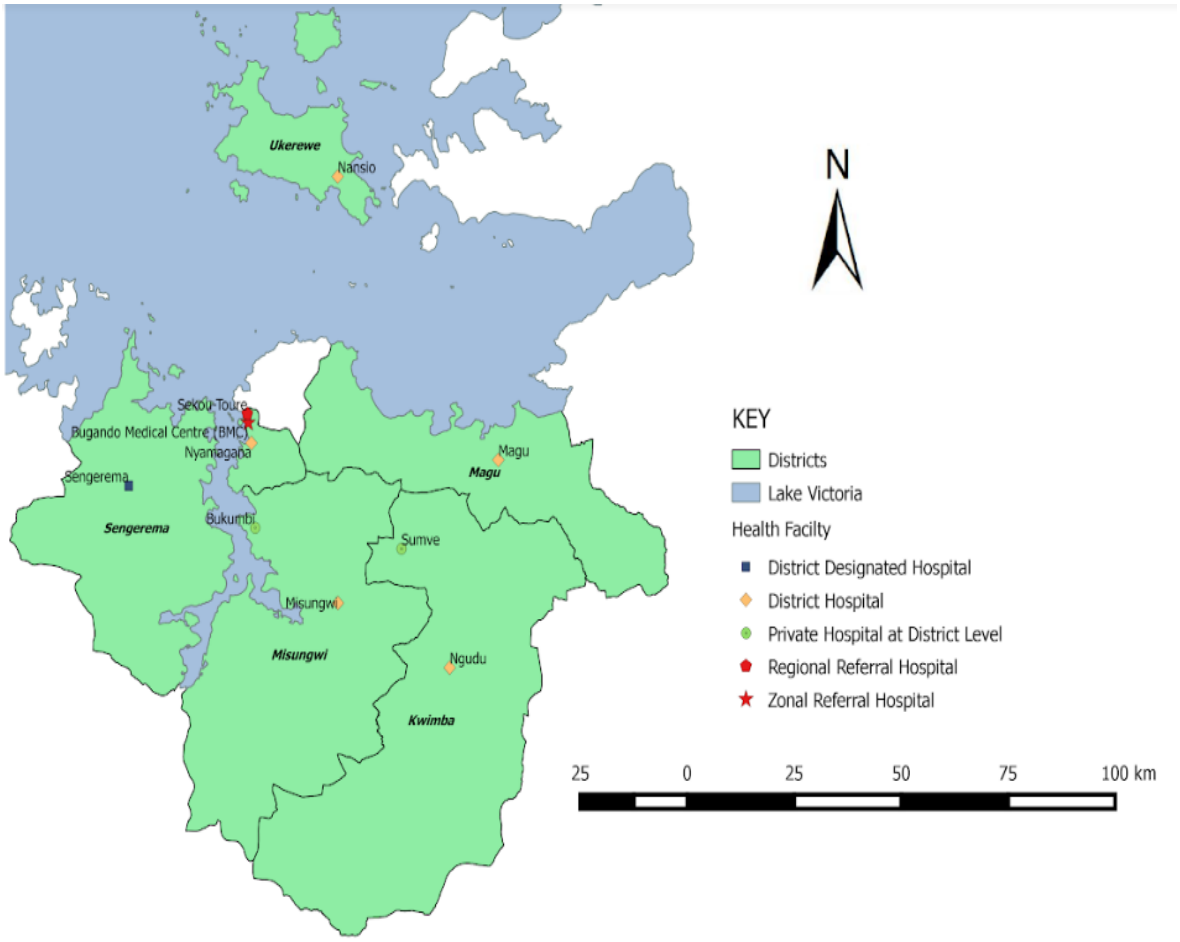

Figure 2: Map showing study area

3.3 Study populations/unit

The study involved;

i. Review of filled partographs of women with gestation age above or equal to 28 weeks who delivered in the selected hospitals in the month of December 2018.Partograph forms having information showing Intra uterine fetal death, Antepartum haemorrhage, completed first stage of labour and Elective Caesarian Section were not reviewed because partograph completion is not recommended for mothers with aforementioned characteristics.

ii. Midwives working in the labour wards of selected hospitals who conducted deliveries in December 2018.

3.4 Sample size estimation

a) The sample size for filled partographs was estimated by using a sample size formula by Kish Leslie 1965 with the following assumption.

$$n = DE \times Z^2 p\,[1-p] / \varepsilon^2$$

Whereby:

DE=Design Effect due to cluster sampling technique used is taken to be 2 (35)

n = the minimum estimated sample size of partographs

Z = Z score for 95% Confidence Interval (1.96)

P = Estimated proportion of partograph use taken to be 50 % (13)

Q=1-p

ε = marginal of error taken to be 5%

Therefore:

n = 2×1.96^2 x 50x (100-50)/5^2n=768

Adjusting for non response rate

n/ 1-0.1

768/0.9=853 partographs

Therefore 853 partographs were reviewed.

b) **The sample size for midwives was estimated using the formula of single proportion developed by Kish Leslie 1965,**

$$n = DE \times Z^2 p\,[1-p] / \varepsilon^2$$

Whereby

DE=Design Effect due to cluster sampling technique for nurses and number of partograph each nurse filled is taken to be 1.5 (25)

n = the minimum estimated sample size for midwives to be included in the study

Z = Z score for 95% Confidence Interval (1.96)

P = Estimated proportion of partograph completeness taken to be 0.21 (36)

Q=1-p

ε = marginal of error =8%

Therefore:

$n = 1.5 \times 1.96^2 \times 0.21 \times (1-0.21)/0.08^2$

n=150 midwives

3.5 Sampling Procedure

First I compiled a list of all the public hospitals from the RMO list of hospitals. Then, all the ten hospitals were visited and the number of deliveries which occurred in December 2018 was obtained from the labour and delivery registers. In total 3992 deliveries were retrieved from the registers. Then 889 deliveries were excluded due to the exclusion criteria mentioned above and identification of partographs of the remaining 3103 deliveries was done in which 2408 partographs were identified.

Partographs were obtained from medical record department of all the listed public hospitals. The total number of partographs in all the ten public hospitals was obtained. Proportional to size sampling was used to determine the number of partographs to be reviewed from each hospital. Using the calculated sample size, sampling fraction was obtained by taking the estimated sample size (853) divide by total number of partographs (2408).The sampling fraction (0.35) was then used to determine the number of partographs per hospital. Partographs in all the hospitals were assigned numbers then simple random sampling was employed in selection of partographs for review in each hospital. This was

done by generating random numbers using open epi random number generating tables. Partographs were reviewed using a standardized checklist.

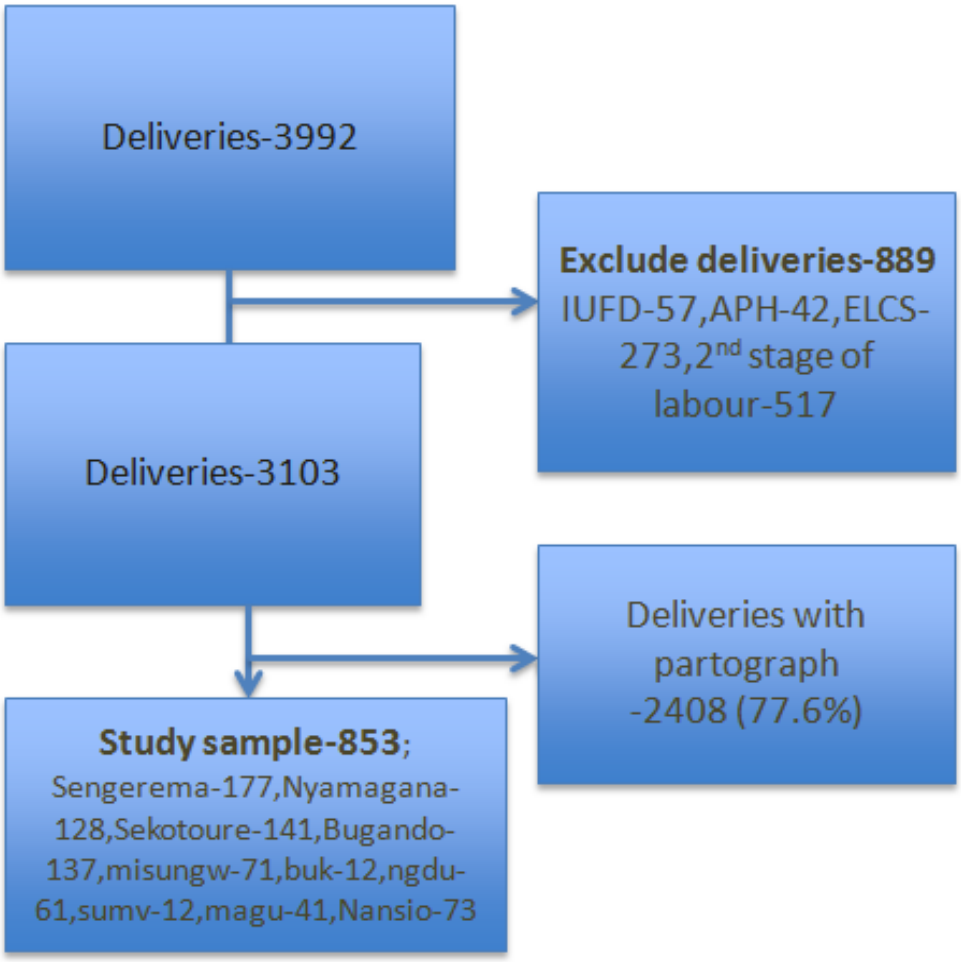

Figure 3: Flow diagram on partograph sample size selection

3.7 Study Variables

3.7.1 Dependent variables

Use of the partograph, Completeness of partograph parameters

3.7.2 Independent variables

Professional qualifications of midwives, knowledge on partograph, Average number of midwives per shift , History of training on partograph, Years of experience in labour ward, availability of clear protocols and guidelines, Age, sex, Level of education.

3.8 Data collection tools

The study had two data collection tools which are a questionnaire and checklist.

Questionnaire: A questionnaire was used to collect information from Midwives who conducted deliveries in December 2018 from 10 Public/Designated hospitals. It had four sections. The first section includes identifier information, the second section Midwives characteristics while the third includes questions pertaining to knowledge on the partograph and the fourth had questions on partograph utilization. The questionnaire was developed in English and translated into Swahili. It was adopted from previous studies (14) and modified according to the problem under study to include all possible variables which addresses the study objectives. The tool was designed to obtain information on the professional characteristics of the midwife, knowledge of the partograph, main source of knowledge of the partograph, its benefits and whether or not they routinely employ it in labour management.

Knowledge score: There were thirteen knowledge questions that assessed the knowledge on the partograph. In order to produce a more objective assessment on the knowledge of the partograph a scoring method was devised and a knowledge score for each of the personnel was obtained by adding up the scores for correct answers given on the selected thirteen questions. A correct response was scored one and incorrect response was scored zero. These scores were then converted into a percent score. The criteria for scoring knowledge was as follows A score of 0 -30% was termed poor knowledge, 40-60% was moderate knowledge and 70-100% was termed good knowledge.

Checklist: This was developed and used to extract information from the partograph. The tool was designed based on information from the partograph used in Tanzania which is recommended by World Health Organization. The tool assessed the parameters of the partograph to determine whether they had been monitored and documented per standard protocol. The standard protocol states that cervical dilatation, moulding of fetal head, descent of fetal head, maternal blood pressure, pulse rate and temperature should be monitored every four hourly, fetal heart rate and uterine contractions should be monitored half hourly, Apgar score and maternal mode of delivery and outcome whether alive or dead should be recorded on the partograph. The tool had three sections. The first section included demographic information of the mother which are patients age, gravidity, parity,

date of onset of labour , date of admission and date of membrane rupture and also maternal complications which arise before and after delivery. The second section included records of labour monitoring parameters which are fetal heart rate, liquor state, moulding/caput, cervical dilatation, descent of head, uterine contraction, Maternal Blood pressure, Pulse rate and temperature. The third part included records on mode of delivery (spontaneous vaginal delivery, Assisted vaginal delivery, caesarian section), fetal (Apgar score, stillbirth, early neonatal death) and maternal outcomes (alive/dead).

Partograph score: A composite variable was generated which includes the 10 partograph parameters which are critically considered in making decision in intrapartum care. The parameters are date of membrane rupture, fetal heart rate, moulding, state of liquor, descent of fetal head, cervical dilatation, uterine contractions, blood pressure, pulse rate, and temperature. Each partograph with all the 10 parameters completely filled was given a score of one (complete) and partograph with even one of the parameter missing /not filled scored 0 (incomplete).

3.9 Recruitment and Training of research assistants

A total of 3 research assistants who are Midwives from other facilities were recruited and trained for one day on the study methodology and data collection procedures.

3.10 Pre testing of the tools

Data collection tools were pretested in Mwanza women Hospital in Nyamagana Municipal Council and then questions which were found not to be clear were revised to ensure clarity, wordings and logical sequence before carrying out the study.

3.11 Data collection methods

Midwives information was obtained by using self administered questionnaire. Midwives whose names appeared on the selected partographs were enrolled to the study. The time and day of filling the questionnaire was arranged following the duty roster where by midwives who appeared on shift at that particular moment, an informed consent was obtained from them and given a questionnaire to fill soon after ending the shift .Moreover

for those who were found to be on annual leave a phone call was made to them and request an appointment with them.

Partograph review: was done by using a checklist designed to record information on main variables which are included as components of the partograph. The parameters or parts of the partograph were assessed to determine whether they have been monitored and filled according to standard protocols.

3.12 Data Management and Analysis

Data was entered in Epi info version7.2.2 software. A data cleaning plan was developed which included processes for screening data for duplication, internal consistency, out of range, invalid values, and outliers.

Data processing and analysis: Before leaving field site, completed questionnaires and checklists were reviewed for accuracy, improbable values, completeness, consistency (with other information collected) and uniformity of data entry. Data entry screen was created with Epi Info version 7.2.2. Numerical codes were used to simplify data entry and to reduce errors.

Univariate analysis; Descriptive analysis was carried out using frequency distribution and proportion for categorical variables and mean and standard deviations for continuous variables.

Bivariate and Multivariate analysis

A chi-square test was used to test for association between exposure variables (Structural factors, staff factors and process factors) and the outcome (completeness of partograph). Logistic regression technique was used to determine independent factors associated with Use and completeness of partograph. A *p*-value of <0.05 was considered significant. The crude odds ratio (OR) was used to quantify statistical association while precision of the association was determined by the associated 95% CI. Step wise logistic regression method was used to obtain a model which explains well the relationship between outcome, and exposure while controlling for confounding variables. All variables with a p-value of less or equal to 0.2 in the Bivariate analysis were added into the multiple logistic regression model.

3.13 Ethical Consideration

Ethical clearance for conducting this research was obtained from the Ethical Review Board of Muhimbili University of health and Allied Sciences with a Ref. No. DA.287/298/01A/. Permission to conduct this study in Mwanza region was obtained from the Regional Administrative Office, District Medical Officers and Hospital In-charges. Participant's names and Identifiers were not included in the data collection tools. Written informed consent was sought from the study participants. Patient names were not used. Immediately after extracting the required information from the partographs, they were returned back to the authority.

CHAPTER FOUR

4.0 RESULTS

4.1 Social demographic characteristics a sample of women delivered in Dec 2018 with partograph filled

A total of 853 partographs were reviewed, About a third (33.2%) of women were in the age group of 20-25 years. The mean age was 26 (+6.72) years. The prime gravida represented 34.7% of the sample and about 41% of them were between gravida 2 to 4. Most (91.9%) had spontaneous vaginal delivery and 4.3% had cesarean section delivery. About 93% of the newborns had the Apgar score of 8 and above.

Table 1: General characteristics of deliveries whose partograph recordings were reviewed (n=853)

Variable	Number	Percent
Age group(years)		
14-19	135	15.8
20-25	283	33.2
26-31	219	25.7
32-37	135	15.8
38-43	62	7.3
44 -49	4	0.5
Not recorded	15	1.8
Gravida		
1	296	34.7
2-4	346	40.6
≥5	208	24.4
Not recorded	3	0.4
Mode of delivery		
Spontaneous Vaginal Delivery	784	91.9
Caesarian section	37	4.3
Assisted Vaginal delivery	3	0.4
Not recorded	29	3.4
Apgar score		
≥8	790	92.6
1-7	43	5.0
0	3	0.4
Not recorded	17	2.0

Of the 853 reviewed partographs, 177(20.7%) and 141(16.5%) were from Sengerema and Sekotoure hospitals respectively while Bukumbi and Sumve hospitals had 12(1.4%) as shown below.

Table 2: Number of partograph reviewed per Hospital

Hospital name	Total number of partographs	Number of partographs reviewed	Percent of the partograph reviewed
Sengerema	500	177	20.7
Nyamagana	359	127	14.8
Sekotoure	399	141	16.5
Bugando	387	137	16.1
Misungwi	200	71	8.3
Bukumbi	35	12	1.4
Ngudu	171	61	7.2
Sumve	35	12	1.4
Magu	115	41	4.8
Nansio	207	73	8.6
Total	2407	853	

4.2 Social demographic Characteristics of midwives who conducted the deliveries

A total of 150 midwives responded to the questionnaire. Of these 71(47.3%) were in the age group of 30-39 years mean age was 34(SD=7.2 years). Females constituted 115 (76.7%).Most of them had diploma in nursing 90 (60%) and majority137 (90%) of the nurses had received formal training on partograph use. Almost two thirds of them 98(65.3) had been working in labour ward for 2-5years as shown in table 3.

Table 3: Demographic characteristics of health workers

Variable	Number	Percent
Age group		
20-29	46	30.7
30-39	71	47.3
40-49	26	17.3
50-59	7	4.7
Sex		
Female	115	76.7
Male	35	23.3
Level of education		
Certificate	43	28.7
Degree	17	11.3
Diploma	90	60.0
Trained on use of partograph		
Trained	137	91.33
Not trained	13	8.67
Years of experience in Labour ward		
< 1 yr	20	13.3
1-5 yrs	**98**	**65.3**
≥6yrs	32	21.3

4.3 Proportion of deliveries with partograph used

The total number of deliveries in all public/designated hospitals were obtained. In total 3992 deliveries were retrieved from the HMIS delivery registers. Then 889 partographs of women who had intrauterine fetal death, elective caesarian section, women admitted in second stage of labour, and those with history of ante partum haemmorhage were excluded because partograph completion is not recommended for mothers with aforementioned characteristics. Then from there 3103 deliveries remained which had 2408 filled partographs. Therefore the overall partograph use in the 10 hospitals was 77.6 %, where by Bugando medical centre and Sengerema district designated hospital had used in more than 90% of the deliveries. Sumve district designated hospital had use in less than 35% of the deliveries as shown in the table below.

Table 4: Proportion of deliveries with partograph used

Hospital Name	Total deliveries	Deliveries with filled partographs	
		number	Percent
Bugando	387	387	100
Bukumbi	52	35	67.3
Magu	187	115	61.5
Misungwi	235	200	85
Nansio	306	207	67.6
Ngudu	203	171	84.2
Nyamagana	450	359	79.8
Sumve	113	35	31
Sekotoure	628	399	63.5
Sengerema	542	500	92
Level of hospital			
Zonal/Regional	1015	786	77.4
District/designated	2088	1622	77.6
Total	**3103**	**2408**	**77.6**

4.4 Proportion of complete partograph as per guideline

This analysis involved the reviewed 10 partograph parameters which are critically considered in making decision in intrapartum care whether they were standard recorded as per guideline. There was significant difference in recording of the 10 partograph parameters between regional/referral and district hospitals. Most of the parameters were found to be recorded according to standard in regional/referral hospitals than in district hospitals. The date of membrane rupture was recorded according to standard in more than 80% in zonal/regional hospital but in district/designated hospitals was completed according to standards in less than 50%. Important parameters such as fetal heart rate , moulding, state of liquor, and descent of fetal head were found to be up to standard in more than 80 % in zonal/regional hospitals while in district/designated hospitals it was less than 80%.

Table 5: Proportion of complete partographs as per guideline

Variable	Level of facility		P-value
	Zonal/Regional (n=278)	District (n=575)	
Date of membrane ruptured			<0.01
Standard	236(84.9)	275(47.8)	
Substandard	3(1.1)	91(15.8)	
Not recorded	39(14.0)	209(36.4)	
Fetal heart rate			<0.01
Standard	257(92.5)	415(72.2)	
Substandard	17(6.1)	138(24.0)	
Not recorded	4(1.44)	22(3.8)	
Moulding			<0.01
Standard	251(90.3)	372(64.7)	
Substandard	7(2.5)	112(19.5)	
Not recorded	20(7.2)	91(15.8)	
State of liquor			<0.01
Standard	234(84.2)	354(61.6)	
Substandard	6(2.20	108(18.8)	
Not recorded	38(13.7)	113(19.7)	
Descent of fetal head			< 0.01
Standard	257(92.5)	451(78.4)	
Substandard	13(4.7)	93(16.2)	
Not recorded	8(2.9)	31(5.4)	
Cervical dilatation			< 0.01
Standard	271(97.5)	495(86.1)	
Substandard	4(1.4)	70(12.2)	
Not recorded	3(1.1)	10(1.7)	
Uterine contractions			< 0.01
Standard	259(93.2)	436(75.8)	
Substandard	12(4.3)	121(21.0)	
Not recorded	7(2.5)	18(3.1)	
Blood pressure			< 0.01
Standard	287(85.3)	385(67.0)	
Substandard	20(7.2)	93(16.2)	
Not recorded	21(7.6)	97(16.9)	
Pulse rate			<0.01
Standard	239(86.0)	305(53.0)	
Substandard	19(6.8)	91(15.8)	
Not recorded	20(7.2)	179(31.1)	
Temperature			<0.01
Standard	235(84.5)	321(55.8)	
Substandard	20(7.2)	61(10.6)	
Not recorded	23(8.3)	193(33.6)	

The overall partographs completeness score was obtained by generating a composite variable which had all the 10 partograph parameters. Partographs with all the parameters recorded to standard were termed complete and those substandard and not recorded termed incomplete. Therefore the overall completeness was 43.5%, whereby a significant difference was found between Zonal/regional 278(62.6%) and District/designated hospitals 575 (34.6%) and the p. value was <0.001.

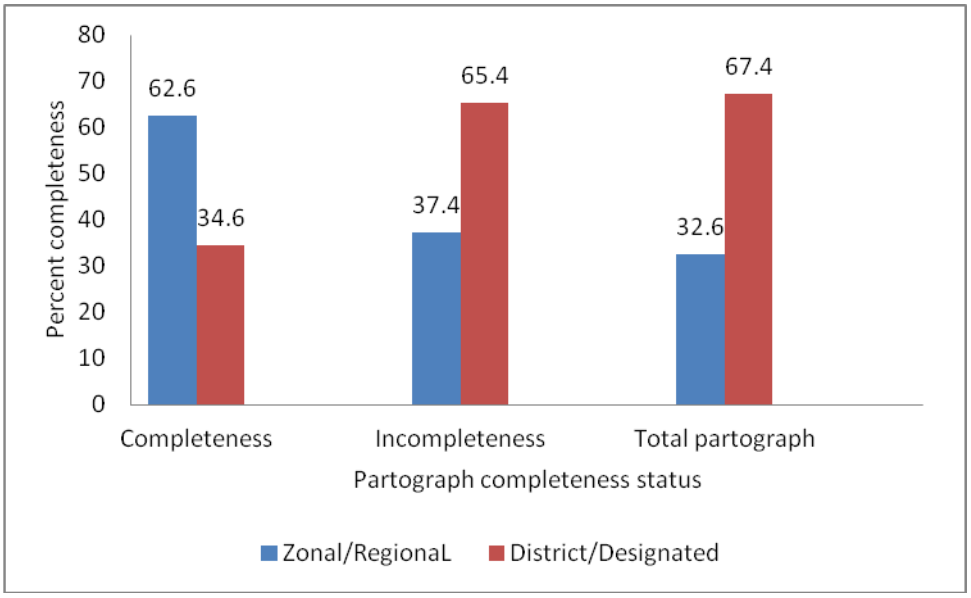

Figure 4: Proportion of complete filled partograph by level of Hospital

4.5 Health providers factors influencing completeness of partograph

This analysis was done only to 321 partographs which were filled by one health provider as other partographs were filled by ≥2 health providers and hence could not have specific provider characteristics.In order to identify health providers factors associated with completeness of partograph, a bivariate analysis using chi-square test was used. The results indicated that factors found to be associated with partograph completeness were sex of health providers, health providers level of education, provider had received training on emergency obstetric and newborn care, provider's knowledge on partograph and years of experience in labour ward. As presented in table 6, 203(81.5%) of partographs filled with midwives who were female were completely recorded compared to only 31(43.1%) among those filled by male providers and the difference was statistically significant .Thirty three (89.2%) of the partographs which were filled by providers with degree level of education

were completely recorded which is higher than 82(65.6%) of those filled by midwives with certificate level and the difference was statistically significant (P=<0.013). Eighty five (76.6%) of partographs which were filled by health providers who had been trained on Emergency Obstetric and New born care were completely recorded, compared to only 85(40.5%) among those filled by providers who were not trained on emergency obstetric care and the difference was statistically significant (P=<0.001). Fifty four partographs (77.1%) which were filled by midwives with moderate knowledge were completely filled which is higher compared to 1(0.6%) of those filled by midwives with poor knowledge on partograph. Fourty eight (81.36%) of the partographs filled by health providers with ≥6 years of experience in labour ward were complete recorded which is higher than 26 (55.32%) of those filled by midwives with < 1 year in the labour ward.

Table 6: Health providers related factors influencing completeness of partographs (n=321)

Variable	All n(Col%) 321(100)	Partograph completeness (n=321)		P value
		Yes (n %)	No (n %)	
Age category				
20-29	46(30.7)	26(56.5)	20(43.5)	
30-39	71(47.3)	38(52.1)	34(47.9)	
40-49	26(17.3)	16(61.5)	10(38.4)	<0.314
50-59	7(4.7)	3(42.9)	4(57.1))	
Sex				
Female	249(77.6)	203(81.5)	46(18.5)	<0.001
Male	72(22.4)	31(43.1)	41(56.9)	
Level of Education				
Certificate	125(38.9)	82(65.6)	43(34.4)	
Diploma	159(49.5)	119(74.8)	40(25.2)	<0.013
Degree	37(11.5)	33(89.2)	4(10.8)	
Trained on management of labour				
Yes	261(81.3)	88(33.7)	173(66.3)	0.060
No	60(18.7)	28(46.7)	32(53.3)	
Trained on Emergency Obstetric care				
Yes	111(34.6)	85(76.6)	26(23.4)	<0.001
No	210(65.4)	85(40.5)	125(59.5)	
Knowledge on partograph				
Poor	5(1.6)	1(0.6)	4(2.9%)	
Moderate	70(21.8)	48(68.6)	22(31.4)	
Good	246(76.6)	175(71.1)	71(28.9)	0.237
Experience in Labour ward				
< 1 year	47(14.6)	26(55.32)	21(44.68)	
1-5 years	215(67.0)	160(74.42)	55(25.58)	
≥6 Years	59(18.4)	48 (81.36)	11(18.64)	0.008

4.6 Stratified Analysis for Health provider factors

Sex and experience in labour ward was found to be effect modifier. Male providers with degree level of education had an increased odds of completing the partograph than female and thus the interaction of two variables modified the association shown by difference of odds ratio of 10.79 -7.22. Providers who are females and have been working in labour ward for ≥6 years had higher odds of completing the partograph than males and the interaction of these variable modified the association from 3.52-1.26.

Table 7: Stratified Analysis for health provider factors

Exposure	Crude OR(95%CI)	Covariate	Covariate strata	Stratum specific, OR(95%CI)	Chi-square for interaction p-value
Level of education	10.79(4.20-52.12)	sex	Female	0.97(0.50-1.90)	0.036
			Male	7.2(2.41-21.57)	
Experience in labour ward	3.52(1.47-8.43)		Female	1.26(1.52-6.96)	<0.001
			Male	0.98(0.57-15.510)	

4.7 Multivariate logistic regression

Age, and knowledge of partograph did not show any significance association with Completion of partograph according to standards. In this analysis, providers who were female were 8.3 times higher to complete the partograph (aOR 8.3 (95%CI)6.46-31.99] compared to male providers . Those providers with degree level of education were 7.4 times higher to complete the partograph than those with certificate level [aOR7.49 (95%CI) 2.10-26.66].

Providers who had received training on emergency obstetric care were 1.36 times higher to complete the partographs than those who were not trained [aOR 1.36 (95%CI) 0.81-2.29]. Providers with good knowledge on partograph were 2.37 times higher to complete the partograph than those with poor knowledge [aOR 2.37 (95%CI) 1.39-4.05].Providers who had been working in labour ward for 1-5 years were 3.9 times higher to complete the partograph than those who work for less than one year [aOR3.9 (95%CI)1.62-9.51], (Table 8).

Table 8: Health providers related factors associated with completeness of partograph

Variable	cOR(95%CI)	P value	aOR(95%CI)	P value
Age category			-	
20-29	Ref			
30-39	1.67(0.88-3.17)	0.114	1.12(0.52-0.41)	0.773
40-49	1.48(0.75-2.90)	0.252	1.71(0.66-4.38)	0.269
50-59	1.43(0.70-2.90)	0.319	1.13(0.44-2.88)	0.795
Sex			-	
Female	5.84(3.31-10.27)	<0.001	8.38(6.46-31.99)	<0.001
Male	Ref			
Level of Education				
Certificate	Ref			
Diploma	1.56(0.85-2.89)	0.174	1.17(0.59-2.29)	0.650
Degree	10.79(4.20-52.12)	0.000	7.49(2.10-26.66)	0.002
Trained on management of labour			-	
Yes	0.59(0.30-1.17)	0.136	0.69(0.32-1.51)	0.358
No	Ref			
Trained on Emergency Obstetric care				
Yes	0.59(0.89-2.84)	0.118	1.36(0.81-2.29)	0.249
No	Ref			
Knowledge on partograph				
Poor	Ref			
Moderate	1			
Good	5.13(2.37-11.08)	0.000	2.37(1.39-4.05)	0.001
Experience in Labour ward				
< 1 year	Ref			
1-5 years	2.34 (1.22 - 4.51)	0.010	3.93(1.62-9.51)	0.002
≥6 Years	3.52 (1.47 - 8.43)	0.005	1.94(0.61-6.14)	0.258

4.8 Health facility related factors associated with completeness of partograph

This analysis was done to 853 partographs. In order to identify facility related factors associated with completeness of partograph, a chi-square test was used. The results indicated that among the facility factors associated with partograph completeness were availability of guidelines and protocols, and having a hospital policy which emphasizes on frequent use of partograph. As presented in table 8, of 756(88.6%) partographs which were filled by health providers reported to have guidelines/ protocols ,470(63%) were completed, and also out of 784(91.9%) partographs filled with health providers who reported to be aware on the hospital policy on use of the partograph ,(478)61% were completed.

Table 9: Health facility related factors influencing completeness of partograph

Variable	Partograph completeness(n=853)		P value
	Yes	No	
Availability of guidelines/protocols			
Yes	470(63.0)	286(37.8)	<0.001
No	40(41.2)	57(58.8)	
Hospital policy to use partograph			
Yes	478(61.0)	306(39.0)	0.009
No	31(44.9)	38(55.1)	

CHAPTER FIVE

5.0 DISCUSSION OF FINDINGS

This study revealed low proportion of partograph use among the ten hospitals in Mwanza region. Only about two third of deliveries in Mwanza in Dec. 2018 were monitored by using partograph. This findings align with those of Amhara region in Ethiopia (12) and was higher compared to a study done to public health institutions in Addis Ababa (37).

There was a marked difference in partograph use among the hospitals.
The possible reason for this discrepancy might be due to the difference in level of facility that is zonal, regional and district, and also difference in geographical location of the hospitals (urban and rural) which may lead to infrequent supportive supervision and also mentorship to some hospitals. The other possible explanation could be the fact that some hospitalsare teaching hospitals and thus performance of activities concerning quality obstetric care provision involving use of partograph were timely monitored that in return may increase the performance of partograph utilization. Use of partograph was low in these hospitals particularly the district hospitals This is inline with a study done in Ethiopia on knowledge and utilization of partograph which revieled low proportion of partograph use in hospitals (25).

Despite the good knowledge of health providers on the partograph, there was inadequate use of the tool in labour monitoring considering that WHO recommended its widespread use for all women during labour (38).
Partographs were judged substandard based on the recordings. This indicates that labour monitoring in this hospitals was unsatisfactory, or even recording of labour parameters is inadequate. This study revealed an overall low proportion of partograph completeness when all the ten parameters were considered.

In all the reviewed partographs, completeness was less than 45%, and a significant difference was found between zonal /regional and district/designated hospitals Compared to other studies on the use of partograph in other settings (20,23,25,39), completeness in this study was relatively better although still not adequate. This difference could be due

to differences in the sample size and also in this study majority of the health providers have good knowledge on partograph.

Various labour parameters in this study such as date of membrane rupture, fetal heart rate, moulding, descent of fetal head, cervical dilatation and uterine contraction were mostly recorded to standard in zonal/regional hospitals than in districts/designated hospitals. This discrepancy might be due to availability of mentors /supervisors in zonal/regional hospitals ,and also the fact that the zonal hospital is a teaching hospital and so the performance of activities concerning quality obstetric care provision involving use of partograph were timely monitored that in return may increase the performance of partograph completeness

However, the regional hospital being close to the Regional Medical Officer's (RMO) office may had also facilitate frequent of supportive supervision than other hospitals. Lack and poor documentation to some parameters on the progress of labour could prevent early detection of complications (40). Early detection as well as timely intervention on obstetric complications is the most crucial activities to prevent maternal and perinatal morbidity and mortality [10]. The poor documentation of the parameters of labour on the partograph found in this study in districts/designated hospitals likely reflects poor intrapartum care.

Moreover, among the provider related factors which were found to be associated with completeness of the partographs were experience in labour ward which shows that the more years of professional experience midwives have in practice, the more likely they are to properly use and complete the partograph. This result is similar to findings from the study done in Nigeria and Rwanda (14,30) which found support for the relationship between years of professional experience and partograph use. This is also supported by Patricia Benner's model of nursing practice in which the author ascertains that nurses/ Midwives develop and improve their nursing skills by exposure to, and the experience of real situations in the clinical field (14). In the other hand the results shows a significant association between sex and partograph completeness. The odds of completing the partographs among females was higher than in males. This findings could be explained by the fact that females are closer to obstetric information as some of them are mothers and maybe because the number of females in this study was high compared to males. This

study is consistence with a previous study done Ethiopia(12).As males midwives are also usually assigned to deliveries wards, this results may be used as an evidence to focus much on male midwives when perfuming supervision and mentorship. However this finding is not in agreement with other studies in which sex has shown no difference with partograph completeness (11,41)

Given that, training of the health providers on emergency obstetric care did not show any significant association with partograph completeness, but their level of knowledge and availability of the partograph in the room influenced proper use of partograph in labor ward. This is similar with the study done in Nigeria (30) which describes that having good knowledge on partograph is an important factor to enhance partograph use.

Furthermore This study revieled that availability of guidelines and protocols was among the facility related factors influencing partograph use and completeness as it helps the midwife to remind him/herself on filling of partograph and also helps to build confidence when filling the tool. This finding is in line with the study done in South Africa which showed that, lack of guidelines/protocols is among the challenges reported to influence use and completeness of partograph (4). However the presence of guiding policy on routine partograph plotting in the hospital was also found to influence partograph use and completeness, as it builds positive attitude towards the tool and hence improve its use. This finding was similar to a study done in India to assess influence of hospital policy on partograph use in tertiary care facilities, which found that hospital policy on routine partograph plotting may positively influence utilization of partograph (15).

5.1 Limitation of the study

The study could not assess the influence of workload such as number of deliveries per shift and number of midwives per shift because of lack of proper records which could help to get accurate information on these variables for the month of December.

CHAPTER SIX

6.1 Conclusion

The results of this study revealed that although more than two thirds of the midwives had good knowledge on the partograph, the actual use of the tool was lower than expected. There is inadequate use of partograph, and most of the partographs are not completed as per the standard guidelines especially at the districts/ designated hospitals, Among the factors which were found to be associated with completeness of the partograph were sex of the health worker, level of education, Trained on emergency obstetric care, providers knowledge on partograph, experience in labour ward, availability of guidelines/protocols and hospital policy on the use of partograph.

6.2 Recommendations

Based on the findings of this study, there is need for the Regional/District health management teams to do regular mentorship to ensure that health providers adhere to guidelines and standard operating procedures and also on job training should be done to newly employed health providers to make sure that they gain experience from seniors.

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APPENDICES

Appendix 1: Questionnaire

To Nurses /Midwives working in Public/Designated Hospitals Labour wards in Mwanza Region, Tanzania.2018/2017Greetings! My name is JANE MCHARO. Currently, I am a student at Muhimbili University of Health & Allied Sciences pursuing MSc in Applied Epidemiology. I am conducting a research to determine use and completeness of partograph and associated factors in Mwanza Region.

Purpose of the study

The aim of this study is to determine Use and Completeness of partograph and associated factors in Mwanza Region. If you agree to join this study, you will be required to answer a series of questions that have been prepared in order to obtain the intended information.

Confidentiality

The information that you will share in the study will be treated as strictly confidential and will be used only for research purpose. Your name will not be used for identification during data analysis and report development, instead number will be used.

Risks

The researcher anticipates no harm will happen to you as you participate in this study.

Benefits

There will be no direct financial benefits to you; however; participation in this research has the potential to improve partograph use through recommendations that will be made from this study.

SECTION 1: IDENTIFIER INFORMATION

Questionnaire number ……..

Date of Interview……../……/……...

District……..Hospital Name……

Ward……..

SECTION 2: PERSONAL CHARACTERISTICS

1. How old are you (age in complete years)……

2. Sex of study participant

a) Male

b) Female

3. What is your educational level

a) Certificate

b) Diploma

c) Advance diploma

d) Degree

e) Masters

4. How long have you been in clinical practice?.....

5. How long have you been working in labour ward (delivery room)?……

6. Did you receive any In-service training on the management of a woman in labour

a) Yes

b) No

7. If yes, Which In-service training did you receive

a) Emergency Obstetric and Newborn Care(EmONC)

b) Advanced Life Serving Skills

c) Help Baby Breath (HBB)

d) Others (specify**) ……**

8. In this hospital what is the average number of Midwife per shift in labourward (delivery room)

a) 1

b) 2

c) 3

d) 4 and above

9. On average how many deliveries do you conduct per shift

……

10. Have you ever used partograph when monitoring a woman in labour?

a) Yes

b) No

11. Did you receive any training on the use of partograph when monitoring labour

a) Yes

b) No

12. Where have you been trained on the use of partograph

a) From a colleague

b) From ward incharge

c) From pre service training

d) From a short course

e) As a topic in training

SECTION 3: KNOWLEDGE ON THE PARTOGRAPH

13. For you, the partograph may be defined as

a) A chart for monitoring labour by doctors

b) A complex tool with pictorial overview of labour to be used by Nurse/Midwife

c) A simple graphic recording of progress of labour and salient conditions of mother and fetus against time in hours

d) I don't know

14. In your hospital /practice, when do you usually enter information to the partograph?

a) Upon diagnosis of labour

b) While the woman is still in labour

c) After delivery of the baby

d) I don't know

Indicate your understanding on partograph by choosing either Yes or NO

SN	**Questions**	**Answers**	
		Yes	**No**
15	The partograph is one of the tool for implementing safe motherhood		
16	The partograph will reduce maternal death		
17	The partograph will reduce newborn death		
18	In normal progress of labour the graph/plot on the partograph should fall on the alert line		
19	In normal progress of labour the graph/plot on the partograph should fall on the left of alert line		
20	In normal progress of labour the graph/plot on the partograph should fall on the right of alert line		
21	In normal labour a woman has got 3 contractions in every 10 minutes		
22	In normal labour minimum duration of a strong contraction is 40 seconds		
23	You require 10 minutes to effectively assess adequacy of contractions		
24	Progress of labour is assessed by the degree of cervical dilatation and descent of presenting part		
25	Labour is prolonged when it lasts more than 12 hours		

26. The following are functions of the action line on the partograph

a) Indicates appropriate action must be taken

b) Allows time for the woman to be adequately assessed for appropriate intervention

c) Continuous observation till delivery

d) I don't know

SECTION 4: PARTOGRAPH UTILIZATION

27. Are their partograph forms in your labour ward?

a) Yes

b) No

28. Are there guidelines /protocols in labour ward instructing on how to fill the partographs

a) Yes

b) No

29. Do you normally use partograph to all women in labour in monitoring progress of labour in this facility?

a) Yes

b) No

30. How often is it used

a) Routinely

b) Rarely

c) Occasionally

31. Is it a hospital policy that all women in labour should be monitored using partograph?

a) Yes

b) No

c) I don't know

32. Do you consider partograph to be useful in obstetric review

a) Yes

b) No

c) I don't know

Appendix 2: Dodoso la muundo (Swahili version)

Dodoso kwa Wakunga katika Hospitali za Serikali/Teule mkoa wa Mwanza

Utangulizi

Habari, Jina langu naitwa Jane Mcharo. Ninasoma katika chuo Kikuu Cha Tiba na sayansi shirikishi Muhimbili. Ninasoma shahada ya Uzamili ya utafiti wa magonjwa.Tumekuja kufanya utafiti juu ya matumizi na ujazaji wa grafu ya uchungu wakati wa kujifungua katika Mkoa wa Mwanza

Lengo la utafiti

Lengo la utafiti huu ni kuangalia matumizi na ujazaji utafiti juu ya matumizi na ujazaji wa grafu ya uchungu wakati wa kujifungua katika Mkoa wa Mwanza.Ukikubali kujiunga na utafiti huu utahitajika kujibu maswali ambayo yameandaliwa ili kuweza kupata hizo taarifa

Usiri

Taarifa utakazozitoa zitakuwa ni siri na zitatumika kwa ajili ya utafiti tu na si kwa kitu kingine chochote Mazungumzo yetu yatachukuwa kama dakika arobaini na tano mpaka hamsini hivi kukamilika, zitatumika namba na sio jina wala hakutakuwa na kitu kingine chochote cha kutambua ushiriki wako.

Madhara

Hatutarajii kutokea madhara ya aina yoyote kwako yatakayosababishwa na utafiti huu,

Faida

Hakutakuwa na malipo yeyote kama vile malipo japokuwa kushiriki kwenye huu utafiti kutachangia kuboresha matumizi ya grafu ya uchungu kufuatia mapendekezo ambayo yatatolewa baada ya utafiti huu

SEHEMU YA KWANZA (1) UTAMBULISHO BINAFSI

Namba ya dodoso ....., Namba ya mteja .....tarehe ya Mahojiano ...../..... /...
Wilaya ....., Jina la Hospitali.....
Wodi.....

SEHEMU YA PILI (2) TAARIFA BINAFSI

1. Una umri gani(miaka).....

2. Jinsia ya mshiriki wa utafiti

a) Kiume

b) Kike

3.Kiwango cha Elimu

a) Cheti

b) Stashahada

c) Shahada

4.Umefanya kazi kwenye kituo hiki kwa muda gani.....

5.Umefanya kazi wodi ya wazazi kwa muda gani.....

6.Ushawahi kuhudhuria mafunzo kuhusu kumuhudumia mama mjamzito wakati wa Kujifungua

a)Ndiyo

b)Hapana

7.Ni mafunzo gani uliohudhuria

a)Huduma za dharura wakati wa Uzazi

b)Huduma za kuokoa maisha zilizoboreshwa

c)Kusaidia mtoto kupumua

d)Mengineyo(elezea).....

.....

.....

.....

8. Kwa wastani ni wakunga wangapi wanaingia kazini kwa zamu wodi ya Uzazi

a) 1

b) 2

c) 3

d) 4 na zaidi

9. Kwa wastani wanajifungua wamama wangapi ndani ya masaa 24.....

10. Umeshawahi kutumia grafu ya uchungu wakati unamuhudumia mama akiwa kwenye uchungu

a) Ndiyo

b) Hapana

11. Ulishawahi kupata mafunzo ya ujazaji wa grafu ya uchungu

a) Ndiyo

b) Hapana

12. Ni wapi ulipata mafunzo ya ujazaji wa grafu ya uchungu

a)Maelekezo kutoka kwa mtumishi mwenzangu

b)Msimamizi wa kazi

c)Mafunzo chuoni

d)Kozi fupi

e)Mada mojawapo kwenye warsha

SEHEMU YA TATU (3) UELEWA KUHUSU GRAFU YA UCHUNGU

13. Kwa uelewa wako grafu ya uchungu ninini

a)Ni chati inayotumika na madaktari wakati wa ufuatiliaji wa mwenendo wa uchungu wa kuzaa kwa wakinamama

b)Ni kitendea kazi tata chenye maelezo ya uchungu kinachotumika na wakunga

c)Ni grafu rahisi ya kurekodi maendeleo ya uchungu na hali ya mama na mtoto wakati wa kujifungua.

d)Sijui

14. Kwa kawaida ni wakati gani unaingiza taarifa za mama baada ya kumfanyia uchunguzi Kwenye grafu ya uchungu

a)Baada ya kutathmini uchungu

b)Wakati mama akiwa kwenye uchungu

c)Baada ya mtoto kuzaliwa

d)Sijui

Maelezo:Onyesha uelewa wako kuhusu grafu ya uchungu kea kuchagua Ndio au Hapana

Namba	Swali	Jibu	
		Ndiyo	Hapana
15	Grafu ya uchungu ni moja ya kitendea kazi kwaajili ya kutekeleza uzazi salama		
16	Grafu ya uchungu inapunguza vifo vya wakinamama		
17	Grafu ya uchungu inapunguza vifo vya watoto wachanga		
18	Wakati wa uchungu wa kawaida wa kuzaa grafu ya uchungu inakuwa kwenye mstari wa tahadhari		
19	Wakati wa uchungu wa kawaida wa kujifungua grafu inakuwa kushoto mwa mstari wa tahadhari		
20	Wakati wa uchungu wa kawaida wa kujifungua grafu inakuwa kulia mwa mstari wa tahadhari		
21	Wakati wa uchungu wa kawaida wa kujifungua mama anapata mikazo mitatu(3)ndani ya dakika kumi		
22	Kwa wastani uchungu wa kawaida wa kujifungua unachukua dakika arobaini(40)		
23	Unahitaji kuchunguza kwa dakika kumi ili kuwa na uhakika kwamba ni uchungu wa kweli au uchungu unaongezeka vizuri		
24	Maendeleo ya uchungu wa kujifungua yanapimwa kwa kufuatia kufunguka kwa njia ya mlango wa kizazi na kushuka kwa sehemu ya mtoto iliyotangulia(kichwa)		
25	Uchungu ukizidi masaa kumi na mbili tunasema ni uchungu wa muda mrefu		

26. Zifuatazo ni kazi za mstari wa kuchukua hatua katika grafu ya uchungu

a)Unaonyesha muda sahihi wa kuchukua hatua

b)Unatoa muda kwa mkunga kumfanyia mama uchunguzi kwa makini

c)Unatoa muendelezo wa uchunguzi mpaka wakati wa kujifungua

d)Sijui

SEHEMU YA NNE (4) MATUMIZI YA GRAFU YA UCHUNGU

27. Je fomu za grafu ya uchungu zinapatikana wodi ya uzazi?

a) Ndiyo

b) Hapana

28. Je kuna miongozo inayopatikana wodi ya wazazi inayoelezea namna ya kujaza grafu ya uchungu

a) Ndiyo

b) Hapana

29. Je ni kawaida kwa kituo hiki kutumia grafu ya uchungu kwa kinamama wote wakiwa katika uchungu wa kujifungua

a) Ndiyo

b) Hapana

30. Ni mara ngapi mnatumia grafu ya uchungu katika kufuatilia maendeleo ya mama akiwa katika uchungu wa kujifungua

a) Kila mara

b) Kwa nadra

c) Mara chache

31. Je kuna sheria katika kituo hiki ya kuhakikisha kila mama anaekuja kujifungua anahudumiwa kwa kutumia grafu ya uchungu

a) Ndiyo

b) Hapana

c) Sijui

32. Je unafikiri grafu ya uchungu ni muhimu katika kutathmini afya ya uzazi kwa wakina mama

a) Ndiyo

b) Hapana

c) Siju

Asante kwa ushirikiano

Appendix 3: Informed consent (English version)

Consent to participate in this study

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES (MUHAS).

Consent to participate in a study titled Use and completeness of partograph and associated Factors in Mwanza Region.

ID NO

Greetings! My name is JANE MCHARO. Currently, I am a student at Muhimbili University of Health & Allied Sciences pursuing MSc in Applied Epidemiology. I am conducting a research to determine use and completeness of partograph and associated factors in Mwanza Region.

Purpose of the study

The aim of this study is to determine Use and Completeness of partograph and associated factors in Mwanza Region. If you agree to join this study, you will be required to answer a series of questions that have been prepared in order to obtain the intended information.

Confidentiality

The information that you will share in the study will be treated as strictly confidential and will be used only for research purpose. Your name will not be used for identification during data analysis and report development, instead number will be used.

Risks

The researcher anticipates no harm will happen to you as you participate in this study.

Benefits

There will be no direct financial benefits to you; however; participation in this research has the potential to improve partograph use through recommendations that will be made from this study.

Rights to Withdraw and Alternatives

To participate in the study is voluntary. You are free to choose whether to participate or not or withdraw in this study at any time. Refusal to participate or withdraw will not imply any effect to your service and do not interfere with the study. However, we would like you to participate in this study because your views are very important in this study.

Who to contact

If there is any question about this study please don't hesitate to communicate to the **Director of Research and Publication Dr. Bruno Sunguya, the** Muhimbili University of Health and Allied Science (MUHAS), P. O. Box 65001, Dar es Salaam, Tel. no 2150302-6. OR

Dr. R. Mpembeni, The study Supervisor (Mobile: 0767394636)
Dr. A. Abade, The study Supervisor (Mobile: 0683498787)
Dr. D. Faini, The study Supervisor (mobile: 0752587105)
Jane E. Mcharo–Principal Investigator (Mobile 0756443880)**.**

Participant agree ☐ **Participant disagree** ☐

Signature of Participant …… Researcher's signature……..

Date …….. Date……..

Appendix 4: Ruhusa idhini (Swahili version)

HATI YA KUKUBALI KUHOJIWA

Namba ya utambulisho

Habari, Jina langu naitwa Jane Mcharo. Ninasoma katika chuo Kikuu Cha Tiba na sayansi shirikishi Muhimbili. Ninasoma shahada ya Uzamili ya utafiti wa magonjwa.Tumekuja kufanya utafiti juu ya matumizi na ujazaji wa grafu ya uchungu wakati wa kujifungua katika Mkoa wa Mwanza

Lengo la utafiti

Lengo la utafiti huu ni kuangalia matumizi na ujazaji utafiti juu ya matumizi na ujazaji wa grafu ya uchungu wakati wa kujifungua katika Mkoa wa Mwanza.Ukikubali kujiunga na utafiti huu utahitajika kujibu maswali ambayo yameandaliwa ili kuweza kupata hizo taarifa

Usiri

Taarifa utakazozitoa zitakuwa ni siri na zitatumika kwa ajili ya utafiti tu na si kwa kitu kingine chochote Mazungumzo yetu yatachukuwa kama dakika arobaini na tano mpaka hamsini hivi kukamilika, zitatumika namba na sio jina wala hakutakuwa na kitu kingine chochote cha kutambua ushiriki wako.

Madhara

Hatutarajii kutokea madhara ya aina yoyote kwako yatakayosababishwa na utafiti huu,

Faida

Hakutakuwa na malipo yeyote kama vile malipo japokuwa kushiriki kwenye huu utafiti kutachangia kuboresha matumizi ya grafu ya uchungu kufuatia mapendekezo ambayo yatatolewa baada ya utafiti huu

Haki ya kujitoa kujitoa katika utafiti

Kushiriki kwako katika utafiti huu ni hiari, unaweza kuamua kukataa au kutoshiriki katika utafiti huu na hakuna adhabu itakayofanyika kwa kutoendelea kushiriki katika mazungumzo. Hata hivyo ni mategemeo yangu kuwa utashiriki kikamilifu katika utafiti huu kwani maoni yako ni muhimu sana.

Kama kuna swali kuhusianan na utafiti huu itakubidi kuwasiliana na

Mkurugenzi wa Utafiti na Uchapishaji Dr Bruno Sunguya - Chuo Kikuu cha Afya na Sayansi ya Tiba Muhimbili, S.L.P. 65001 DSM. Simu namba 2150302-6. Kama una maswali zaidi unaweza kuwasiliana na

Dr. Rose Mpembeni– Msimamizi wa Utafiti (simu: 0767394636)

Dr.A. Abade- Msimamizi wa Utafiti (simu: 0683498787)

Dr. D.Faini – Msimamizi wa Utafiti(simu:0752587105)

Jane E.Mcharo–Mtafiti Mkuu (simu: 0756443880)

"Nimesoma na nimeelewa ombi lako, kwa hiari yangu, bila ya nguvu wala ahadi zozote nakubali kushiriki katika utafiti huu".

"Samahani, sipo tayari kushiriki ☐ Nipo tayari Kushiriki ☐

Sahihi ya mshiriki/Alama ya dole gumba……..... Tarehe.....

Sahihi ya muulizaji..... Tarehe .....

Appendix 5: Partograph checklist

PARTOGRAPH CHECKLIST			
Facility Name			
Date of data collection			
Partograph identifier			
Maternal Age			
Gravida			
Parity			
Date of admission			
Date of Onset of labour			
Maternal complications before delivery	**Yes**	**No**	
Premature rupture of membrane			
High Blood Pressure			
Pre-eclampsia			
Eclampsia			
Anaemia			
Complications during and after delivery	**Yes**	**No**	
Postpartum Haemorrhage			
Pre-eclampsia			
Eclampsia			
Obstructed labour			
Ruptured uterus			
Variable Name	**Recorded**		
	Standard	**Substandard**	**Not**
Date of membrane rupture			
Fetal Monitoring			
Fetal heart rate			
Moulding			
State of liquor			

Labour Progress			
Descent of fetal head			
Cervical Dilatation			
Uterine contractions			
Maternal Monitoring			
Blood pressure			
Pulse rate			
Temperature			
Mode of Delivery			
Spontaneous Vaginal Delivery			
Assisted Vaginal Delivery			
Caesarian Section			
Condition of the Baby after birth			
Apgar Score			
Stillbirth			
Early neonatal death			
Maternal Outcome			
Alive			
Dead			
Cadre of the service providers who filled the partograph			
No of service providers who filled the partographs			
Initials of service providers			

Appendix 6: Approval of ethical clearance

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES

P.O. Box 65001
DAR ES SALAAM
TANZANIA
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Tel G/Line: +255-22-2150302/6 Ext. 1015
Direct Line: +255-22-2151378
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E-mail: dpgs@muhas.ac.tz

Ref. No. DA.287/298/01A/ 27th December, 2018

Ms. Jane Elirehema Mcharo
MSc. Applied Epidemiology
MUHAS.

RE: APPROVAL OF ETHICAL CLEARANCE FOR A STUDY TITLED: "USE AND COMPLETENESS OF PARTOGRAPH AND ASSOCIATED FACTORS IN MWANZA REGION"

Reference is made to the above heading.

I am pleased to inform you that, the Chairman has, on behalf of the Senate, approved ethical clearance for the above-mentioned study. Hence you may proceed with the planned study.

The ethical clearance is valid for one year only, from 24th December, 2018 to 23rd December, 2019. In case you do not complete data analysis and dissertation report writing by 23rd December, 2019, you will have to apply for renewal of ethical clearance prior to the expiry date.

Dr. Emmanuel Balandya
ACTING: DIRECTOR OF POSTGRADUATE STUDIES

cc: Director of Research and Publications
cc: Dean, School of Public Health and Social Sciences, MUHAS

Appendix 7: Permission to conduct study in facilities in Mwanza Region

THE UNITED REPUBLIC OF TANZANIA
PRESIDENT's OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

MWANZA REGION:

Tel. Address: "REGCOM"
Tel. No: 028-2502171
FAX NO 028-2540850

REGIONAL COMMISSIONER'S OFFICE,
Health Department,
P.O. BOX 132,
MWANZA.

Ref. No: FA.222/264/01F/4

18th January, 2019

City Director,
Mwanza

District Executive Director,
Kwimba, Misungwi, Ukerewe,
Magu and Sengerema

Medical Officer Incharge,
Sekou Toure Regional Referral Hospital,
P. O. Box 132,
MWANZA

RE: REQUEST FOR PERMISSION TO CONDUCT STUDY IN FACILITIES WITHIN MWANZA REGION

Please refer to the subject above.

The Regional Medical Officer is granting permission to Ms. Jane Elirehema Mcharo is a student at Muhimbili of Health and Allied Sciences University for the degree of Master of Applied Epidemiology titled ***"Use and completeness of partograph and associated factors in Mwanza Region"***. She is required to share the results of the research to all levels in order to inform the decision makers.

It's my hope that will be given cooperation to the requirements of her study.

Best regards,

Dr. Silas Wambura
For: REGIONAL ADMINISTRATIVE SECRETARY
MWANZA

Copy to: Ms. Jane E. Mcharo

Director,
Dean, School of Public Health and
Social Sciences,
DAR ES SALAAM