

**MAKERERE**



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**SCHOOL OF PUBLIC HEALTH**

**PARTOGRAPH COMPLETION LEVELS. A COMPARISON OF RURAL-URBAN  
HEALTH FACILITIES IN JINJA DISTRICT IN 2023**

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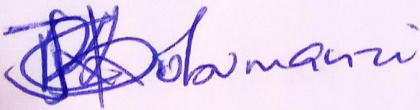
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## **Declaration**

I, Kobumanzi Cathelyne, hereby declare that all the work presented in this dissertation is my original work. It has never been submitted either in part or in full for publication or award of a degree in any other University. Other author materials have been recognized through citing the sources. I hereby present it for the partial fulfillment of the award of the degree of Master of Public Health of Makerere University, Kampala, Uganda.

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## **Acknowledgement**

I acknowledge me, myself and I! What a journey!

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## **Abbreviations and acronyms**

CMO - City Medical Officer

DHIS2 - District Health Information System 2

DHO - District Health Officer

IGME - Inter-Agency Group for Child Mortality Estimation

JDLG- Jinja District Local Government

HCIV- Health Center 4

KII - Key Informant Guide

MPDSR – Maternal and Perinatal Death Surveillance and Response

PPH - Post Partum Haemorrhage

UDHS - Uganda Demographic and Health Survey

UNICEF - United Nations International Children's Emergency Fund

WHO - World Health Organization

## Operational definitions

**A partograph** An hourly graphical representation of the progress of labour where information about the foetal, maternal wellbeing and progress of labour are recorded during labour and it helps to identify early signs of prolonged or obstructed labour with action and alert lines, enabling timely interventions

**Partograph completion** A partograph with 11-13 parameters correctly documented according to the standard MOH guidelines

**Urban Public Health facility** A government funded health facility that is located in an area that is considered urban per the classification of the Uganda Bureau of Statistics International Labour Organisation (ILO).

**Rural Public Health facility** A government funded health facility that is located in an area that is considered rural as per the classification of International Labour Organisation (ILO).

**Prolonged labour** When childbirth takes more than 20 hours of active labour longer than usual, often due to slow dilation or descent of the baby through the birth canal

**Complicated labour** Childbirth that deviates from the normal process, often involving factors such as prolonged labour, foetal distress, or maternal health issues, which may require medical intervention to ensure a safe delivery

**Birth Asphyxia** The failure to establish breathing at birth.

## **Abstract**

**Introduction:** Maternal and neonatal mortality rates in Uganda remain a significant public health concern, with maternal deaths attributed to postpartum hemorrhage, sepsis, and delivery-related complications, while neonatal deaths are linked to birth asphyxia and infections. This study aimed to evaluate partograph completion levels, challenges and enablers to partograph completion, and the relationship between partograph completion and neonatal outcomes.

**Methods:** This cross-sectional study was conducted in Jinja District, Uganda, reviewing patient delivery folders from Buwenge HCIV (rural setting) and Mpumudde HCIV (urban setting). A total of 352 out of 866 folders were sampled from Buwenge HCIV, and 352 out of 1148 from Mpumudde HCIV. A checklist was used to measure neonatal labor outcomes and partograph completion. Key informant interviews explored contextual challenges and enablers of partograph completion. The primary overall outcome was dichotomized into completion/non-completion. Univariate, bivariate, and multivariable analyses were conducted, with findings presented in tables, pie charts, bar graphs, and narrative format.

**Results:** The majority were mothers aged 20-24 (260/704), homemakers (227/704), married (368/704), and residing in rural areas (447/704), with most being multigravida (507/704) and in their 37th week of gestation or beyond (624/704). Out of 704 partographs, only 68 were fully completed, with 29/352 at Buwenge HCIV and 39/352 at Mpumudde HCIV. Cervical dilation was the most recorded parameter. Partographs for asphyxiated neonates had a completion level of 11.3%, compared to 9.3% for those without asphyxia, but this difference was not statistically significant (aOR: 0.76, p=0.626). Challenges in the urban context included high patient volumes, work overload for healthcare staff and inconsistent supportive supervision. Enablers included access to training and patient education and awareness. Challenges in the rural context included, planned absenteeism among staff, patient hesitance to be monitoring and influence of native medicine on patient care. Enablers included, mentorship from senior midwives and awareness of the partographs' importance.

**Conclusion:** The study highlights that urban health facilities in Jinja, Uganda, have higher partograph completion rates than rural facilities due to better staffing and resources, while emphasizing the need for targeted interventions to address the unique challenges faced by rural settings.

## **CHAPTER 1**

### **1.0 INTRODUCTION AND BACKGROUND**

#### **Introduction**

In a world where every heartbeat matters, the persistently high maternal and neonatal mortality ratios stand as a stark challenge to our shared commitment to health (Heard, 2021). According to World Health Organization (WHO), 287000 women died during pregnancy and childbirth in 2020 and 70% of these deaths were experienced in sub-Saharan Africa. Nearly 95% of maternal deaths that occurred in low and lower-middle-income countries were preventable (WHO, 2023a). Women face the risk of death due to complications in pregnancy and childbirth, many of which arise during pregnancy and are often preventable or treatable. Some complications may preexist but can worsen if not addressed as part of the woman's care (Say et al., 2014). The primary contributors to approximately 75% of maternal deaths include Post- Partum Hemorrhage, sepsis (typically following childbirth), and blood pressure-related disorders during pregnancy (pre-eclampsia and eclampsia, PET with severe features), delivery-related complications, and unsafe abortion (Say et al., 2014).

Approximately 2.4 million newborns lose their lives annually around the globe, with roughly one-third succumbing on the day of birth and nearly three-quarters within the first week of life and an extra 2 million stillborn births (IGME, 2019, UNICEF, 2020). As observed with maternal deaths, Sub-Saharan Africa holds the unfortunate distinction of having the world's highest neonatal mortality rate, standing at 27 deaths per 1000 live births and contributes 43% of global newborn deaths (WHO, 2023b) . In 2019, approximately 1 million newborns lost their lives within the first 24 hours and the leading causes of neonatal deaths were preterm births, complications during childbirth such as birth asphyxia or lack of breathing at birth, infections, and birth defects (WHO, 2023b).

The Uganda Demographic Health Survey (UDHS) findings of 2022 showed that the maternal mortality ratio dropped from 338 per 100000 live births in 2016 to 189 per 100000 live births in 2022 and neonatal mortality was reported at 22 deaths per 1000 live births (UDHS, 2023). In the case of Jinja, from 2021 to 2023, 64 maternal deaths per 100,000 live births and 7 perinatal deaths

per 1000 live births on average were reported, according to the health facilities that reported to the DHIS2 data base (DHIS2, 2024). The most number were reported by the Jinja Regional Referral hospital being the last level of reference in the region.

With the Sustainable Development Goals (SDG) geared toward reducing maternal mortality to 70 deaths per 100000 live births and neonatal mortality as low as 12 per 1000 live births, it is paramount that these numbers be reduced. Most of the maternal deaths that occur in low income countries can actually be prevented by several interventions have been implemented including the use of a partograph to monitor labour (Sena Belina Kitila1, 2014). The World Health Organization (WHO) advocates for the utilization of a partograph during active labor as a means to monitor the well-being of both the mother and the fetus (WHO, 2014).

Despite this being a life-saving intervention, the utilization of partographs is still low in most developing countries due to a number of factors such as high workload, inadequate on job training on use of the partograph, lack of supervision, health worker years of experience, attitudes and so on (Ayehubizu et al., 2022) (Ojong, 2021.) The Ugandan health system adopted the usage of partographs since the 90s but several studies have reported low usage. For instance in 2009, partograph usage was reported at 69.9% in Rujumbura Health Sub District (Ogwang et al., 2009a) and 2015, at 15.7% at Bwera hospital. (Katongole et al., 2015). Studies have also shown that complete documentation of all sections of the partograph at 8.8% for less busy wards and 5.2% for busy wards at the national referral in Mulago, that is to say that even when a partograph is used to monitor labour, not all sections are completed, more so accurately (Mukisa et al., 2019a). Studies however, have not shown us whether some health facilities could be performing better than others in partograph completion especially due to socio-economic contexts, where disparities in health care delivery are often noted. Studies have also not shown whether completely filling all the sections could actually have an association with labour outcomes. This could be a major limitation when it comes to ensuring actionable insights for targeted interventions to improve maternal and neonatal outcomes in different social contexts Therefore, this study compared completion between rural and urban public health facilities in Jinja and explored the challenges and enablers to partograph completion, as well as determine whether there is an association between a having completely filled partograph and neonatal labour outcomes.

## **Background**

The partograph as a critical intervention that has been implemented on a global scale can be paper-based or paperless monitoring (Metawia et al., 2022), can actually save the lives of mother and fetus because when labor is closely monitored, life threatening events such as labor obstruction can be averted (Opoku and Nguah, 2015a). The partograph allows for monitoring of the foetal heart rate, color of amniotic fluid, molding of the fetal skull, pulse, BP, temperature, urine output and urine for protein and acetone as well as drugs and fluids given to a mother in labor (Dalal and Purandare, 2018) and as such, labour outcomes like eclampsia, PPH, birth asphyxia are minimized. In peri-urban settings in Ghana, use and completion of partographs was found to be associated with less asphyxiated newborns that is to say, that labors which were monitored using a partograph were 4.29 times less likely to result in birth asphyxia and if the partograph was filled completely, birth asphyxia was 5.3 times less likely to occur (Anokye et al., 2019a).

The quality of care guidelines dictate that it is imperative to conduct a thorough assessment and review of their antenatal care records, pregnancy and labor history, along with vaginal examination and confirmation of labor of women whilst maintaining regular monitoring upon admission and during labor to ensure tailored care, prevent complications, and promptly address any risks or complications for optimal outcomes for both mother and newborn. Therefore, this underscores the importance of partograph during labour monitoring (WHO, 2016).

The Ministry of Health (MOH) in Uganda created the Essential Maternal & Neonatal Care Clinical Guidelines in an effort to address the common obstetric and neonatal conditions that lead to maternal and neonatal mortality. These guidelines emphasize a revised approach to antenatal care, birth preparedness, and emergency readiness, with a focus on early identification, prevention, and effective management of life-threatening complications during pregnancy and childbirth, as well as the care of both healthy and sick newborns. Furthermore, these guidelines are an essential tool for healthcare providers to make well-informed decisions (MOH, 2016). These guidelines also emphasize the use of a partograph to monitor labor. Suffice to say that this intervention has been widely adopted all over the country, Jinja being no exception.

Regardless of the policies in place, research shows that use of partographs is still fairly low, especially in resource limited settings (Mukisa et al., 2019a, Nassaka and Udho, 2022, Yazbek et

al., 2022). A systematic review that aimed to identify barriers to and incentives for achieving partograph use in obstetric practice in low- and middle-income countries found that partographs often face underutilization in low- and middle-income countries (Ayenew and Zewdu, 2020). Assessments that considered factors related to the innovation itself, the patient characteristics, individual professionals, as well as the social, organizational, economic, and political contexts were made and the study concluded that identifying local barriers and incentives is crucial for shaping strategies aimed at improving partograph usage. The study recommended exploration of emerging technologies supporting electronic partograph recording, featuring clinical prompts and remote decision to solve some of these barriers, as well as investigating the thresholds at which the partograph becomes valuable given the evolving field of obstetric care and resource limitations (Ollerhead and Osrin, 2014).

As per DHIS2 database, it was indicated that Jinja on average had 7 perinatal fatalities for every 1000 live births and 30.8 asphyxia cases per 1000 live births from 2021-2023 (UDHS, 2023) and these labour comes can also result due to lack of labour monitoring. In light of these alarming numbers, there is an inadequately explored domain concerning the factors influencing partograph completion levels in various healthcare settings, especially the distinctions between urban and rural facilities as well as how completion of partographs relates to birth asphyxia in the region. This research therefore endeavored to address this knowledge gap, seeking to unveil insights that can inform targeted interventions, thereby enhancing the quality of obstetric care and mitigating observed disparities in partograph completion rates among obstetric health care workers.

## **CHAPTER 2**

### **2.0 LITERATURE REVIEW**

#### **2.1 Definition and overview of a partograph**

The partograph is a low tech graphical record used during labour which monitors the progress of childbirth and ensures the well-being of both the mother and the baby. It can be paper based or monitor/screen based depending on the health care settings (Metawia et al., 2022, Ida Laila et al., 2021).

It consists of a time recorded graph depicting various parameters such as cervical dilation, foetal heart rate, contractions, and alert and action lines indicating labor progress and potential deviations. Additionally, it records the descent of the foetal head, the status of amniotic fluid, and maternal pulse and blood pressure. When tracking prolonged labour, healthcare providers, guided by the partograph, may consider interventions such as oxytocin administration or a cesarean section. This real-time visual tool aids in simultaneous monitoring, facilitating the early identification of potential complications and informed decision-making for a safe and successful childbirth (Dalal and Purandare, 2018).

The historical development of partographs in labour monitoring can be traced back to the mid-20th century, introduced by Friedman in 1954, and then subsequently enhanced by Philpot and Castle whose contributions included the integration of alert and action lines, aimed at facilitating timely interventions during labor (Lavender et al., 2013). Since then, many countries have adjusted and adopted their own versions. However, the widely used and accepted version in most WHO member countries is the one modified by WHO in 2000 (Opoku and Nguah, 2015a). The WHO partograph underwent modifications to simplify and streamline its usage. The latent phase of labour was eliminated, and now plotting on the partograph starts during the active phase, characterized by cervical dilation to 4 cm (Orji, 2008).

#### **2.2 Parameters of a partograph and measurement of completion.**

The partograph graphically records key features of the fetus or the mother across different areas of the chart. Below the patient's identification details, the fetal heart rate is noted initially and then



every 30 minutes, ranging from 80 to 200 beats per minute. Liquor refers to the amniotic fluid, with color recorded initially and every 4 hours if the fetal membranes have ruptured. Moulding assesses fetal skull overlap, recorded every 4 hours. Cervical dilatation and descent of Head are tracked initially and every 4 hours. Contractions per 10 minutes and oxytocin administration are noted, along with drugs and IV fluids given. Maternal vital signs include pulse and BP, ranging from 60 to 180, and temperature. Mother's Urine characteristics (protein, acetone, and volume) are also recorded. Alert and Action lines in the cervical dilatation section prompt action if labor progression deviates from the norm. These 13 parameters guide labor progress assessment (Mandiwa and Zamawe, 2017a).

Mandiwa and Zamawe from Malawi in 2017 assessed the documentation of the partograph parameters in assessing the progress of labour by health care providers in Malawi's South-West zone found that there was poor documentation of vital parameters of the partographs, which may be an indication for poor monitoring of labour by health care providers. To enhance the accurate documentation of parameters on the partograph, this study suggested that underlying issues be researched and understood, then tailored solutions be devised to address them, ultimately improving pregnancy outcomes, conducting regular in-service refresher courses on partograph usage for healthcare workers would be beneficial, providing supportive supervision to obstetric care providers and conducting routine audits of partograph utilization could further enhance documentation practices (Mandiwa and Zamawe, 2017a).

In a cross sectional study conducted at Mulago National Referral and teaching hospital in Kampala which aimed to evaluate the level of Partograph completion and healthcare workers' perspectives on its use measured partograph completion in four categories that is to say complete (if all the three components: fetal monitoring, labour progress and maternal monitoring were filled out) , adequately filled (if the three components had some information even if lacking in some parameters) , inadequately filled (if only two components were filled out), grossly inadequately filled (If only one component was filled out) and blank(if there no part or sections of the Partograph were filled (Mukisa et al., 2019a). Another study done in northern Uganda followed the same criteria and then recorded them as documented or not documented according to the guidelines and protocols for labour monitoring (Nassaka and Udho, 2022).

A study done at the Fort Portal Regional Referral adapted and modified the partograph audit tool developed by the Uganda ministry of health to come up with the data abstract checklist to assess the quality of a partograph and then any partograph with overall score of 0-10 and 11-13 was regarded as poor and good quality respectively (Olebo et al., 2023a).

### **2.3 Partograph completion levels in urban and rural health facilities.**

An analysis of the national emergency obstetric and newborn care survey that was carried out in Ethiopia in 2016 on health care professionals' adherence to partograph use revealed a poor level of adherence, with molding, maternal temperature and decent as the least recorded parameters. It was also found that completion levels were higher in rural facilities compared to urban health facilities and recommended strong supervision and mentoring of health workers to better record and use partographs mainly in urban health facilities. The study also recommended that future interventional research focus on improving the adherence level (Gebrehiwot et al., 2020a).

Contrary to the findings by Gebrehiwot et al., 2020, the survey that was conducted in Burkina Faso, Ghana and Tanzania showed that rural health facilities had poor utilisation of partographs and recommended investment in improving health worker performance in a bid to reduce maternal and neo-natal mortality. This study however may have been limited by the non-participatory observation approach that was taken, which could have had a Hawthorne effect on health worker (Duysburgh et al., 2013).

### **2.4 Partograph completion levels and labour outcomes.**

A study that was conducted at a tertiary teaching hospital in Ghana which employed a retrospective chart review design and aimed to assess the relationship between use of the partograph and birth outcomes found that partograph use was associated with less maternal blood loss and neonatal injuries. Furthermore, the study showed that when action was taken on time, neonates were less likely to be admitted to NICUs. This study then concluded that partographs are indeed effective when correctly used and interventions undertaken. And recommended that frontline health workers be given access to on the job training on how to use this life saving tool (Gans-Lartey et al., 2013).

In Rwanda, completeness of the partograph was associated with reduction in fetal deaths and increased (Appearance, Pulse, Grimace, Activity and Respiration) APGAR score. This was at

Muhima hospital through a study that looked at implementing a labor monitoring guideline and midwives responsibilities to increase the completion rate of partograph, and tackled the root cause of partograph incompleteness by providing supportive supervision (Byukusenge et al., 2016a). The limitation of this approach could be that the observed increase in the completion of the partographs could be as temporary as the supportive supervision.

Another study conducted in Ghana at a health facility operating in peri-urban settings whose objective was to study the association between use and completion of a partograph with birth asphyxia found a significant relationship between completing all sections of the partograph and reduced cases of asphyxiated babies. Labors where partographs were completely filled were 5 times less likely to result in birth asphyxia compared to those whose charts were incomplete. The study found that 87% of the labors at that hospital were adequately monitored using a partograph and recommended that hospital leadership be strengthened to empower the use of partographs (Anokye et al., 2019a).

An association between partograph completeness and reduced maternal and fetal mortality was also observed, in a quantitative cross-sectional study that was conducted in selected health facilities in Makenna County in Kenya. The study went on to recommend increased supervision time to ensure timely use and filing of partographs, as well as training midwives in the same (Muthusi et al., 2019).

Olebo et al., 2023 evaluated the neonatal labour outcomes measured as born alive or dead and found that poor quality partographs were associated with neonatal deaths, and concluded that the thoroughness and accuracy of partograph documentation played a critical role in influencing neonatal outcomes, underscoring the significance of meticulous and precise record-keeping in maternal care. This study like most others reviewed patient records and adopted a standard tool for partograph audit which is different from what other studies did, and tried to show us what the importance of completing a partograph is in relation to labour outcomes in our Ugandan settings (Olebo et al., 2023a).

## **2.5 Factors associated with partograph completion and use.**

A cross-sectional study conducted in India at a secondary level health facility to determine the usage of partograph and explore the issues/challenges in its plotting at various levels of health

facilities found that the adherence to partograph use was low, with poor completion rates at 1.03%. Factors identified were; scarcity of health staff, insufficient knowledge and skills, heightened workload, absence of monitoring, and interpersonal issues are identified as pivotal factors contributing to the suboptimal documentation in labor rooms, including the plotting of partographs (Palo et al., 2019a).

A study conducted among midwives working in city public health institutions to establish utilization of Partograph and its associated factors in Addis Ababa City Administration, Ethiopia found that more than half of the midwives used a partograph but not entirely up to WHO standard. The functioning of the facility, having good supervision and mentoring, training on using the partograph, the number of midwives on each shift, and having enough knowledge were all things that influenced the use of the partograph. It's suggested to introduce helpful actions in response to these factors that were found to be connected (Hagos et al., 2020).

Another study conducted in city/urban health facilities in Ethiopia that used a cross-sectional design also found that lack of knowledge, on job training, and supportive supervision about partograph was factors strongly associated with proper partograph recording and client follow up during childbirth. Night admission of labor cases and using uterotonics were also significantly associated with partograph utilization. The study like Hagos et al., 2020, went on to recommend that training be updated and enhanced during pre- service, supervision mechanism strengthening, as well as an audit system through child birth (Negash and Alelgn, 2022a). The findings of both studies are consistent, as with many other studies.

In Botswana, a study that took a qualitative approach at a referral hospital found that the barriers and facilitators of partograph completion were but not limited to health workers being overwhelmed by numbers, inconsistent shifts of health workers, knowledge gaps and absenteeism. Other factors identified rotated around health system factors (Yazbek et al., 2022). The findings of this study cannot be generalized since they are limited to the context of the hospital in Botswana but they paint a picture on the factors that may be limiting completion and usage of partographs in other health care facilities limited by resources.

## **2.6 Challenges and enablers to partograph completion**

A study that focused on analyzing the completion of the World Health Organization modified version of the partograph in Malawi found that, the perceived challenges to partograph completion by obstetric health care workers are but not limited to the confusing sections of the partograph, the unrealistic time intervals for monitoring fetal heart rate and the small font size. This resulted in lower completion levels. This study recommended the modification of the features of the partograph and increased staffing levels (Chimala et al., 2020).

A mixed methods study on barriers to partograph completion highlighted lack of communication between doctors and midwives about clinical information to be one of the major challenges to partograph completion at tertiary care hospital in India. The study also pointed out that some nurses do not appreciate the importance of the partograph, brushing it off as a waste of time, and recommended that future research focus on identifying these barriers on a larger scale and addressing them properly in order to ensure better use of the partograph (Manna et al., 2022).

## **2.7 Summary of literature review.**

It is evident that while there is extensive research on partograph utilization and completion, several gaps exist that warrant further investigation. Inconsistencies in utilization rates persist, with some studies indicating poor completion rates of partographs, while others demonstrate higher adherence. Understanding the factors contributing to these disparities and identifying strategies for improving consistency in utilization is crucial. The impact of training and supervision varies across studies, suggesting a need to explore the most effective approaches for training and supervising healthcare workers in partograph usage. Notably, while certain factors influencing completion rates, such as knowledge and skills of healthcare workers, workload, and health system factors, have been studied, there may be additional context-specific factors that need exploration. Investigating these factors could provide valuable insights into improving partograph completion rates. Context-specific challenges, such as shortages of healthcare staff and inconsistent shifts, impact partograph utilization and require tailored solutions. Additionally, the long-term sustainability and scalability of interventions like training and guideline implementation remain uncertain, warranting investigation into their lasting impact and strategies for sustaining effectiveness. Lastly, poor documentation of partograph parameters raises concerns about the quality of care provided during labor, highlighting the need for further research to understand the

reasons for poor documentation and develop interventions to improve accuracy and completeness of records. Addressing these gaps through additional research could enhance the effectiveness of partograph use in monitoring labor and improving maternal and neonatal outcomes.

## **CHAPTER 3**

### **3.0 STATEMENT OF THE PROBLEM, JUSTIFICATION, CONCEPTUAL FRAMEWORK**

#### **3.1 Statement of the problem**

The low utilization of partographs is still a major challenge in Uganda despite their key role in early detection of prolonged and obstructed labour (Nassaka and Udho, 2022).

Partographs' completion has been reported to be as low as 8.8%, that is to say the all sections of the partograph filled to standard in our health care settings (Mukisa et al., 2019a). Unmonitored labour could result in poor labour outcomes and health of both the mother and neonate. The consequences of poorly monitored labour include birth asphyxia, neonatal and maternal mortality and the low partograph completion levels have been associated to heavy workloads, knowledge and attitudes of health workers, and other health system related factors.

To improve labour outcomes, the Ugandan Ministry of Health has developed Essential Maternal & Neonatal Care Clinical Guidelines to address maternal and neonatal mortality, emphasizing early identification, prevention, and management of life-threatening complications during pregnancy and childbirth. The guidelines also stress the importance of using a partograph to track labor. It is sufficient to remark that Jinja is not an exception to the implementation of this intervention.

However, it is unclear whether public health facilities in urban or rural areas have better partograph completion and whether partograph completion is associated with birth asphyxia. Additionally, the specific contextual challenges and enablers to partograph completion within each setting are not well documented hindering efforts to set priorities and develop tailored interventions. This study therefore aimed to evaluate partograph completion in selected urban and rural public health facilities and association with birth asphyxia in Jinja, Uganda.

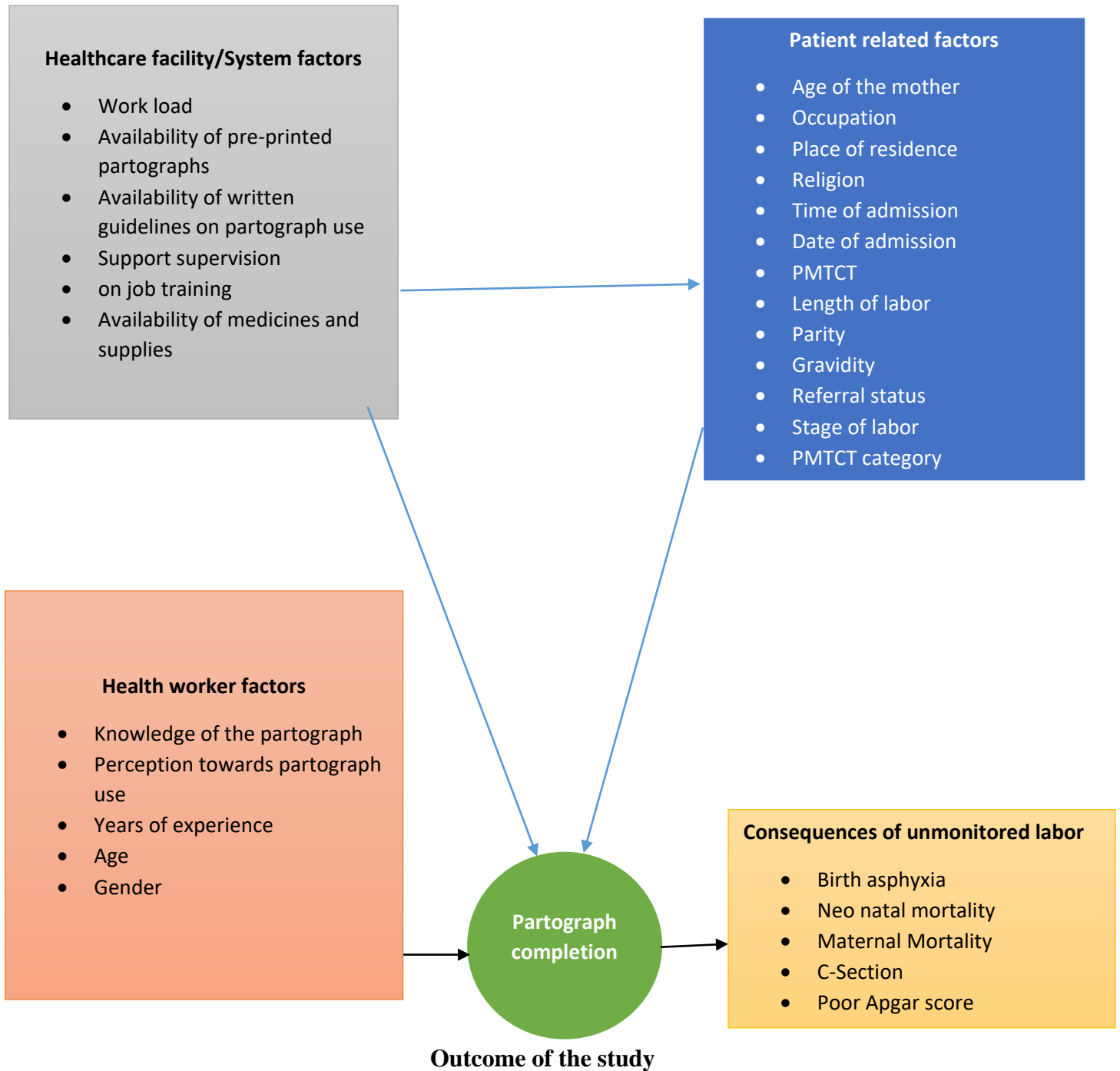
### **3.2 Justification**

This study aimed to compare partograph completion levels in Jinja's urban and rural health facilities as well as assess the relationship between partograph completion levels and birth asphyxia. By thoroughly examining the contextual challenges and enablers influencing partograph completion and its consequential impact on labor outcomes, the study endeavored to equip key stakeholders, including the District Health Office, City Health Office, Health facility In-charges, and Maternal and Child health implementing partners, with evidence-based insights. These insights will drive the implementation of targeted interventions, engaging healthcare workers and local health committees, with the ultimate goal of elevating maternal and neonatal health outcomes. Without the empirical foundation provided by this study, healthcare providers and policymakers risk grappling with the persistent challenges specific to Jinja's partograph completion rates and labor outcomes. Through pinpointing area-specific barriers and challenges, healthcare providers and policymakers can craft tailored interventions, intended to improve labour monitoring with partographs and consequently diminish the incidence of birth asphyxia, fostering improved maternal and neonatal health outcomes across Jinja.



### 3.3 Conceptual framework and narrative

#### 3.3.1 Conceptual framework



*Source: Adopted from the Socio-Ecological model and modified for this study*

### **3.3.2 Narrative**

This study adopts a conceptual framework that integrates elements from the Socio-Ecological Model (Kumar et al., 2012). Recognizing that partograph completion is influenced by individual, interpersonal, and environmental factors, this framework provides a comprehensive lens for understanding the complexities of completion level in both urban and rural settings

**Individual Level (Health Worker Factors):** At the core of partograph utilization lie the individual attributes of healthcare providers. Their knowledge, attitudes, and perceptions towards the partograph significantly impact its integration into clinical practice. Experienced professionals may bring established practices and perspectives, while younger practitioners may embrace innovative tools more readily. Ensuring that health workers possess adequate knowledge and a positive perception of the partograph is fundamental to its successful adoption.

**Interpersonal Level (Healthcare Facility/System Factors):** Within healthcare facilities, the interpersonal dynamics and organizational factors play a pivotal role. Heavy workloads, coupled with limited resources such as pre-printed partographs and supportive supervision, can impede consistent use of the tool. Access to continuous training and mentoring can enhance skills and reinforce the importance of diligent labor monitoring. The availability of guidelines and protocols within the organizational framework is crucial for standardizing partograph use across different healthcare settings.

**Community Level (Patient-Related Factors):** Patient characteristics and community-level dynamics also influence partograph utilization. Demographic factors such as age, occupation, and clinical indicators (like parity and gravidity) determine the complexity of labor monitoring. Additionally, seamless continuity of care and effective referral systems are essential community-level components that facilitate the consistent use of the partograph from admission to discharge.

**Organizational/Institutional Level:** At the broader institutional level, organizational policies and infrastructure significantly impact the adoption and sustained use of the partograph. Clear guidelines, supported by adequate infrastructure and the availability of essential supplies, create

an enabling environment for healthcare providers to implement labor monitoring protocols effectively.

The social ecological perspective offers an understanding of the factors influencing partograph completion in maternal healthcare. By addressing individual, interpersonal, community, and organizational factors, we can foster a conducive environment for the effective adoption of this critical tool, ultimately contributing to improved maternal and neonatal health outcomes.

## **CHAPTER 4**

### **4.0 RESEARCH QUESTIONS AND STUDY OBJECTIVES**

#### **4.1 Research Questions**

1. Is there a difference in completion levels of partographs between urban and rural public health facilities in Jinja district, Uganda?
2. What is the association between partograph completion level and birth asphyxia in rural and urban public health facilities in Jinja district, Uganda?
3. What are the challenges and enablers to partograph completion in rural and urban public health facilities in Jinja district, Uganda?

#### **4.2 Study Objectives**

##### **4.2.1 General Objective**

To evaluate partograph completion in selected urban and rural government health facilities and association with birth asphyxia in Jinja, Uganda.

##### **4.2.2 Specific objectives**

1. To determine the levels of partograph completion at selected rural and urban public health facilities in Jinja, Uganda.
2. To determine association between partograph completion and birth asphyxia in selected rural and urban public health facilities in Jinja, Uganda.
3. To explore contextual challenges and enablers to partograph completion in selected rural and urban public health facilities in Jinja, Uganda.

## **CHAPTER 5**

### **5.0 METHODOLOGY**

#### **5.1 Study area**

The study was conducted in Jinja, specifically focusing on Buwenge HCIV as the representative rural public health facility and Mpumudde HCIV as the representative urban public health facility.

Rural and urban areas in this study were defined based on the International Labour Organization (ILO) criteria, which emphasize social, economic, and infrastructural characteristics. Urban areas are characterized by high population density, concentrated human settlements, and predominantly non-agricultural economic activities such as industries, trade, services and are recognized as administrative units such as cities or municipalities. Conversely, rural areas are sparsely populated and primarily dependent on agriculture, forestry, and fishing as the main sources of livelihood. They are characterized by limited infrastructure, geographic isolation, and scattered settlements. These definitions were adapted to guide the classification of health care facilities as study sites identified as rural and urban public health facilities (ILO, 2020).

Buwenge HCIV is found in Buwenge Sub County under the oversight of JDLG health offices while Mpumudde HCIV is located in Mpumudde-Kimaka under the oversight of the City Medical Office. Both HCFs are staffed with 36 health care workers, 9 of whom are trained in Obstetric health care. In 2023, Buwenge HCIV reported the highest number of asphyxiated babies among rural health centers in the district (41 asphyxiated babies out of 866 live births) and Mpumudde reported 62 asphyxiated babies out of 1148 live births, among the urban health centers, hence the need for investigation.

#### **5.2 Study Design**

This study was a cross-sectional study which aimed to evaluate partograph completion levels between the selected rural and urban government health facilities and associated factors.

#### **5.3 Study Population**

The primary study population was health center IVs in Jinja city and Jinja district. The study further reviewed patient delivery folders of women at any stage of labour that were admitted at either health facility in the period of January 2023 to December 2023.

## **5.4 Inclusion criteria and Exclusion criteria**

### **5.4.1 Inclusion criteria**

Records of deliveries that occurred from January 2023 to December 2023

### **5.4.2 Exclusion criteria**

Delivery records that were kept during the study period but lacked key variables such as the outcome of labour were excluded.

## **5.5 Sample size**

The Kish Leslie formula for categorical outcomes was used to estimate the sample size for the patient folders to review (Kish, 1965). The proportion of completion of partographs was estimated at 29.1%. (Olebo et al., 2023a) A two-sided Z statistic corresponding to a 95% confidence interval (1.96), a precision of 5%.

$$p = 29.1\%$$

$$q = (1-p) = 1-0.291=0.709$$

$$d = 0.05$$

$$z = 1.96$$

$$n = (Z^2pq)/d^2$$

$$n = (1.96^2 * 0.291 * 0.709) / 0.0025$$

$$n = 317$$

Adjusting for incomplete or unusable records estimated at 10%

$$N = \frac{n}{1 - nr}$$

Where;

n= is the sample size before adjustment

nr = unusable records = 10% = 0.1

N = the adjusted sample size

$N = (317) / (1 - 0.1)$

= 352

Therefore, the study considered 352 delivery records, from each health facility. The entire study therefore encompassed 704 delivery record folders.

## **5.6 Sampling procedure**

Systematic random sampling was used to select patient delivery records for review. Record files of deliveries that occurred from Jan 2023 to Dec 2023 were organized and assigned numbers according to date of occurrence. Simple random sampling was used to pick out the first chart from the pool, there after 4<sup>th</sup> chart was selected until the sample size was achieved.

## **5.7 Study variables**

### **5.7.1 Dependent variable**

Partograph completion which was measured as the proportion of completely and accurately filled partographs out of the total patient delivery folders in the study period that were reviewed.

This information was extracted using a checklist adopted from a study Assessing Partograph Quality and its Impact on Neonatal Outcomes: A Study at Fort Portal Regional Referral Hospital, Uganda (Olebo et al., 2023a). The tool consisted of 3 sections of Social demographics, partograph completion and labour outcomes.

The 13 parameters that are recorded during labour monitoring on a partograph were used to assess completion, response was noted as “yes” or “no”. These included;

1. Assessment of the mother for potential risk factors (Yes or No)
2. Recording of Fetal heart rates every half hour (Yes or No)

3. Recording of the intactness or rupture of membranes (Yes or No)
4. Recording of liquor color upon rupture of membranes (Yes or No)
5. Recording of Fetal head molding (Yes or No)
6. Recording of cervical dilation every 4-hourly (Yes or No)
7. Recording of uterine contractions every half hourly (Yes or No)
8. Recording of Fetal descent very 4-hourly (Yes or No)
9. Recording of maternal temperature every 4-hourly (Yes or No)
10. Recording of maternal pulse rate every half hourly (Yes or No)
11. Recording of maternal blood pressure every 4-hourly (Yes or No)
12. Urine testing for proteins (Yes or No)
13. Recording of actions taken when needed (Yes or No).

The overall score was dichotomized into “completion” (yes to all 13 parameters) and “Non-completion” (less than 13 parameters)

### 5.7.2 Independent variables

Patient related factors included: Demographic variables such as Age, occupation, marital status, place of residence, religion, gravidity and parity as well as other factors such as PMTCT category, referral status, and weeks of gestation

Neonatal labour outcomes included: Sex of the baby, weight, baby abnormalities, gestational age, if the baby needed any intervention, if any intervention was given, APGAR score at 1 and 5 minutes, if the baby was alive or dead and if the baby was a still birth.

### Measurement of variables

Variable	Description	Type
Patient related		
Age of the mother	15-19, 20-24, 25-29, 30-35,36-39,40-45, 46-50,	Categorical
Occupation,	None, Farming, Artesian, Trade/Business, Civil servant/formal employment, Self-employed, Home	Categorical



Marital status,	Single/ never married, Married, Domestic partnership (co habiting), Widow, Divorced/separated	Categorical
Place of residence,	Rural or Urban	Categorical
Religion	Muslim, Catholic, Protestant, Pentecostal, Orthodox, Others specify	Categorical
gravidity	“prim gravida”, “multigravida”	Categorical
Parity	nullipara, multipara, Grand para	Categorical
PMTCT category	Positive, Negative	Categorical
Referral status,	Referral case, Non referral case	Categorical
Weeks of gestation	<37 weeks, ≥37weeks	Categorical
Neonatal outcomes		
Sex of the baby	Male, Female	Categorical
Weight	<2.5kg, 2.5-4kg, >4kg	Categorical
baby abnormalities	Yes or No	Categorical
gestational age	Term, preterm, post term	Categorical
if the baby needed any intervention	Yes or no	Categorical
, if any intervention was given	Yes or no	Categorical

APGAR score at 1 minute	<7 or ≥7	Categorical
APGAR score 5 minutes	<8 or ≥8	Categorical
Status of the baby	Alive or dead	Categorical
if the baby was a still birth	Yes or no	Categorical
Asphyxia status	Asphyxiated, Not asphyxiated	Categorical

**5.8 Data collection**

**5.8.1 Data collection tools**

A structured patient record review data extraction tool consisting of 3 sections of Social demographics, partograph completion and labour outcomes was uploaded on KOBO collect and was administered by research assistants to extract data on partograph completion as per its 13 parameters, neonatal labour outcomes mainly focusing on birth asphyxia, and maternal characteristics such as gravidity, weeks of gestation and so on. This data answered objective one and two. Key informant guide was used to interview midwives who are directly involved in labor monitoring to explore challenges and enablers to partograph completion which answered objective 3.

**5.9 Quality Assurance and Control**

**5.9.1 Training of research assistants**

Research assistants who comprised of 2 enrolled midwives and 4 nurses underwent training covering data collection procedures, ethical considerations, and confidentiality maintenance to ensure consistency.

**5.9.2 Pretesting of data collection tools**

A pre-test of data collection tools was conducted in Ishongororo HCIV in Ibanda district to identify and rectify any issues, and adjustments were made.

### **5.9.3 Missing data**

Folders missing key sections such as partographs and socio-demographics were dropped and replaced with folders with desired sections.

## **5.10 Data Management and analysis**

### **5.10 .1 Data management**

All quantitative data was extracted into MS Excel and exported to STATA software version 15 for analysis. Data cleaning was done in MS Excel before exporting the dataset to STATA version 15.

Qualitative data was assigned codes for confidentiality such as MIDWIFE 1 BHCIV and so on, and audios recorded were stored in password protected folder on google drive.

### **5.10.2 Data analysis**

Objective one: This was analyzed as a proportion of completely filled partographs (11-13 parameters) out of the total number of partographs sampled. Descriptive statistics was used to calculate the prevalence of completion for the selected health facilities. To test for the difference in partograph completion levels between Buwenge and Mpumudde HCIVs, a chi-square test was performed to compare the proportions of completed partographs at both facilities. Additionally, an independent t-test was conducted to assess whether the mean completion rates differed significantly between the two facilities. A significance level of  $p < 0.05$  was applied for all analyses, and data was visualized using a pie chart, bar graph and table, using STATA software version 15.

Objective 2: Univariate analysis was done to obtain frequencies and percentages for each of the neonatal outcomes in relation to partograph completion as well as the partograph parameters in relation to birth asphyxia.

Bivariate analysis was done using logistic regression to determine the relationship between neonatal outcomes and partograph completion, and birth asphyxia in relation to partograph completion. Variables that were significant at p-value  $< 0.25$  were included in multivariable analysis.

Multicollinearity of the variables was checked and any one of the variables that showed a correlation coefficient of  $\geq 0.4$  for example APGAR score at 5 minutes was correlating with APGAR score at 1 minute and was therefore excluded from the multivariable analysis.

At multivariable analysis, variables that were least significant at  $P \leq 0.05$  were removed from the final model one at a time using backward elimination.

The lfit command was used to establish the goodness of fit of the model with a chi2 p-value of 0.2063 for neonatal outcomes and partograph completion.

Objective 3: KIIs were transcribed and coding was done deductively using pre-existing themes based on the objective which explored challenges and enablers to partograph completion in the rural and urban contexts. Sub themes were generated to capture relevant results to obtain a comprehensive understanding of partograph completion in Jinja

### **5.11 Ethical Considerations**

Ethical approval was sought from the School of Public Health Research and Ethics Committee (SPH-REC). While in Jinja, approval was sought from the office of the DHO and the CMO to conduct research from the selected health facilities. Data collected including audio files were uploaded and stored on google drive. For the qualitative data, participants were assigned random codes during transcription such as MIDWIFE 1 to ensure confidentiality.

**5.13 Dissemination** Study results will be disseminated to the school of public health and to Jinja district local government health office. The findings from this study will also be disseminated in an international peer reviewed journal.

## **CHAPTER 6**

### **6.0 Results**

#### **6.1 Socio-demographic characteristics of the participants.**

Out of the 704 delivery record, majority of mothers 36.9% (260/704) were between the ages of 20-24. The largest group of the mothers, 32.2% (227/704) were homemakers. 52.3% (368/704) were married while most, 63.5% (447/704) resided in rural areas. Protestants formed the largest group 27.4% (193/704), most mothers 72.0% (507/704) were multigravida and multipara

62.2%(438/704). Regarding the PMTCT category, most of the participants tested negative 85.5%(602/704). Most of the mothers 88.6%(624/704) were in their 37th week of gestation or beyond (Table 1).

**Table 1: Socio-demographics of the participants.**

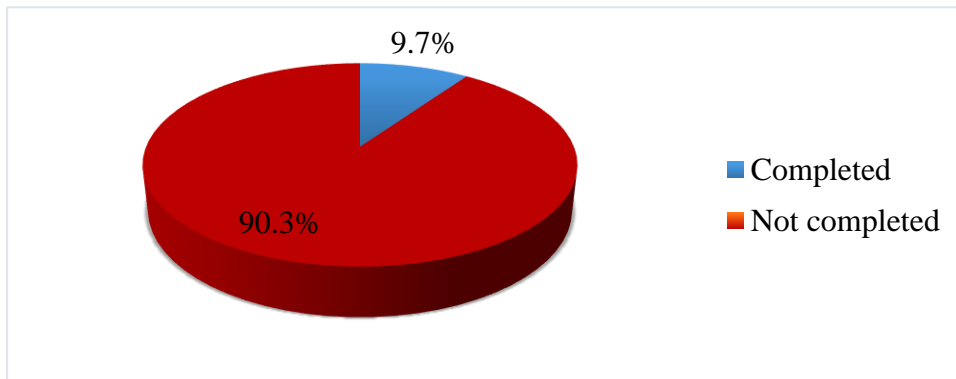
<b>Variable</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>Age</b>		
15-19	95	13.5
20-24	260	36.9
25-29	193	27.4
30-34	87	12.4
35-39	49	7.0
40-44	17	2.4
≥45	3	0.4
<b>Occupation</b>		
Home	227	32.2
Farming	103	14.6
Trade/Business	128	18.2
Unemployed	111	15.8
Self employed	99	14.1
Civil servant/formal employment	36	5.1
<b>Marital status</b>		
Married	368	52.3
Co habiting	216	30.7
Single	104	14.8
Divorced/separated	14	2.0
Widow	2	0.3
<b>Mother's residence</b>		
Rural	447	63.5
Urban	257	36.5
<b>Mother's religion</b>		
Protestant	193	27.4
Muslim	176	25.0
Pentecostal	166	23.6
Catholic	162	23.0
Orthodox	7	1.0
<b>Gravidity</b>		
Multigravida	507	72.0
Prim gravida	197	28.0

<b>Parity</b>		
Multipara	438	62.2
Nullipara	221	31.4
Grand para	45	6.4
<b>PMTCT</b>		
Negative	<b>602</b>	85.5
Positive	102	14.5
<b>Weeks of gestation</b>		
≥37	624	88.6
<37	80	11.4

## 6.2 Partograph completion at selected rural and urban public health facilities in Jinja district and city, Uganda

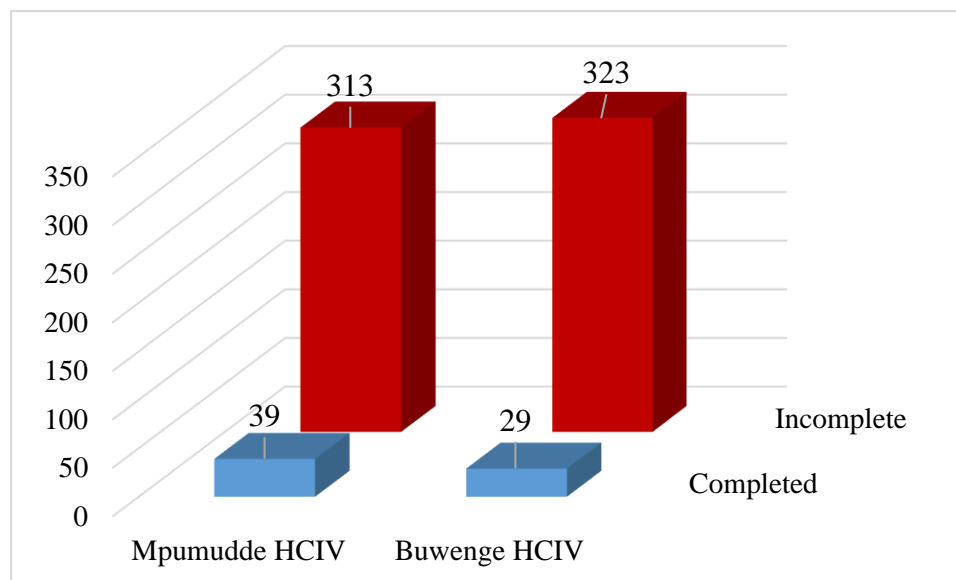
Out of the 704 partographs, only 68 were filled to completion 9.7% (Figure 1).

*Figure 1: Overall completion status of partographs*



At Buwenge HCIV 29/352 (8.2%) partographs were completely filled compared to Mpumudde HCIV where 39/352 (11.1%) were complete (Figure 2).

*Figure 2: Completion status at selected urban and rural public health facilities in Jinja district and city.*



There was no statistically significant difference in partograph completion levels between Buwenge HCIV and Mpumudde HCIV ( $p > 0.05$ ).

**Table: Partograph Completion by Facility (Chi-Square and T-Test Results)**

Facility	Incomplete (n, %)	Completed (n, %)	Total (n)	Mean Completion	Std. Error	Std. Dev.	95% CI	Chi-Square ( $\chi^2$ )	p-value ( $\chi^2$ )	t-value	p-value (T-Test)
Rural	323 (91.8%)	29 (8.2%)	352	0.082	0.014	0.275	[0.054, 0.111]	1.628	0.202		
Urban	313 (88.9%)	39 (11.1%)	352	0.111	0.016	0.314	[0.078, 0.144]			-1.28	0.202

### 6.2.1 Completion status by partograph parameter at Buwenge HCIV and Mpumudde HCIV in Jinja district and city.

At Buwenge HCIV, cervical dilation was recorded the most with 74.1% (261/352) of the partographs having this parameter accurately documented. The same was observed for Mpumudde HCIV in 75.3% (265/352) of the partographs. The least recorded parameter at Buwenge HCIV was the Urine test for sugar with only 28/352 (7.9%) of the partographs capturing it compared to Mpumudde HCIV where the least recorded parameter was the urine test for albumin in 41/352 (11.6%) of the partographs (Table 2).

**Table 2: Completion status of parameters of the partograph at selected health facilities in Jinja district and city.**

<b>Factor</b>	<b>Buwenge HCIV</b>	<b>Mpumudde HCIV</b>	<b>Overall</b>
Obstetric Risk	<b>n= 352</b>	<b>n= 352</b>	<b>n=704</b>
YES	143(40.6)	160(45.5)	303(43.0)
NO	209(59.4)	192(54.5)	401(57.0)
Foetal heart rate			
YES	170(48.3)	198(56.2)	368(52.1)
NO	182(51.7)	154(43.8)	336(47.9)
Intactness membranes			
YES	231(65.8)	238(67.6)	469(66.5)
NO	120 (34.2)	115(32.4)	235(33.5)
Liquor colour			
YES	234 (66.7)	226(64.2)	460(65.2)
NO	117 (33.3)	127(35.8)	244(34.8)
Foetal head moulding			
YES	229 (65.2)	210(60.0)	439(62.4)
NO	122(34.8)	140(40.0)	265(37.6)
Cervical dilation			
YES	261(74.1)	265(75.3)	526(74.7)
NO	91(25.9)	87(24.7)	178(25.3)
Uterine contractions			
YES	205 (58.2)	219(62.2)	424 (60.2)
NO	147(41.8)	133(37.8)	280(39.78)
Foetal descent			
YES	248(70.5)	221(62.8)	469(66.6)
NO	104 (29.5)	131(37.2)	235(33.4)
Maternal temperature			
YES	30(8.5)	75(21.3)	103(14.6)
NO	322(91.5)	277(78.7)	601(85.4)
Maternal pulse			
YES	22(6.2)	79(22.4)	101(14.3)
NO	330(93.8)	273(77.6)	603(85.7)
Maternal blood pressure			
YES	80 (22.8)	118(33.5)	198(28.1)
NO	271(77.2)	234(66.5)	506(71.9)
Albumin			
YES	62(17.6)	41(11.6)	103(14.6)
NO	290(82.4)	311(88.4)	601(85.4)



Sugar			
YES	28(7.9)	41(11.7)	68(9.7)
NO	324(92.1)	311(88.3)	636(90.3)
Actions taken			
YES	153(43.5)	09(31.0)	262(37.2)
NO	199 (56.5)	243(69.0)	442(62.8)

*Source: field data*

### **6.3 Partograph completion and neonatal labour outcomes in selected rural and urban public health facilities in Jinja, Uganda.**

#### **Bivariate Analysis:**

Post-term neonates were significantly having higher odds of being associated with an incomplete partograph (cOR: 8.69, 95% CI: 2.82-26.76,  $p < 0.001$ ). Additionally, the need for neonatal intervention showed a significant association with an incomplete partograph (cOR: 0.56, 95% CI: 0.33-0.95,  $p = 0.032$ ), as did the provision of any intervention (cOR: 0.55, 95% CI: 0.32-0.93,  $p = 0.025$ ). Partographs for neonates who were asphyxiated had a completion level of 11.3 compared to 9.3 for those who were not (cOR = 1.24, 95% CI: 0.67-2.31,  $p = 0.499$ ), but this association was not statistically significant.

#### **Multivariate Analysis:**

After adjusting for potential confounders, post-term neonates continued to have significantly higher odds of association with an incomplete partograph (AOR: 8.31, 95% CI: 2.57-26.84,  $p < 0.001$ ). However, the association between asphyxiated neonates and partograph completion level was not significant at this level (AOR = 0.76, 95% CI: 0.25-2.31,  $p = 0.626$ ).

**Table 3: Neonatal labour outcomes and partograph completeness**

Neonatal outcome		Partograph completeness		Bivariate		Multivariable
Variable	Attribute	Complete n=68	Incomplete n=636	COR (95% CI)	P value	AOR(95% CI)
<b>Sex</b>	Female	30 (9.4)	290 (90.6)	1		1
	Male	38 (9.9)	346 (90.1)	1.06 (0.64-1.77)	0.816	0.97 (0.57-1.62)
<b>Weight</b>	<2.5kg	8 (12.5)	56 (87.5)	1		1
	2.5-4kg	53 (8.8)	550 (91.2)	0.67 (0.31-1.49)	0.330	0.60 (0.22-1.62)
	>4kg	7(18.9)	30(81.1)	1.63 (0.54-4.94)	0.385	1.26 (0.35-4.56)
<b>Had abnormalities</b>	Yes	7(14.9)	40(85.1)	1		
	No	61(9.3)	596(90.7)	0.58(0.25-1.36)	0.214	0.57(0.23-1.39)
<b>Gestational age</b>	Term	56(9.0)	568(91.0)	1		1
	Preterm	6(9.0)	61(91.0)	1.00(0.41-2.41)	0.996	0.67(0.22-2.02)
	Post term	6(46.1)	7(53.9)	8.69(2.82-26.76)	<0.001	8.31(2.57-26.84)
<b>Needed Intervention</b>	Yes	25(13.7)	157(86.3)	1		

	No	43(8.2)	479(91.8)	0.56(0.33-0.95)	0.032	
<b>Any intervention given</b>	Yes	25(14.0)	154(86.0)	1		
	No	42(8.2)	473(91.8)	0.55(0.32-0.93)	0.025	
	N/A	1(10.0)	9(90.0)	0.68(0.08-5.64)	0.725	
<b>APGAR Score at 1min</b>	<7	13(12.0)	95(88.0)	1		1
	≥7	55(9.2)	541(90.8)	0.74(0.39-1.41)	0.365	0.4990-15-1.63)
<b>APGAR Score at 5min</b>	<8	7(10.0)	63(90.0)	1		
	≥8	61(9.6)	573(90.4)	0.96(0.42-2.18)	0.919	
<b>Status of the baby</b>	Alive	67(10.0)	606(90.0)	1		1
	Dead	1(3.2)	30(96.8)	0.30(0.04-2.25)	0.242	0.14(0.01-1.81)
<b>Still birth</b>	Yes	1(4.2)	23(95.8)	1		1
	No	67(9.8)	613(90.2)	2.51(0.33-18.91)	0.371	1.0(0.08-10.46)
<b>Asphyxia status(Outcome of the study)</b>	Asphyxiated	14(11.3)	110(88.7)	1		
	Not asphyxiated	54(9.3)	526(90.7)	1.24(0.67-2.31)	0.499	0.76(0.25-2.31)

*Source: field data. \*: Variables were dropped in the final model.*

## 6.4 Contextual challenges and enablers to partograph completion in selected rural and urban public health facilities in Jinja, Uganda.

Health facility	Participants	Age in years	Years spent at HCF
Mpumudde HCIV	Mid wife 1	30	4
	Mid wife 2	45	5
	Mid wife 3	26	1
	Mid wife 4	32	2
	Mid wife 5	28	3
	Mid wife 6	29	3
Buwenge HCIV	Mid wife 1	31	2
	Mid wife 2	43	7
	Mid wife 3	44	7
	Mid wife 4	24	1
	Mid wife 5	26	2
	Mid wife 6	32	4

### 6.4.1 Challenges to partograph completion in Mpumudde HCIV an urban health facility.

#### Resource shortages

Resource shortages affects proper documentation and monitoring labor progress due to lack of partograph booklets. This shortage forces healthcare providers to use alternative, less reliable methods of documentation, which may not be retained for future reference, as supported by the following quotes;

*"Sometimes we don't have partographs. But if they were in place all the time that would be good."MIDWIFE4*

#### Work overload

There is also a challenge of staff overload where staff are often required to perform multiple tasks simultaneously, such as attending to different maternal services, making it challenging to consistently monitor and record on the partograph, as supported by the following quotes;

*"There is also a time when we have work overload, for example, you can be maybe 2 people on duty but doing YCC, doing ANC, PMTCT, labour and delivery, postnatal..." MIDWIFE1, MHCIV*

### **Burdensome frequency of monitoring**

The requirement for frequent monitoring, such as half-hourly fetal heart checks, is burdensome when dealing with multiple patients and other responsibilities as was mentioned by one of the midwives;

*"Now like where there is the half-hourly monitoring of the fetal heart, I would extend it maybe to one hour." MIDWIFE1*

### **Poor staff attitudes towards recording**

There is also the challenge of staff attitudes towards recording. Some healthcare workers exhibit laziness and arrogance, leading to incomplete partograph entries even when resources are available as seen in these quotes below;

*"But sometimes we are also lazy just. Because some of us are lazy and arrogant. Even if the partographs are there, people don't fill them." MIDWIFE1*

### **Patient volumes**

Patient volume and staff shortage in the urban setting leads to a high influx of patients, which can be overwhelming when staffing levels are not adequate. The need for more staff is emphasized, as a single midwife is often responsible for multiple tasks, including triage, deliveries, and antenatal care.

*"It depends on the day, there are days when patients are many and you are only one." MIDWIFE2*

*"Really we need more staff...it becomes really difficult to focus on documentation." MIDWIFE2*

### **Increased workload due to popularity of the facility in the urban center**

Increased work load due to popularity of the facility and ease of access was another challenge pointed out by most of the midwives as they are overwhelmed with numbers hence the challenges with recording in the partograph.

*"But now we end up stretching even beyond our catchment because our maternal and child services are good...This increases our workload." MIDWIFE1*

*because our facility is easy to reach" MIDWIFE3*

### **Cultural practices**

Cultural influences and community level factors such as mothers using native herbs that accelerate labor, complicating the partograph completion process as labor progresses rapidly.

*"Sometimes we receive mothers who come when they have taken native herbs... after like 30 minutes she pushes the baby. So how are you going to fill that partograph?" MIDWIFE3*

### **Environmental factors**

Environmental factors such as power outages pose a major challenge and hinder proper documentation and effectively monitoring high patient loads during night shifts. This often leads to monitoring without recording.

*"We have challenges with documentation really... sometimes power goes off and you are having like 3 to four mothers. You end up monitoring but you don't record." MIDWIFE6*

## **6.4.2 Enablers to partograph completion at Mpumudde HCIV an urban health facility.**

### **Good reputation of the facility**

Good reputation of services at Mpumudde stood out. Positive reputation attracts clients, suggesting that the quality of maternal and child health services is an enabler that draws more users, despite increasing workload as supported by the quote below.

*"When they were budgeting that were looking at only the city. But now we end up stretching even beyond our catchment because our maternal and child services are good." MIDWIFE1*

### **Patient cooperation**

Patient cooperation was highlighted by a midwife notes that patients are generally cooperative with labor monitoring, which supports the use of partographs.

*"Once they have come, they have come. It's up to you as a health worker to do your part. And I have not seen a case where I call a mother for review and a mother refuses or has an attitude about it."*

### **Continuous medical education**

Continuous training and meetings like MPDSR and CME meetings help reinforce the importance of partograph completion, encouraging staff to integrate these practices into routine care. Training sessions on partograph completion help improve adherence to documentation practices, even if temporarily.

*"Through these MPDSR meetings, we have always talked about partographs" MIDWIFE1*

### **Regular supervision**

Supervisory checks and regular follow-up by supervisors ensures partographs are completed, encouraging consistent documentation practices.

*"In most cases, they follow up the one who delivered the mother to explain the incomplete partograph."MIDWIFE2*

### **Policies and guidelines**

There are established existing policies that require the completion of partographs, which could guide staff in proper documentation practices.

*"Yes, the policies are there. When you start a partograph you have to complete it."MIDWIFE3*

### **Access to higher medical cadres**

Being in an urban setting creates a supportive environment with advantages such as access to doctors for labor support and regular supervision, which aids in better labor monitoring compared to rural settings. Being near a regional referral center with doctors available provides support in managing labor, thus encouraging complete documentation for effective referrals.



*"Being in an urban area puts us at an advantage because we have doctors, and we are nearer to the regional referral...you have to call the doctor and show them on the partograph." MIDWIFE2*

### **Increased staff awareness and best practices**

Increased staff awareness through regular discussions and reminders of the importance of documentation in meetings highlight its role in defense and accountability

*"Actually, there is a cry that they recruit more staff. But not only that, we are also urged and reminded of the importance of documenting this labour progress." MIDWIFE1*

Best practices such as proactive monitoring and recording which involve keeping the partograph with the patient, enabling immediate documentation following monitoring, which is critical for continuity of care and decision-making.

*"Actually when you stay with your partograph in the labour suite, immediately you monitor, record, because it is important to avoid a perinatal or maternal death." MIDWIFE4*

### **Team work and effective management**

The culture of teamwork and willingness to help among colleagues ensures that partographs are completed more effectively, with support from more experienced staff when needed.

*"Here we have team work. You can request a colleague and they help you do the recording... even if you do not know how to fill the partograph, you will be helped by a senior." MIDWIFE 3*

Effective management practices, such as assigning staff to specific sections, help facilitate better labor monitoring as supported by this quote.

*"Partograph completion also depends on the management. For our case here at Mpumudde our leaders assign us to sections and we have to work together to effectively monitor labour."MIDWIFE5*

### **The simplicity of the partograph in application**

The simplicity and summarization of the partograph make it a useful tool for detecting complications if used appropriately. The midwife acknowledges that the partograph is not complicated and can effectively aid in monitoring labor progress.

*"The partograph is well summarized. It's not complicated... If we use it genuinely we can be able to detect a complication easily."MIDWIFE6*

### **6.4.3 Challenges to partograph completion at Buwenge HCIV a rural facility.**

#### **Planned absenteeism among staff**

There are staffing issues in rural facilities like planned absenteeism from work among staff, which contributes to the heavy workload for the available midwives as supported by the following quotes.

*"Instead of having 3 midwives on duty, you find only one. The others are on planned absenteeism."MIDWIFE4 Buwenge HCIV*

#### **Patient reluctance and misconceptions toward monitoring**

Patient reluctance was another challenge mentioned in rural facilities where most of their clients are women from rural areas, who often resist frequent checks due to misconceptions or discomfort, such as thinking that frequently being checked could lead to C- section.

*"Most women who come to rural facilities do not want to be touched checked frequently, so half hourly checks and plotting is really hard to do because these women always assume the worst when they see you monitoring a lot, there is a lot of misconception." MIDWIFE3*

#### **Use of native medicine to induce labour**

There was also use of native medicine by pregnant mothers which leads to intense, premature labor, complicating monitoring as supported by the following quotes.

*"Our biggest challenge here is herbal medicine! They come when they have induced intense labor pains before the cervix even dilates properly. We even end up getting a lot of cervical tears compared to urban facilities. It affects labour monitoring a lot because you have to start a partograph for every woman which you do not get to complete." MIDWIFE1*

#### **Socio-demographic differences of clients**

Difference in client background was another challenge pointed out by most midwives at the rural facility where they noted that their rural clients need a lot of explanation about labor monitoring compared to urban women who may be more understanding probably due to socio-demographic differences.

*“They are not like us who have to explain a lot to our rural clients to understand that we have to examine them frequently to take record.” MIDWIFE1*

### **Long work shifts**

Another challenge that was pointed out was workload and the length of working shifts in rural facilities which often have longer shifts and fewer staff, increasing workload, compared to urban facilities.

*“Most urban facilities have enough health workers who work friendly shifts of 8 hours, compared to us in rural facilities who can work up to 13 hour shifts.” MIDWIFE2*

### **Insufficient and non-functional equipment**

Non-functional or insufficient equipment (e.g., thermometers, BP machines, dopplers) hinders monitoring and accurate recording on partographs as was pointed out by some of the midwives at Buwenge HCIV.

*“Do you think our monitoring equipment even work? Even the BP machine sometimes its batteries die, the Doppler never has batteries and most midwives don’t know how to use it.” MIDWIFE3*

### **Increased workload during night shifts**

While the patient volumes in rural facilities are described as manageable, the staffing, especially during night shifts, is inadequate, leading to increased workload and challenges in managing labor cases effectively.

*“Look at the rural volumes, they are not so high, the numbers of patients are manageable... the only challenge I see is night duty where they only deploy one midwife for that shift.” MIDWIFE4*

### **Lack of policies particular to the facility**

There are no specific policies at Buwenge HCIV regarding partograph completion, which may be a challenge contributing to the low completion status of the facility.

*“No not really do not have any that are particular to this facility. We just follow clinical guidelines and the Essential care guidelines.” MIDWIFE2*

### **Scarcity of higher cadre medical personnel**

Another significant challenge in rural facilities is the scarcity of doctors, which can delay critical decision-making during labor. This contrasts with urban facilities where the presence of more doctors, including interns, makes labor monitoring easier and more efficient.

*“The rural facilities maybe have a few doctors... when we are monitoring these mothers, it is really easier when the doctor is involved... in urban facilities the doctors are many, they even have intern doctors.” MIDWIFE5*

### **Absence of refresher trainings**

The absence of refresher trainings was one of the challenges one of the midwives highlighted, especially after being transferred to facilities with different levels of care. This would help maintain skills in partograph use, which can diminish when not regularly practiced.

*“I feel like the support we need as midwives is maybe refresher trainings, because sometimes, they keep giving us transfers. Five years back I used to work at a HCIV then they took me to a HCII where there is no conducting deliveries, you forget of a partograph completely. When they bring you back to a HCIV, you see everything as new to you, so again you start, mpozzi how do they do this? So maybe if they take us for those refresher trainings, we would be well versed with partograph use!” MIDWIFE6*

### **Human resource challenges**

The midwives highlighted that the facility is generally well-equipped with the necessary resources and infrastructure to support labor monitoring, suggesting that the challenges lie more in human resource issues rather than equipment.

*“Yes, we do have enough resources and infrastructure. Most of us are just lazy to record but we do monitor labour.” MIDWIFE1*

## **6.4.4 Enablers to partograph completion at Buwenge HCIV, a rural facility.**

### **Regular supplies of partographs**

Regular supplies of partographs to the facility has enabled labour monitoring in a sense that partographs are always available and every mother’s file as supported by the following quotes.

*“In the case of partographs we have never run out, they always there” MIDWIFE4*

### **Comprehensive records**

The delivery records for every mother are combined in one booklet that has patient details and partographs which helps ensure data is recorded.

*“What has helped us is the nature of the files we use... combine all the details of the mother, labour outcomes, and have a partograph at the end.” MIDWIFE2*

### **Support from senior colleagues**

While there have been no formal strategies or interventions to enhance partograph completion, senior colleagues play a vital role in guiding and supporting less experienced staff in completing partographs accurately.

*“The senior colleagues who have been around they take you around and they say maybe you have forgotten this.” MIDWIFE2*

### **The appreciation of the partograph**

Another enabler is the appreciation of the importance of the partograph where the midwife emphasized the importance of the partograph in monitoring labor progress and detecting early signs of complications, such as changes in fetal heart rate, which could indicate distress.

*“It is very relevant... I can see the mother is moving on well... and then all of a sudden things turn out to be abnormal... you no longer hear the fetal heart, and you know something is up.” MIDWIFE1*

### **Similarities between Buwenge and Mpumudde HCIV**

Both the rural and urban health facilities faced similar challenges, such as staff shortages and limited resources. Additionally, both facilities benefited from supportive supervision as an enabler for partograph completion.

## **CHAPTER 7**

### **7.0 Discussion**

#### **7.1 Partograph completion at Buwenge HCIV and Mpumudde HCIV in Jinja**

The findings of this study reveal notable discrepancies in the documentation of key labor parameters, which could have serious implications for maternal and neonatal outcomes. These discrepancies might be due to prioritization of one parameter over the other in the belief that at the bare minimum those parameters can be monitored, or due to the ease of monitoring. The parameters with the highest documentation rates were cervical dilation and uterine contractions, indicating that these indicators are prioritized in labor monitoring. This could be due to the fact that cervical dilation and uterine contractions are most physically easy to observe and are fundamental to assessing labor progress. These findings are in agreement with (Nassaka et al., 2022) who found that cervical dilation was also the most documented in northern Uganda.

However, the study also uncovered substantial gaps in the documentation of other vital parameters, particularly obstetric risk factors, fetal heart rate, and maternal vital signs like temperature, pulse, and blood pressure. This could be due to the issue of patient health worker ratio, that would not allow adequate attention paid to all partograph parameters. It could also be attributed to prior assessments done during ANC visits where obstetric risk factors are examined and documented. The low documentation rates of these parameters are concerning given their importance in comprehensive labor management. These findings contradict the findings in Malawi where fetal heart rate was recorded the most, labour progress and maternal vital signs respectively (Mandiwa and Zamawe, 2017b, Mukisa et al., 2019b). This lack of documentation could result from insufficient training or awareness among healthcare providers about the importance of monitoring these factors, or as revealed by the qualitative findings, work overload and lack of instruments to use to monitor these parameters, leading to missed opportunities for early intervention.

While the documentation of cervical dilation and uterine contractions appears to be prioritized, the significant gaps in recording other critical parameters such as obstetric risk factors, fetal heart rate, and maternal vital signs point to a need for improved training and resources. Addressing these gaps

is essential to ensure comprehensive labor monitoring, which is crucial for preventing complications and improving maternal and neonatal outcomes.

The overall completion of partographs at 9.7% is alarmingly low and indicates a need for immediate intervention. This could be attributed to the challenges highlighted in the qualitative arm of the study such as staff overload, high volumes of patients, reliance on local concoctions by patients to induce rapid labour as pointed out in both urban and rural contexts. These findings agree with (Palo et al., 2019b) who found completion at 1.03% at a secondary level facility in India and (Nassaka et al., 2022) who found overall completion at only 5% in northern Uganda. The slightly higher completion rate at Mpumudde HCIV (11.1%) compared to Buwenge HCIV (8.2%) might reflect differences in staff training, resource availability, or workload, or as revealed by the qualitative findings, the differences in clients understanding and cooperation. These findings disagree with (Gebrehiwot et al., 2020b) who found that rural health facilities had a higher completion compared to urban facilities. However, both rates are insufficient to ensure optimal maternal and neonatal outcomes. This issue has been similarly documented in Ghana, where poor partograph completion was associated with suboptimal labor outcomes (Opoku and Nguah, 2015b)

## **7.2 Partograph completion and neonatal outcomes**

Neonates weighing over 4 kg had were more likely to have an incomplete partograph. This may be due to the focus of healthcare providers on managing the complexities of delivering babies with more than average weight rather than on the documentation itself. This finding however is inconsistent with the literature, which indicates that neonates weighing 2.5kg to 4kg had higher odds of having an incomplete partograph and that the association between partograph completeness and neonatal weight has statistical significance (Olebo et al., 2023b) but agrees with a study conducted in Dar es Salaam which did not find neonatal weight of significance in regards to completeness of the partograph in labour monitoring (Sospeter et al., 2023)

Post-term neonates 8 times more likely to have an incomplete partograph, which was significant statistically. These findings agree with (Olebo et al., 2023b) and (Sharma et al., 2022) who also found this association significant. The complexity of managing post-term labors, which often requires more intensive monitoring and intervention, could contribute to lapses in documentation.

This significant association highlights the need for healthcare providers to be particularly vigilant in documenting these cases to ensure comprehensive monitoring and better outcomes.

Regarding neonatal interventions, the need for such measures was significantly associated with an incomplete partograph in the bivariate analysis. This may indicate that during complex or emergency labors, healthcare providers prioritize immediate clinical interventions over documentation. These findings agree with (Olebo, Masereka et al. 2023) who also found that neonates that required intervention after birth were more likely to have an incomplete partograph.

Neonates who experienced asphyxia had a slightly higher completeness compared to those who did not however, having a complete partograph did not determine whether the baby was asphyxiated or not. These findings do not align with (Byukusenge et al., 2016b) who found that partograph completion was associated with less fetal deaths and increased APGAR score. (Anokye et al., 2019b) findings also indicated a reduced incidence of birth asphyxia associated with a complete partograph, contradicting the findings of this study.

### **7.3 Challenges and enablers to partograph completion in urban- rural contexts**

#### **7.3.1 Challenges in the urban context**

The challenges to partograph completion at Mpumudde HCIV were numerous, comprising of resource shortages of partographs, staff overload, environmental factors, and health worker attitudes issues. These findings agree with (Mukisa et al., 2019b) who conducted their study at Mulago National Referral, an urban health facility.

Shortage of partograph booklets, disrupts proper documentation and labor monitoring. These findings agree with (Mathibe-Neke et al., 2013) who found this to be a challenge at an urban health facility in South Africa, and other studies conducted in Central Ethiopia and Nigeria(Mathibe-Neke et al., 2013, Opiah et al., 2012). In this study, this shortage forces healthcare providers to resort to alternative methods of documentation, which may not be as reliable or retained for future reference. The quotes from midwives underscore the impact of this challenge, highlighting the difficulties faced when partographs are out of stock. However a study in Rujumbura Health Sub-



district in South Western Uganda found that even when facilities has sufficient supplies, still completion was low(Ogwang et al., 2009b)

Staff overload, where midwives are often required to juggle multiple tasks simultaneously. The need to manage various maternal services, such as antenatal care (ANC), labor and delivery, and postnatal care, often leaves little time for consistent partograph monitoring and recording. This issue is exacerbated by the high volume of patients in urban settings, which overwhelms the available staff and reduces the quality of care. The midwives' accounts vividly describe the strain caused by having to monitor multiple mothers at once, leading to incomplete or neglected partograph entries. These findings agree with (Zelellw and Tegegne, 2018) who found that increased inflow of patients coupled with staffing issues is one of the challenges in the urban context, as well as (Mukisa et al., 2019b) findings.

The requirement for half-hourly fetal heart checks is particularly burdensome in an urban setting where staff must attend to multiple patients. This frequent monitoring, while necessary for ensuring fetal well-being, becomes impractical when staff are overextended, as indicated by one midwife's suggestion to extend the monitoring interval to one hour. (Ontiretse, 2022) found this to be the case in an urban referral hospital in Botswana and (Bedwell et al., 2017) found that some midwives find i=the partograph burdensome and too difficult to complete.

Cultural practices such as the use of native herbs by patients to accelerate labor, further complicates partograph completion. The rapid labor progression induced by these herbs makes it difficult for midwives to keep up with documentation, as described by midwives who face challenges when mothers arrive in advanced stages of labor. A study in Nigeria found that deeply ingrained cultural norms, beliefs, and practices surrounding childbirth may diverge from the structured approach advocated by the partograph which in turn hinders completion(Elendu et al., 2024)

Environmental challenges, such as power outages, also hinder proper documentation, especially during night shifts. The lack of electricity forces midwives to prioritize monitoring over recording, leading to gaps in the partographs. Much like the findings of (Nwaneri et al., 2017) who conducted their study partly in urban health facilities and found that environmental context can be a contributing factor to completion of partographs.

### **7.3.2 Enablers in the urban context**

Despite the challenges, several enablers support partograph completion at Mpumudde HCIV:

The facility's positive reputation for providing quality maternal and child health services attracts a high number of clients. This reputation, combined with the generally cooperative attitude of patients, facilitates labor monitoring and partograph completion, as midwives report that mothers are willing to comply with monitoring procedures.

Regular training and accountability sessions, such as Maternal and Perinatal Death Surveillance and Response (MPDSR) meetings and Continuous Medical Education (CME), reinforce the importance of partograph completion. These training sessions temporarily improve adherence to documentation practices. Additionally, supervisory checks ensure that midwives complete partographs, encouraging consistent documentation. These findings agree with studies conducted in Zambia and Botswana (Mogatle, 2017, Mwewa, 2016, Ontiretse, 2022)

Mpumudde HCIV has established policies and protocols that mandate the completion of partographs. These guidelines serve as a framework for midwives, ensuring that partograph completion is an integral part of labor monitoring. Not to mention the facility's urban setting provides an advantage in terms of access to medical personnel, including doctors from the regional referral center who offer support in managing labor. This proximity to specialized care encourages midwives to complete partographs as part of effective patient management and referral processes. (Mwewa, 2016)'s findings suggest the same notion that work place policies and team work with in different cadres in labour monitoring could be an enable to partograph completion.

A culture of teamwork among staff members and effective management practices, such as assigning specific sections to staff, also play a role in facilitating partograph completion. The willingness of colleagues to assist with documentation and the clear division of responsibilities contribute to better labor monitoring and documentation practice and increases knowledge pertaining to partograph use, which is an enabling factor as supported by research conducted in city public health facilities in Ethiopia (Negash and Alelgn, 2022b)

Finally, the partograph itself is recognized as a well-designed tool that, when used correctly, aids in the early detection of labor complications. The midwives acknowledge that the partograph is not complicated and can be a valuable resource in ensuring safe deliveries. This kind of attitude is an enabler as supported by (Haile et al., 2020) in Southern Ethiopia.

### **7.3.3 Challenges in the rural context**

Midwives at Buwenge HCIV face several challenges that hinder effective partograph completion. Staffing issues, including absenteeism and heavy workloads, often leave midwives covering shifts alone, affecting labor monitoring. Patient reluctance to frequent exams, especially among rural women, complicates record-keeping due to misconceptions and discomfort with the procedures. The use of native medicine by pregnant women, leading to premature labor pains, further complicates monitoring. Midwives also noted that rural women require more extensive explanations about the importance of monitoring compared to urban clients. Inadequate equipment, such as thermometers and BP machines, alongside long shifts and insufficient night staffing, make accurate partograph completion difficult. The absence of specific partograph policies, a scarcity of doctors for timely decision-making, and a lack of refresher training further exacerbate these challenges, reducing the effectiveness of labor monitoring at the facility.

### **7.4.4 Enablers to Partograph Completion at Buwenge HCIV, a Rural Facility**

Despite the challenges, midwives at Buwenge HCIV identified several enablers that support partograph completion. Regular supplies ensure the consistent availability of partographs, enabling continuous labor monitoring. The structured patient records, which combine patient details with the partograph, aid in comprehensive data recording. Although formal strategies for improving partograph use are absent, senior midwives mentor less experienced staff, ensuring partographs are properly completed. Additionally, midwives understand the importance of the partograph in monitoring labor and detecting complications, reinforcing their commitment to its use.

### **The labour care guide**

Since 2018, the standard of care during labour monitoring has been shifted towards adopting the labour care guide in the place of the partograph (2020) The findings of this study set the stage for the Labour Care Guide in the way that its simplified and user-friendly design is likely to address

issues of low completion by prioritizing critical parameters and reducing the documentation burden on healthcare providers. By focusing on actionable thresholds and integrating decision-making prompts, the Labour Care Guide can ensure that essential monitoring is not only recorded but also used effectively to guide care. It also emphasizes individualized, respectful care and alignment with updated evidence-based guidelines which can improve health worker adherence, especially in settings like Buwenge and Mpumudde, where completion gaps were observed. This streamlined approach is expected to overcome the barriers to partograph use, leading to better maternal and neonatal outcomes.

## **CHAPTER EIGHT: STRENGTHS AND LIMITATIONS**

### **8.1 Strengths**

- The patient folders reviewed were fully available and compiled comprehensively at both facilities.

### **8.2 Limitations**

- Some of the midwives who were key informants were inaccessible due to night shifts. This was addressed by replacing physical interviews with telephone interviews.
- The findings from the study relied on medical records and qualitative interviews is specific to the population and context studied, limiting the generalizability of results to broader populations or settings.
- The study was conducted in only 2 health facilities, limiting the generalizability of results to broader populations or settings.

## **CHAPTER NINE: CONCLUSIONS AND RECOMMENDATIONS**

### **9.1 CONCLUSIONS**

#### **9.1.1 Partograph Completion in Jinja, Uganda**

This study assessed partograph completion in two health facilities in Jinja, Uganda: Mpumudde HCIV, an urban facility, and Buwenge HCIV, a rural facility. The findings revealed differences in partograph completion between these facilities. Mpumudde HCIV exhibited higher rates of partograph completion, driven by better staffing levels, more consistent resource availability, and greater access to training. Conversely, Buwenge HCIV struggled with lower completion rates due to challenges such as planned absenteeism among staff, patient reluctance, and the influence of native medicine.

#### **9.1.2 Factors Influencing Partograph Completion**

The study identified several factors influencing partograph completion. In urban facilities like Mpumudde HCIV, the main challenges included high patient volumes and occasional shortages of staff. However, these were mitigated by the availability of resources and supportive supervision. In rural settings like Buwenge HCIV, challenges were more pronounced, with issues such as staffing shortages, longer working shifts, insufficient equipment, and the use of native medicine by patients, complicating the accurate completion of partographs.

#### **9.1.3 Impact of Partograph Completion on neonatal labour outcomes**

While the study did not find a statistically significant association between partograph completion and the occurrence of birth asphyxia, certain parameters, such as the monitoring of fetal descent and maternal temperature, were linked to improved birth outcomes. These findings highlight the importance of accurate and thorough monitoring during labor, emphasizing that even when overall

partograph completion rates are low, specific aspects of monitoring can still contribute positively to maternal and neonatal health.

#### **9.1.4 Policy and Practice Implications**

The disparities observed between urban and rural facilities in Jinja indicate the need for targeted interventions to improve partograph completion rates. The findings suggest that policies should focus on addressing the unique challenges faced by rural health facilities, such as staffing issues, patient education, and resource availability. This has significant implications for improving maternal and neonatal health outcomes in Uganda, particularly in underserved areas.

### **9.2 RECOMMENDATIONS**

#### **1. Enhancing Staff Capacity and Training**

To improve partograph completion rates, particularly in rural areas like Buwenge HCIV, it is recommended that health facility management prioritize ongoing staff training and capacity building. Regular refresher courses on partograph use should be implemented, especially for midwives who have been transferred from facilities with lower levels of care. Additionally, administrators should address staffing shortages by ensuring adequate midwife coverage, particularly during night shifts, will help reduce the workload and improve partograph completion.

#### **2. Addressing Patient Reluctance**

Given the identified reluctance of rural women to undergo frequent labor checks, it is essential for the health education department at the facilities to implement educational interventions that address misconceptions about labor monitoring. Community outreach programs, antenatal education sessions, and collaboration with local leaders can play a crucial role in dispelling fears related to C-sections and promoting the importance of regular monitoring during labor.

#### **3. Improving Resource Availability**

Ensuring the availability of functional monitoring equipment, such as thermometers, BP machines, and dopplers, is critical for accurate partograph completion. It is recommended to the

administration of health facilities particularly in rural areas, receive regular equipment maintenance and that sufficient supplies be provided to avoid interruptions in labor monitoring. The government and relevant health authorities should also consider providing additional support to rural facilities to ensure they are well-equipped.

#### **4. Policy and Guidelines Enhancement**

Health facility management should be encouraged to develop facility-specific policies that address local challenges and promote best practices.

#### **5. Further Research**

Further research by academicians and maternal and child health specialists is needed to explore the long-term impact of improved partograph completion on maternal and neonatal outcomes, particularly in rural settings. Future studies should consider longitudinal research to assess the effectiveness of interventions aimed at increasing partograph completion rates.



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## Appendices

### Appendix 1. Data collection tools

#### Appendix a. DATA ABSTRACTION CHECKLIST

##### Section A: Demographic Characteristics of the Mothers

Hospital Number:  Study Enrolment number:

1. Age of the mother:
2. What is the Occupation of the mother?

a. None

- b. Farming
- c. Artesian
- d. Trade/Business
- e. Civil servant/formal employment
- f. Self employed
- g. Home

3. Marital status of the mother

- A. Single/ never married
- B. Married
- C. Domestic partnership (co habiting)
- D. Widow/widower
- E. Divorced/separated

4. Where the mother' s Residence (Village/Gombolola/Saza/District)?

5. What is your religion?

- A. Muslim
- B. Catholic
- C. Protestant
- D. Pentecostal
- E. Orthodox
- F. Others specify

6. What is the Gravidity of the mother?

7. What is the Parity of the mother?

8. What is the mother's Weeks of gestation?

9. Where did the mother come from before admission?

10. PMTCT Category of the mother: Positive/Negative

Section B: Completeness of partograph

1. Was the assessment of the mother done for potential risk factors? Yes  No
2. Was recording of foetal heart rates done every half hour? Yes  No
3. Was recording of the intactness or rupture of membranes done? Yes  No
4. Was recording of liquor colour upon rupture of membranes done? Yes  No
5. Was recording of foetal head moulding done? Yes  No
6. Was recording of cervical dilation done every 4-hourly? Yes  No
7. Was recording of uterine contractions done every half hourly? Yes  No
8. Was recording of foetal descent done every 4-hourly? Yes  No
9. Was recording of maternal temperature done every 4-hourly? Yes  No
10. Was recording of maternal pulse rate done every half hourly? Yes  No
11. Was recording of maternal blood pressure done every 4-hourly? Yes  No
12. Was urine testing done and recorded for; Albumin Yes  No , Sugar Yes  No , Acetone Yes  No
13. Was recording of actions taken done when needed? Yes  No
14. What is the overall score from the range of 0-13? .....
15. Which category was these partograph quality?
  - A. Incomplete (0-10)
  - B. Complete (11-13)

Section C: Outcome of Labour for mother

11. What was the type of delivery?
  - A. Spontaneous vertex delivery
  - B. Caesarean section
  - C. Others  specify

12. What was the duration of first stage of Labour?
13. What was the duration of the second stage of Labour?
14. What amount of blood loss in mls did the mother loose?
15. Was episiotomy done on the mother? Yes  No
16. Did the mother get tears during delivery? Yes  No
17. What was the Status of the mother? Alive  Dead

**Section D: Outcome of Labour for Baby**

18. What is the Sex of the baby? Male  Female
19. What is the Weight of the baby (in Kilogram)?
20. Did the baby have any abnormalities? Yes  No
21. If yes for abnormalities specify.....
22. Was the New born gestational age Term? Yes  No
23. Was the New born gestational age Pre-term? Yes  No
24. Was the New born gestational age post term? Yes  No
25. Was the baby asphyxiated? Yes  No
26. Did the baby need any intervention? Yes  No
27. Was any intervention given to the baby? N/A  YES  No
28. What was the baby's APGAR Score at (1 minute)?
29. What was the baby's APGAR Score at (5 minutes)?
30. What was the Status of the baby; Alive  Dead
31. If the baby died what was the cause of death? .....
32. Did the mother deliver a Still birth? Yes  No

## **Appendix 2: KII guide**

### **Key informant Guide**

Hello,

My name is..... a student at Makerere University School of Public Health, I am undertaking research for my dissertation focusing on understanding the contextual factors influencing partograph completion levels in both rural and urban public health facilities in Jinja. This key informant interview guide has been developed to delve into the complexities of this topic and gather valuable insights from healthcare professionals like yourself. Your participation in this interview will be instrumental in unraveling the challenges and opportunities surrounding partograph utilization in maternal care. Please be assured that your responses will be handled with the utmost confidentiality, and your involvement is entirely voluntary. Your contribution to this study will not only enrich academic discourse but also contribute to improving maternal healthcare practices in Uganda. Thank you for your willingness to participate and for your dedication to advancing public health research.

### **Questions**

1. What are the specific challenges you encounter when completing partographs?
2. How do infrastructure and resource availability affect partograph completion at your facility?
3. Can you describe any differences in partograph completion practices between rural and urban public health facilities?
4. How do patient volumes and staffing levels influence the use of partographs at your facility?
5. What organizational policies or protocols exist regarding partograph use? How do they impact your patient care?
6. Are there community level factors such as cultural beliefs or social norms that affect partograph completion in your context?
7. What support mechanisms or resources do you feel would help improve partograph completion at your facility?
8. Can you identify any successful strategies or interventions that have been implemented to enhance partograph completion in your facility?



