KAIRUKI UNIVERSITY

DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY

EFFECTIVENESS OF INTRAMUSCULAR OXYTOCIN IN MANAGING THE THIRD STAGE OF LABOUR AMONG WOMEN DELIVERING AT REGIONAL REFERRAL HOSPITALS IN DAR ES SALAAM, TANZANIA

By

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Dissertation submitted to the School of Medicine in partial fulfilment of the requirements for the degree of Master of Medicine in Obstetrics and Gynaecology of Kairuki University

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for examination by Kairuki University a dissertation entitled **"Effectiveness Of Intramuscular Oxytocin in Managing the Third Stage of Labour among Women Delivering at Regional Referral Hospitals in Dar Es Salaam, Tanzania"** in (partial) fulfilment of the requirements for the degree of Master of Medicine in Obstetrics and Gynecology of Kairuki University.

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DECLARATION AND COPYRIGHT

I, **Rudovick Bernard Bizeze** declare that this dissertation is my original work, and it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature---------- Date---------- 02 MAY 2025

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DEDICATION

This work is dedicated to the people who have helped me throughout my education including my Supervisor who gave ne strength when I thought of giving up.

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LIST OF ABBREVIATIONS

AMTSL	Active Management of Third Stage of Labour
APGAR	Appearance, Pulse, Grimace, Activity, and Respiration rate
IM	Intramuscular
PPH	Postpartum hemorrhage
USA	United States of America
WHO	World Health Organization
KU	Kairuki University
SVD	Spotaneously vaginal delivery
C/S	Cercearian Section

DEFINITION OF TERMS

Anaemia: A medical condition characterized by a deficiency of red blood cells or hemoglobin in the blood.

Active management of the third stage of labor: A strategy for preventing postpartum hemorrhage that involves administering uterotonic medications, controlled cord traction to facilitate the delivery of the placenta and massage the uterus.

Intramuscular oxytocin: A medication used to stimulate uterine contractions during the active management of the third stage of labor.

Primary Postpartum hemorrhage: Excessive bleeding following childbirth more than 500ml by SVD and more than 1000ml by C/S, in our study it will be defined as drop in 10% of hemglobin level 24 hours post delivery.

Maternal outcomes: health outcomes related to the mother after delivery eg PPH

Effective of intamuscular oxytocin.the ability to prevent PPH occurance during third stage of labor.

ABSTRACT

Introduction: Postpartum hemorrhage (PPH) is a significant cause of maternal mortality, particularly in developing countries, accounting for around 25% of maternal deaths globally. Intramuscular oxytocin is a common intervention for PPH. It is influenced by factors such as maternal anaemia, demographics, and medical history. This study evaluates the incidence of PPH, hemoglobin changes, maternal outcomes, and the impact of maternal factors on oxytocin effectiveness in prevention of PPH in Dar es Salaam regional referral hospitals.

Objective: To evaluate the effectiveness of intramuscular oxytocin in managing the third stage of labour and its impact on maternal outcomes among women delivering at regional referral hospitals in Dar es Salaam, Tanzania.

Methodology: This **cohort study** was conducted at three regional referral hospitals in Dar es Salaam, Tanzania, from February to June 2024, involving 288 term pregnant women in active labour. The primary depended variable was incidence of PPH. Stratified random sampling was utilized, and data collection was performed using a questionnaire. Data analysis was conducted using SPSS version 25.**descriptive statistics was used to** summarize the incidence of PPH and maternal complication. The paired and upaired T-test was used to evaluate hemoglobin change.Chi-square test and multivalient logist regession were used for association of anaemia with PPH. The adjusted odds ratios (aOR), 95% confidence intervals (CI), and p-values were used to quantify the strength and significance of associations, with statistical significance set at

$p \leq 0.05$.

Results: The study analyzed 288 women, with the majority from Temeke Regional Referral Hospital (TRRH) 129 (44.8%), Amana Regional Referral Hospital (ARRH) 115 (39.9%), and Mwananyamala Regional Referral Hospital (MRRH) 44 (15.3%). Among the cohort, 185 (64.2%) were anaemic (Hb < 11 mg/dL), and the occurrences of PPH were found to be 51 patients with cumulative incidence of 17.1%. Among those with postpartum haemorrhage, 48 (94.1%) were anaemic, 41 (80.4%) had tachycardia, 38 (74.5%) had clammy skin, 36 (72.5%) experienced pubic swelling, 30 (58.8%) reported dizziness, and 26 (51.0%) had fever. Women aged 35 years and above had significantly higher odds of postpartum haemorrhage compared to those under 35 (aOR = 6.11, 95% CI: 2.66–14.03, p < 0.001). Not taking haematinics was associated with increased odds of postpartum haemorrhage (aOR = 2.14, 95% CI: 1.04–4.39, p = 0.039), while having no history of bleeding (aOR = 0.44, 95% CI: 0.21–0.90, p = 0.024) and being non-anaemic (aOR = 0.11, 95% CI: 0.03–0.40, p = 0.001) were protective factors.

Conclusion: Despite the routine use of intramuscular oxytocin for PPH prevention, its incidence remains significant (17.1%). This highlights the importance of addressing contributing factors such as maternal anaemia, advanced maternal age, lack of hematinic use, and a history of bleeding. While intramuscular oxytocin is recognized as a key intervention for uterine contraction and haemorrhage control.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Postpartum haemorrhage (PPH) is a leading cause of maternal mortality globally, particularly in developing countries. The World Health Organization (WHO) estimates that PPH accounts for approximately 25% of all maternal deaths worldwide (1). Intramuscular oxytocin is widely used as a first-line uterotonic agent to prevent PPH due to its efficacy and safety profile. However, the effectiveness of oxytocin can be influenced by various factors, including maternal anaemia, demographic characteristics, and medical history (2).

Anaemia during pregnancy is a significant public health issue, affecting approximately 50-80% of postpartum women in low- and middle-income countries (3). Studies have shown that anemia can negatively impact maternal health-related quality of life, increasing the risk of fatigue, depression, and poor mother-child interaction (4–7). Additionally, prenatal anaemia has been associated with an increased risk of PPH, although findings have been mixed.

The administration of intramuscular oxytocin during the third stage of labour is a common practice to prevent PPH (8). Recent studies have compared the effectiveness of intramuscular oxytocin with other routes of administration, such as intravenous infusion and bolus, with intravenous administration showing slightly better outcomes in terms of reducing blood loss (9,10). However, intramuscular oxytocin remains a widely accepted and accessible option, especially in resource-limited settings.

Effective management of postpartum haemorrhage is crucial for improving maternal outcomes and reducing maternal mortality. When PPH is promptly and appropriately managed with interventions like intramuscular oxytocin, the risk of severe complications such as hypovolemic shock, organ failure, and the need for blood transfusions is significantly reduced (11). Moreover, preventing severe blood loss helps in minimizing the risk of long-term health issues, such as chronic anaemia and impaired physical recovery, which can adversely affect a mother's ability to care for herself (12). In resource-limited settings, where access to advanced medical care may be restricted, the timely administration of intramuscular oxytocin plays a vital role in safeguarding maternal health and ensuring positive outcomes (13).

Maternal demographic and medical history factors, such as age, parity, and previous obstetric history, can influence the effectiveness of oxytocin in managing the third stage of labour. Understanding these associations can help tailor interventions to improve maternal outcomes.

Therefore, this study aims to compare the incidence of PPH between anaemic and non-anaemic patients receiving intramuscular oxytocin, evaluate changes in haemoglobin levels, assess maternal outcomes, and analyze the association between maternal factors and occurrences of PPH. By addressing these objectives, the study seeks to contribute to the ongoing efforts to improve maternal outcome in Dar es Salaam regional referral hospitals.

1.2 Problem Statement

Active management of the third stage of labour involves administration of intramuscular 10 I.U oxytocin, controlled cord traction to deliver the placenta, and uterine massage. Despite intramuscular oxytocin being widely used as the first-line intervention in AMTSL, postpartum haemorrhage (PPH) remains a significant challenge in Tanzania, contributing to a high maternal mortality ratio (MMR) of 104 maternal deaths per 100,000 live births (11). Local studies indicate that PPH accounts for at least 25% of maternal deaths, with prevalence rates ranging from 10.5% to 25% in different regions (12,13). The healthcare infrastructure in Dar es Salaam, including regional referral hospitals, plays a critical role in addressing maternal health issues, but the differential effects of intramuscular oxytocin on anemic versus non-anaemic women remain poorly understood in the prevention of PPH (8,10,14–17). This gap in understanding limits the ability to bridge health disparities and improve maternal and neonatal outcomes. Addressing this knowledge gap is urgently needed to inform more effective maternal health interventions.

1.3 Rationale of a Study

The rationale for this study is to address critical gaps in understanding the impact of administering intramuscular oxytocin to women in the third stage of labour, particularly concerning the incidence of PPH. Given that widespread use of oxytocin to manage third stage of labour and reduce the risk of PPH, it is essential to evaluate its effectiveness and safety comprehensively. By determining the incidence of PPH and assessing haemoglobin changes from admission to 24 hours post-delivery, this study aims to provide valuable insights into the haematological impact of oxytocin use. Additionally, examining maternal outcomes and the association between anaemia status and PPH incidence will help identify potential risk factors and improve clinical management practices.

Ultimately, the findings will contribute to enhancing maternal health outcomes and guiding evidence-based interventions in labour and delivery settings.

1.4 Research question

1.4.1 Broad Research Question

What is the effectiveness of intramuscular oxytocin in managing the third stage of labour and its impact on maternal outcomes among women delivering at regional referral hospitals in Dar es Salaam, Tanzania.

1.4.2 Specific Research Questions

1. What is the magnitude of postpartum haemorrhage among **third** stage labour women administered intramuscular oxytocin from February to June 2024 in Dar es Salaam regional referral hospitals?
2. How do haemoglobin levels change from admission to 24 hours post-delivery among second stage labour women administered intramuscular oxytocin from February to June 2024 in Dar es Salaam regional referral hospitals?
3. What are the maternal outcomes among women in the third stage of labor who are administered intramuscular oxytocin?
4. What is the association between anaemia status and the incidence of PPH among third-stage labour women administered intramuscular oxytocin from February to June 2024 in Dar es Salaam regional referral hospitals?

1.5 Objectives

1.5.1 Broad Objective

To evaluate the effectiveness of intramuscular oxytocin in managing the third stage of labour and its impact on maternal outcomes among women delivering at regional referral hospitals in Dar es Salaam, Tanzania.

1.5.2 Specific Objectives

1. To determine the occurrence of postpartum haemorrhage among **third** stage labour women administered intramuscular oxytocin.
2. To evaluate changes in haemoglobin levels from admission to 24 hours' post-delivery among third stage labour women administered intramuscular oxytocin.
3. To assess the maternal outcomes among third stage labour women administered intramuscular oxytocin.
4. To analyze the association between anaemia status and the occurrence of PPH among third-stage labour women administered intramuscular oxytocin.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Overview of Literature Review

Research indicates that prolonged labour is a significant risk factor for PPH. A study by Nyfløt et al. (2017) found that women with severe postpartum haemorrhage had a longer duration of labour compared to controls. The use of oxytocin for labour augmentation has been associated with both benefits and risks, including the potential for increased blood loss (16). Postpartum haemorrhage can lead to significant blood loss, impacting haemoglobin levels. A study by Anger et al. (2019) explored the correlation between blood loss and haemoglobin levels, finding that severe PPH (blood loss >1000 ml) was more strongly associated with significant drops in haemoglobin levels (18).

Anaemia status is a critical factor in maternal health, with studies indicating that women with pre-existing anaemia are at higher risk for PPH. The relationship between anaemia and PPH highlights the need for careful monitoring and management of haemoglobin levels during and after labour (18).

Drop in Hemoglobin and Prenatal Anemia

Prenatal anaemia, characterized by low hemoglobin (Hb) levels during pregnancy, has been strongly associated with adverse maternal outcomes, including postpartum haemorrhage (PPH). Studies indicate that severe prenatal anemia significantly increases the risk of PPH due to reduced oxygen-carrying capacity and impaired uterine contractility. A meta-analysis of 13 studies found that women with severe anaemia had a threefold higher risk of PPH compared to non-anaemic women1. Additionally, low maternal Hb levels during pregnancy have been linked to increased maternal mortality, preterm birth, and low birth weight. These findings underscore the

importance of early detection and management of anemia during pregnancy to mitigate its impact on maternal and neonatal health. However, conflicting evidence exists regarding the association between mild or moderate anemia and PPH, suggesting the need for further research1.

Intervention Between Anaemic and Non-Anaemic Groups

Interventions targeting anemia in pregnancy often focus on iron and micronutrient supplementation, which have been shown to improve Hb levels and reduce anemia-related complications. For anaemic women, iron supplementation significantly reduces the risk of adverse outcomes such as PPH and low birth weight4. Non-anaemic women, on the other hand, benefit from preventive measures like delayed cord clamping, which improves neonatal iron stores without increasing maternal risks. A systematic review highlighted that tailored interventions, such as blood transfusions for severe anemia and dietary fortification for mild cases, are critical in addressing the varying needs of anemic and non-anaemic groups3. Despite these advancements, gaps remain in understanding the long-term impact of these interventions, particularly in resource-limited settings.

Estimated Blood Loss as a Conventional Diagnosis of Anaemia

Estimated blood loss (EBL) is a widely used metric in clinical settings to assess the severity of anemia, particularly in perioperative and postpartum contexts. Visual estimation remains the most common method, but studies have highlighted its limitations due to subjective inaccuracies, often leading to underestimation or overestimation of blood loss. Gravimetric and formula-based techniques have been introduced to improve accuracy, but their application is often restricted by resource availability and clinical practicality.

EBL is critical in diagnosing acute anaemia caused by haemorrhage, as it provides immediate insights into the need for interventions such as blood transfusions. However, reliance solely on EBL can overlook chronic anaemia cases, where gradual blood loss or nutritional deficiencies play a significant role. Research has shown that integrating EBL with haemoglobin measurements and clinical signs, such as pallor and fatigue, enhances diagnostic precision. Despite its utility, EBL is not without challenges, as it fails to account for individual variations in hemodynamic responses to blood loss.

Emerging technologies, such as calorimetric and digital imaging methods, aim to refine EBL estimation, offering promising avenues for more accurate and real-time assessments. These advancements could bridge the gap between conventional practices and the need for precision in anaemia diagnosis.

A 10% drop in haemoglobin levels is a significant indicator of acute anaemia, often associated with substantial blood loss or underlying conditions. Research highlights that such a drop can result from postpartum haemorrhage (PPH), surgical procedures, or trauma. In obstetric contexts, a 10% decrease in haemoglobin is frequently linked to PPH, which can lead to hypovolemia and impaired oxygen delivery to tissues. Clinical studies emphasize the importance of timely interventions, such as blood transfusions or iron supplementation, to mitigate the risks associated with this decline.

Moreover, the relationship between haemoglobin drop and prenatal anaemia is critical. Women with prenatal anaemia are more vulnerable to experiencing a sharp haemoglobin decrease postpartum due to their already compromised iron stores and reduced erythropoietin capacity. This underscores the need for preventive measures during pregnancy, including routine haemoglobin monitoring and iron supplementation, to reduce the likelihood of severe anaemia postpartum.

2.2 Occurrence of Postpartum Haemorrhage among third stage labour women.

PPH is a leading cause of maternal mortality globally, with significant morbidity and mortality rates, especially in low-resource settings (4). The administration of intramuscular oxytocin immediately after delivery is a common practice to prevent PPH by promoting uterine contractions and reducing blood loss (19).

Recent studies have shown that anaemia, defined as a haemoglobin level below 11 g/dL, is a significant risk factor for PPH (4,19). Anaemic women are more likely to experience excessive bleeding due to reduced oxygen-carrying capacity and impaired coagulation (19). A study conducted in Guangzhou Medical Centre for Critical Pregnant Women found that pre-delivery anaemia was associated with a higher incidence of severe PPH (defined as blood loss >1000 mL).

Intramuscular oxytocin is widely used as a first-line uterotonic agent to prevent PPH (19). Its effectiveness in reducing blood loss has been well-documented, but its impact on anaemic patients remains less clear (4). A meta-analysis by the American Society of Hematology highlighted the importance of timely oxytocin administration in reducing PPH incidence, but noted that anaemic patients might require additional interventions.

While there is substantial evidence on the general effectiveness of oxytocin in preventing PPH, there is limited data specifically comparing its efficacy in anaemic versus non-anaemic patients. Further research is needed to understand how anaemia influences oxytocin's effectiveness and whether additional measures are required for anaemic women to achieve similar outcomes.

The incidence of PPH in anaemic patients remains a significant concern despite the widespread use of intramuscular oxytocin. Addressing this gap in research will help optimize PPH prevention strategies and improve maternal outcomes, particularly in regions with high anaemia prevalence.

2.3 Changes in Hb from admission to 24 hours' post-delivery among third stage labour women.

Maternal anaemia is a prevalent condition that complicates many pregnancies worldwide, particularly in low- and middle-income countries. It is characterized by reduced levels of haemoglobin, which can impair oxygen delivery to tissues and increase susceptibility to PPH. Understanding the changes in haemoglobin levels post-delivery, especially in anaemic patients, is crucial for optimizing maternal care.

Studies have consistently shown that anaemia before delivery can significantly impact maternal outcomes (20,21). A study on obstetrics reported that anaemic women were more likely to experience severe reductions in haemoglobin levels post-delivery compared to their non-anaemic counterparts.

Oxytocin is routinely administered intramuscularly immediately after delivery to facilitate uterine contractions and reduce the risk of PPH (19). The role of oxytocin in maintaining haemoglobin levels post-delivery has been investigated in several studies (20). Research published in the Cochrane Database of Systematic Reviews highlighted that oxytocin effectively reduces blood loss during the third stage of labour, thereby potentially mitigating the decline in haemoglobin levels.

A study published in BMC Haematology examined biochemical and haematological changes among anaemic and non-anaemic pregnant women. The study found that anaemic women had significantly reduced levels of haemoglobin, haematocrit, mean corpuscular volume, and iron compared to non-anaemic women (21).

While the efficacy of oxytocin in reducing blood loss is well-established, there is a paucity of data specifically addressing how haemoglobin levels change from admission to 24 hours post-delivery in anaemic versus non-anaemic women. Most studies focus on immediate blood loss or PPH rates without detailed longitudinal tracking of haemoglobin levels in these subgroups1.

Evaluating changes in haemoglobin levels from admission to 24 hours post-delivery in anaemic and non-anaemic women administered intramuscular oxytocin will provide valuable insights into the specific needs of anaemic patients. Addressing this gap will help develop targeted interventions to optimize maternal health outcomes and ensure effective management of postpartum anaemia1.

2.4 Maternal outcomes among third stage labour women administered intramuscular oxytocin.

Postpartum haemorrhage is defined as blood loss of 500 ml or more within 24 hours after childbirth. It is a leading cause of maternal mortality, particularly in low-resource settings. Oxytocin is widely used as a first-line treatment to prevent and manage PPH due to its ability to stimulate uterine contractions and reduce bleeding. However, the effectiveness of oxytocin can vary, and some women may still experience severe PPH and its associated complications.

Several studies have investigated the maternal outcomes of women who develop PPH despite receiving oxytocin (14,19,20,22,23). The outcomes can be categorized into immediate and long-term effects.

Women who experience severe PPH may develop haemorrhagic shock, characterized by a significant drop in blood pressure, rapid heart rate, and reduced organ perfusion (14). This condition requires prompt medical intervention to prevent organ failure and death. Many women with severe PPH require blood transfusions to replace lost blood volume and maintain hemodynamic stability. In cases where medical management with oxytocin and other uterotonics fails, surgical interventions such as uterine artery embolization, hysterectomy, or laparotomy may be necessary to control bleeding.

Persistent anemia is a common long-term outcome of severe PPH (23). Anemia can lead to fatigue, weakness, and impaired physical and cognitive function, affecting the overall quality of life. Experiencing severe PPH can have a significant psychological impact on women, leading to conditions such as post-traumatic stress disorder (PTSD), anxiety, and depression. The fear of future pregnancies and childbirth can also affect family planning decisions.. Women who undergo hysterectomy lose their ability to conceive, while those who have uterine artery embolization may face challenges with future pregnancies.

2.5 Risk factors associated with the incidence of PPH among third-stage labour

The third stage of labour is a critical period for maternal outcome as it involves the delivery of the placenta and the prevention of PPH. Intramuscular oxytocin is widely used to facilitate uterine contractions and reduce blood loss during this stage.

However, the effectiveness of oxytocin can be influenced by various maternal demographic and medical history factors, including age, parity, socioeconomic status, pre-existing medical conditions, previous obstetric history, prenatal care, and gestational age at delivery.

Maternal age is a significant factor influencing the effectiveness of intramuscular oxytocin. Advanced maternal age (35 years and above) has been associated with an increased risk of PPH due to age-related changes in uterine contractility and vascular elasticity (5,24). A study Tita et al 2010 found that older women were more likely to experience reduced uterine responsiveness to oxytocin, leading to higher rates of PPH (25). Conversely, younger mothers may exhibit more robust uterine contractions, enhancing the effectiveness of oxytocin in preventing PPH (15).

Parity, or the number of previous pregnancies carried to viability, is another crucial factor affecting oxytocin effectiveness (26). Multiparous women (those with multiple previous deliveries) often have better uterine tone and contractility, which can enhance the response to oxytocin. However, grand multiparity (having given birth five or more times) has been linked to a higher risk of PPH due to uterine atony and overstretched uterine muscles (26). A systematic review study conducted by Salati et al. highlighted that grand multiparous women had a reduced response to oxytocin, necessitating additional uterotonic agents to manage PPH effectively.

Socioeconomic status (SES) can indirectly influence the effectiveness of intramuscular oxytocin through access to healthcare resources, nutrition, and prenatal care (6,27). Women from lower SES backgrounds may have limited access to quality prenatal care, leading to undiagnosed or poorly managed anaemia and other risk factors for PPH (27). A study by Tibaijuka, G. et al., 2018 found that lower SES was associated with

higher rates of PPH and reduced effectiveness of oxytocin, emphasizing the need for targeted interventions to address disparities in maternal health outcomes (17).

Pre-existing medical conditions, such as hypertension, diabetes, and coagulation disorders, can affect the response to oxytocin (28). Women with hypertension may experience reduced uterine perfusion, impairing oxytocin efficacy (28). A systematic review study has reported that hypertensive women had a higher incidence of PPH despite oxytocin administration. Similarly, diabetes can alter vascular function and increase the risk of PPH (28). Women with coagulation disorders may have an inherent risk of bleeding that oxytocin alone cannot mitigate, requiring additional haemostatic interventions (29).

A history of previous PPH or other obstetric complications can predispose women to recurrent PPH (30). The systematic review conducted by Cotter et al., 2019 indicated that women with a history of PPH were more likely to experience PPH in subsequent pregnancies, even with prophylactic oxytocin administration (10).

The quality and frequency of prenatal care play a vital role in the effectiveness of oxytocin (31). Adequate prenatal care allows for the early identification and management of risk factors, such as anaemia and pre-existing conditions, which can impact the response to oxytocin (31). A several studies have found that women who received comprehensive prenatal care had lower rates of PPH and better outcomes with oxytocin administration compared to those with inadequate care (31–33).

Gestational age at delivery can influence oxytocin effectiveness (5). Preterm deliveries are associated with a higher risk of uterine atony and PPH. A several studies have found that women delivering preterm infants had a diminished response to oxytocin,

necessitating additional uterotonic agents (8,9). Conversely, term and post-term deliveries may benefit from more effective uterine contractions, enhancing oxytocin's effectiveness (34).

While there is extensive research on individual factors affecting oxytocin's effectiveness, there is limited data on the combined impact of multiple demographic and medical history factors. Most studies focus on single variables, leaving a gap in understanding how these factors interact and influence outcomes collectively.

Understanding the association between maternal demographic and medical history factors and the effectiveness of intramuscular oxytocin in managing the third stage of labor is critical for optimizing maternal outcomes. Addressing this research gap will help develop personalized care strategies and improve the overall management of PPH, particularly in diverse patient populations.

All patients was and routine observation and management during the study, and all pt who was diagnosed to have PPH was managed according to hospital protocol.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study site

The study was conducted at three regional referral hospitals in Dar es Salaam, Tanzania: Mwananyamala, Ilala, and Temeke. All hospital possessed obstetric ward which are well structured, they have antenatal part, labor area, observation area and postnatal area. observation area is special area were diagnosis of dangerous sign like PPH et are done. Mother stay for one hour before to be transferred to post-natal.

Mwananyamala Regional Referral Hospital: Located in the Kinondoni district, Mwananyamala Hospital is one of the busiest maternal health centers in Dar es Salaam. It serves a population of over 2.2 million people and attends to 1,500 to 1,800 patients per day. The hospital conducts approximately 12,000 deliveries annually with daily delivered approximately to be 40 child.

Amana Regional Referral Hospital: Situated in the Ilala district, this hospital serves a diverse urban population of approximately 1 million residents. It is known for its robust maternal l care services, with an average of over 80 deliveries per day.

Temeke Regional Referral Hospital: Located in the Temeke district, Temeke Hospital plays a vital role in the southern part of Dar es Salaam. It serves a population of over 1.1 million people and conducts 35 to 45 deliveries per day, totalling around 13,000 deliveries per year.

3.2 Study design

This study design was a cohort study conducted among three regional referral hospitals in Dar es Salaam, Tanzania. The study aimed to assess the incidence of PPH, evaluate changes in haemoglobin levels from admission to 24 hours post-delivery, assess maternal outcomes, and analyze the association between maternal demographic and medical history factors with the effectiveness of intramuscular oxytocin administration in managing the third stage of labour. Data were collected over a five-month period, from February to June 2024 The longitudinal cohort design allowed for the tracking of participants within 24 hours to observe changes and outcomes related to the administration of intramuscular oxytocin, providing valuable insights into its differential impact on anaemic and non anaemic .

3.3 Population

3.3.1 Study population

The study population consists of 3rd-stage labour women administered intramuscular oxytocin from February to June 2024 in Dar es Salaam regional referral hospitals.

3.3.2 Inclusion

The inclusion criteria for this study were second-stage labour women aged 18-45, with term deliveries (gestational age of 37-42 weeks), who have been administered intramuscular oxytocin during labour at regional referral hospitals in Dar es Salaam from February to June 2024.

3.3.3 Exclusion

Women excluded from the study include those with multiple gestations, placenta previa or other contraindications to oxytocin, previous uterine surgery, bleeding disorders, or intra-uterine foetal death.

3.4 Sample Size

The sample size was estimated using single proportion formula.

$$n = \frac{Z^2.P(1-P)}{\varepsilon^2}$$

Where by,

n = Estimated sample

Z = 1.96, Critical value for standard normal distribution, at 95% CI.

ε = 5%, marginal error

p = 25%, previous estimated magnitude of PPH, obtained from the study conducted in, Songea Tanzanian by S.P Mvandal and K. Colethal.

$$n = \frac{1.96^2.0.25(1-0.25)}{0.05^2} = 288$$

The estimated sample size was 288.

3.5 Sampling technique

The stratified random sampling technique was used in this study. The study population was stratified based on the three regional referral hospitals in Dar es Salaam: Mwananyamala, Temeke, and Amana. Within each hospital stratum, participants were randomly selected.

The proportional sample were obtained from each stratum, i.e. MRRH, TRRH, and ARRH. Based on each stratum, the number of term birth from each stratum, RRH, were 96, 247, and 277, for MRRH, TRRH, and ARRH respectively. Therefore, the sample of the study participants from each stratum were obtained using the proportionate formula shown below.

Total estimated number of term birth from the hospital registries for MRR, TRRH, and ARRH were = 96 + 247 + 277 = 620.

The estimated total number of participants from each stratum will be:

$$MRRH = \frac{96}{620} * 288 = 44$$

$$TRRH = \frac{247}{620} * 288 = 115$$

$$ARRH = \frac{277}{620} * 288 = 129$$

From each hospital, the consecutive sampling was employed to select the eligible participants upon admission to the labour wards of Mwananyamala, Temeke, and Amana hospitals.

3.6 Variables

Dependent variable: Postpartum hemorrhage.

Independent variables:

Social demographic characteristics: Age, education level, marital status, Residency

Maternal clinical parameters: Clinical information: History of using hematinic, history of bleeding, kidney dishful, gravidity, and parity.

Neonatal Outcome: Alive, dead, and birth weight

3.7 Data collection tool

The data was collection using a questionnaire, which was developed by a researcher during the literature reviews based on the study objectives. This questionnaire form consisted of three parts, part one consisted of social demographic characteristics, part two consisted of the clinical parameters and part three consisted of maternal outcome information.

The questionnaire form was then pre-tested using 10 participants who were not included in the final data analysis.

The pretest data were not entered into SPSS, and reliability test was conducted for the complete questionnaire form variables, whereby a Cronbach alpha value of 0.73 was obtained.

3.8 Data collection process.

The data collection process began after securing the ethical clearance from Institute Ethical Review Board of a Kairuki University. The data collection was conducted by a research assistant (two nurses from each region hospital) in each of the study sites while overseen by a principal researcher.

During data collection The research assistants were stationed at maternity ward, where they assess the admitted expectant women. informed consent was obtained from eligible participants who also signed the consent form.

The data collected directly from the participants were social demographic information such age, occupation, parity, residency and medical history information such as bleedings. The hemoglobin level was taken during the admissions for delivery and follow-up 24-hours after the delivery. The hemoglobin was measured by lab technician, using NOHON KOHDEN Analyzer machine manufactured in China 2018.

After data was collected from the participant, the filled data questionnaire forms were handed to the PI. The PI entered the data into a Microsoft excel which was password protected.

3.9 Data analysis

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS), version 25, developed by IBM Corporation, Chicago, NY. The data was transformed from MS excel to SPSS data file. Data was then cleaned and recoded. The process involved checking for and handling missing values, outliers, and inconsistencies in the data to ensure accuracy. Variables were recoded to standardize the categories, and new variables were created to facilitate analysis. Continuous variables, such as hemoglobin levels, were inspected for normality.

Data were then summarized whereby the continuous variables, such as haemoglobin levels, summarized using mean and standard deviation (SD). Categorical variables were summarized using frequencies and percentages while the data was presented using tables, figures, and text.

Objective	**Analysis plan**
To determine the incidence of postpartum haemorrhage among second stage labour women administered intramuscular oxytocin.	descriptive statistics to summarize incidence
To evaluate changes in haemoglobin levels from admission to 24 hours' post-delivery haemorrhage among second stage labour women administered intramuscular oxytocin.	paired t-test, an unpaired t-tests
To describe the maternal outcomes among second stage labour women administered intramuscular oxytocin.	descriptive statistics to summarize proportions of complications
To analyze the association between anaemia status and the incidence of PPH among second-stage labour women administered intramuscular oxytocin.	Chi-square test, multivariable logistic regression

The bivariate analysis was conducted using chi-square tests to examine the association between anaemia status and the incidence of PPH. The proportions of PPH cases in anaemic and non-anaemic groups were compared to identify any significant differences. Following this, a multivariate analysis was performed using logistic regression to identify independent predictors of PPH. This analysis included anaemia status and other potential confounding variables such as age, parity, mode of delivery, and duration of labour in the model.

Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were calculated to assess the strength and significance of the association between anaemia status and PPH. Additionally, subgroup analyses were performed to evaluate the interaction effects between anaemia status and other variables, such as mode of delivery and comorbid conditions, on the risk of PPH. The statistical association were considered significant at *p*—value of less or equal to 0.05

3.10 Ethical Consideration

Ethical clearance, number HKMU/IREC/27.10/435 for this study was obtained from Institute of Review Board (IRB) of the Kairuki University. The permission to conduct the study in study sites were obtained from each of the RRH management.

Informed consent was obtained from all participants, ensuring they fully understood the study's purpose, procedures, risks, and benefits. Participants were assured of their right to withdraw from the study at any time without any consequences.

Those patients who was noticed to get PPH and other complication was managed accordingly. This was done by addition a higher dose of oxytocin, both IM and IV, other was given tranexamic acid, misoprostol and others was given also Blood transfusion.

Confidentiality was strictly maintained by anonymizing personal data and securely storing all information collected during the study. Only authorized personnel had access to the data to protect participants' privacy.

The study adhered to ethical guidelines set by relevant institutional review boards, ensuring that it met all necessary standards for the protection of human subjects.

CHAPTER FOUR

4.0 RESULTS

This study was conducted among 288 second-stage labor women administered intramuscular oxytocin from February to June 2024 in Dar Es Salaam regional referral hospitals.

Most participants were from TRRH, followed by ARRH with proportions of 129(44.8%) and 115(39.9) respectively while 44 (15.3%) were recruited from MRRH. Participants mean age was 26 years and standard deviation of 6.

The demographic characteristics of the study participants are presented in Table 1. The age distribution indicates that the majority of participants (31.3%) were between 26–30 years.

Educational attainment varied, with 59.0% having less than a primary education . Residency was distributed across three regions, with the highest proportion from Ilala (44.8%).

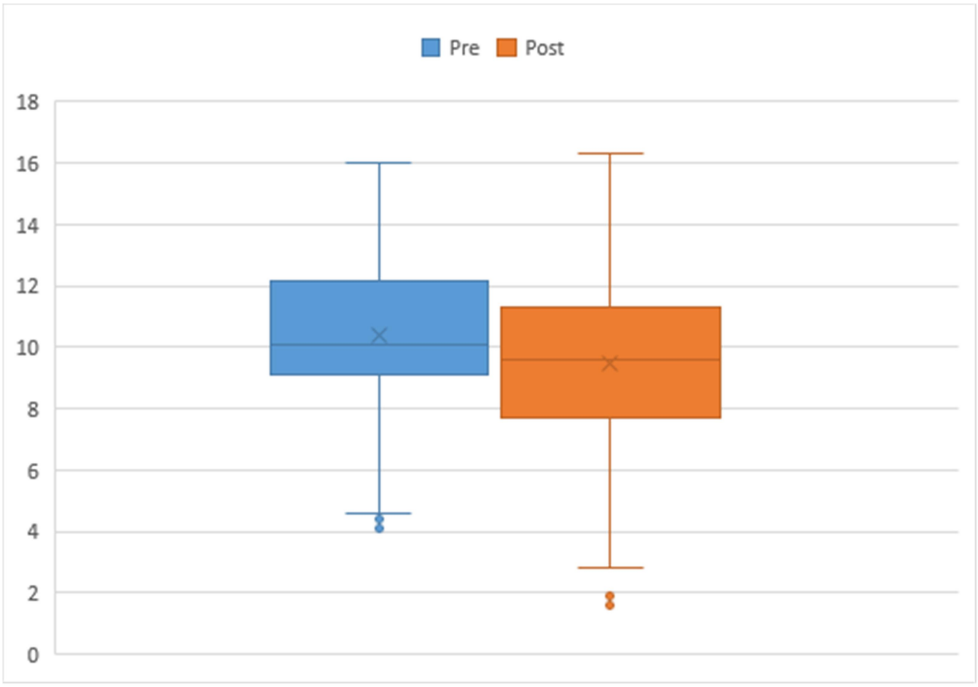
Parity and gravidity distributions were nearly identical, with 59.4% of participants having two or more children and 59.0% classified as gravida. The use of haematinics was reported among 66.3% of participants. Additionally, 29.9% of participants had a history of bleeding,

Table 1: Demographic and Clinical Characteristics of Study Participants (N=288)

	N(%)
Age group	
<21	63(21.9)
21-25	74(25.7)
26-30	90(31.3)
31-35	42(14.6)
>35	19(6.6)
Marital status	
Single	90(31.3)
Married	198(68.8)
Education level	
<Primary	170(59.0)
>Secondary	118(41.0)
Residency	
Temeke	115(39.9)
Ilala	129(44.8)
Kinondoni	44(15.3)
Parity	
1	117(40.6)
>2	171(59.4)
Gravidity	
Prim	118(41.0)
Gravida 2 and more	170(59.0)
Haematinics	
Yes	191(66.3)
No	97(33.7)
Hx bleeding in previous pregnancy	
Yes	86(29.9)
No	201(70.1)

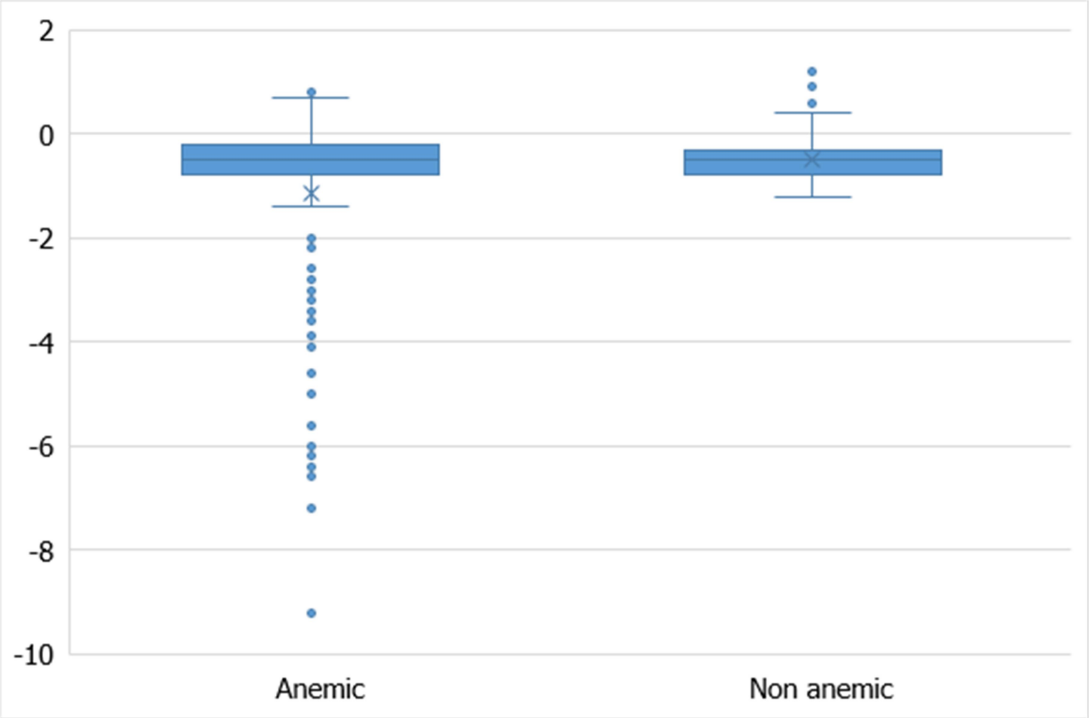
Evaluation of the haemoglobin changes.

Figure 1: Comparison of Haemoglobin (Hb) Levels Before and After Delivery



A paired samples t-test was conducted to compare hemoglobin levels at admission and 24 hours post-delivery. The results showed a statistically significant decrease in hemoglobin levels from admission (M = Hb_at_admiss) to post-delivery (M = Post_adm_delivery), $t(287) = 10.712$, $p < .001$, with a mean difference of 0.91 g/dL (95% CI [0.74, 1.07]). The findings indicate a measurable decline in hemoglobin levels following delivery, suggesting an impact likely due to blood loss during labor.

Figure 2: Comparison of Postpartum Haemorrhage (PPH) Across Anaemia Status



An independent samples t-test was conducted to compare the change in hemoglobin levels between anaemic and non-anaemic groups. **Levene's test for equality of variances** indicated a significant difference in variances, **F (1,286) = 54.242, p < .001**, so the Welch's t-test was used. The results showed a statistically significant difference in hemoglobin change between the groups, **t (227.378) = -4.849, p < .001**, with anaemic women experiencing a greater hemoglobin decline (**M = -0.65, 95% CI [-0.92, -0.39]**). These findings suggest that anaemia status has a substantial impact on postpartum hemoglobin changes, reinforcing the need for targeted interventions to mitigate postpartum anaemia risks.

Maternal outcome within 24-hours post-delivery.

Figure 3: *Maternal* ***outcome*** *within* ***24-hours post-delivery***

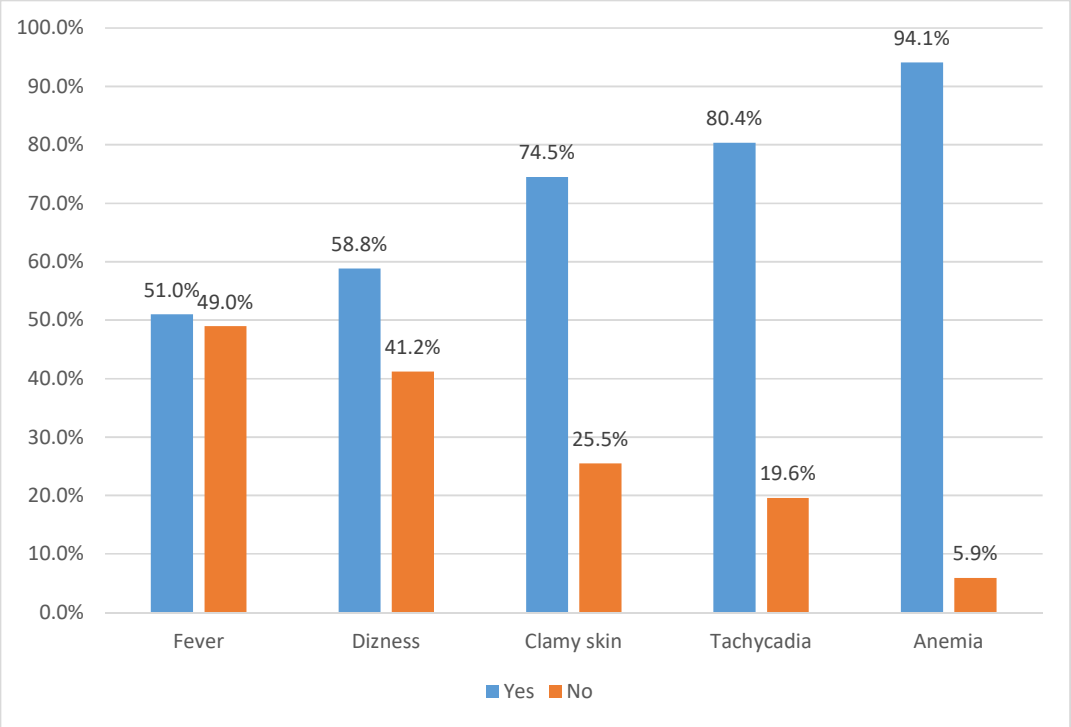


Figure 3 shows the prevalence of complications among participants who experienced postpartum haemorrhage (PPH). Notably, 51.0% reported fever, 58.8% experienced dizziness, 72.5% had pubic swelling, 74.5% exhibited clammy skin, 80.4% showed signs of tachycardia, and 94.1% were anaemic.

Factors associated with PPH in oxytocin-induced third-stage labour.

Table 2: Bivariate Analysis of Factors Associated with PPH (N=288)

Variables	PPH STATUS		P value
	Yes[N(%)]	No[N(%)]	
Age			.155
<21	13(20.6)	50(79.4)	
21-25	8(10.8)	66(89.2)	
26-30	14(15.6)	76(84.4)	
31-35	10(23.8)	32(76.2)	
>35	6(31.6)	13(68.4)	
Marital status			.755
Single	15(16.7)	75(83.3)	
Married	36(18.2)	162(81.8)	
Education			.035
<Primary	37(21.6)	134(78.4)	
>Secondary	14(12.0)	103(88.0)	
Residency			.992
Temeke	20(17.4)	95(82.6)	
Ilala	23(17.8)	106(82.2)	
Kinondoni	8(18.2)	36(81.8)	
Parity			.930
1	21(17.9)	96(82.1)	
2	30(17.5)	141(82.5)	
Gravidity			.974
Primi	21(17.8)	97(82.2)	
Gravida	30(17.6)	140(82.4)	
Haematinics			.001
Yes	22(10.8)	182(89.2)	
No	29(34.5)	55(65.5)	
History of bleeding			.001
Yes	27(31.4)	59(68.6)	
No	24(11.9)	178(88.1)	
Anaemia status			.001
Anaemic	48(25.9)	137(74.1)	
Non anaemic	3(2.9)	100(97.1)	

Table 2 reveals a chi-square test bivariate analysis of factors associated with PPH status, highlighting significant differences in certain groups. Individuals aged 35+ had more observations of PPH (52.5%) compared to those under 35 (12.1%). Those with less than primary education had higher PPH occurrences (21.6%) compared to those with more than secondary education (12.0%). People not using haematinics showed more PPH cases (34.5%) than those who did (10.8%). A history of bleeding was associated with higher PPH occurrences (31.4%) compared to no history (11.9%). Also, anaemic individuals experienced more PPH events (25.9%) compared to non-anaemic individuals (2.9%).

Table 3 : Univariate and Multivariable Logistic Regression Analysis of Factors Associated with PPH

Variable	95% C.I.for cOR(Lower —Upper)	P value	95% C.I.for aOR (Lower —Upper)	P value
Age				
<21	Ref	1	Ref	1
21-25	2.145 (.826—5.570)	.117	1.705 (.600—4.848)	.317
26-30	1.411 (.612—3.253)	.419	1.318 (.515—3.373)	.565
31-35	832 (.326—2.122)	.700	1.148 (.410—3.219)	.792
>35	.563 (.179—1.768)	.325	.695 (.194—2.495)	.577
Education				
<Primary	.492(.253—.959)	.037	.765 (.362—1.617)	.483
>Secondary	Ref	1	Ref	1
Haematinics				
Yes	Ref	1	Ref	1
No	.229 (.122—.431)	.000	.407 (.204—.810)	.010
History of bleeding				
Yes	Ref	1	Ref	1
No	3.394(1.819—6.333)	0.00	2.341 (1.182—4.636)	.015
Anaemia status				
Anaemic	Ref	1	Ref	1
Non anaemic	.086 (.026—.283)	.000	8.395 (2.454—28.714)	.001

Table 3: Shows the multivariable logistic regression analysis conducted to identify factors associated with PPH status. Participants aged 35 and above were significantly more likely to experience post PPH compared to those under 35 years old, with an odds ratio (OR) of 6.11 and a 95% confidence interval (CI) of 2.66 to 14.03, p = .000. Participants who did not use haematinics were significantly more likely to develop PPH, with an OR of 2.14 (95% CI [1.04, 4.39], p = .039) compared to those who did (OR = 1). Individuals with no history of bleeding were less likely to experience PPH, showing an OR of 0.44 (95% CI [0.21, 0.90], p = .024) compared to those with a history of bleeding (OR = 1). Non-anaemic participants were significantly less likely to experience PPH, with an OR of 0.11 (95% CI [0.03, 0.40], p = .001) compared to anaemic participants.

CHAPTER FIVE

5.0 DISCUSSION

In this study, the cumulative incidence of postpartum haemorrhage (PPH) was found to be 17.1%. This indicates that nearly one in five women experienced PPH, highlighting the significant burden of this condition in the study population. Comparatively, a study conducted at Muhimbili National Hospital in Tanzania by Mjema at al., 2023 reported a fluctuating incidence of PPH, ranging from 1.78% to 2.87% over a period of 7 years (35). Another study in Kasr Al Ainy University Hospital in Egypt found an incidence of PPH was 8.1% with a sample size of 7,605 in 2019-2020 (36). The discrepancies in these findings could be attributed to differences in study populations, our sample size was small compared to previous research sample,

The results show no significant change in Hb levels between pre-delivery and 24 hours post-delivery, indicating childbirth did not affect Hb levels notably in this timeframe. However, there was a significant difference in mean Hb levels between anaemic and non-anaemic groups, with an effect size of 0.46. This highlights the need for managing anaemia during pregnancy. The findings align with existing literature from Ghana by Annan at al., 2021 emphasizing the importance of addressing anaemia for better maternal health outcomes (37).

This study found a significant prevalence of complications among participants who experienced PPH, including anaemia, tachycardia, and clammy skin, highlighting the severe (the leading was postpartum changes was) physiological impact of PPH. These findings are consistent with study by Smith et al. in 2019), which reported similar

complications (8). Since women were injected with oxytocin during labour, this finding raises questions about the effectiveness and administration of oxytocin intervention.

Age emerged as a significant factor associated with PPH in this study, with individuals aged 35 and above having a higher risk compared to younger women. This finding is similar with the assumption that younger women are at a lower risk due to better health and resilience. The elevated risk for older women may be due to age-related physiological changes, potential comorbidities, and cumulative reproductive health challenges. This result aligns with the study from Brazil and Saudi Arabia by Alves et al. in 2021 and Baattaiah et al. in 2023 respectively, identifying advanced maternal age as a risk factor for PPH (38,39). The implication underscores the need for targeted interventions and enhanced monitoring for older pregnant women to mitigate the risk of PPH and improve maternal health outcomes as discussed in the study of Jaul et al., 2017 (40).

This study found that individuals who did not use haematinics were significantly more likely to develop PPH, highlighting the protective role of haematinics in reducing haemorrhagic complications during childbirth. A history of bleeding also emerged as a significant factor associated with PPH, emphasizing the need for comprehensive prenatal care and targeted interventions for those with such histories. These findings align with previous studies (40)(41) which reported similar complications, and a meta-analysis by Durmaz and others in 2018 that identified haematinics and history of bleeding as significant factors associated with PPH (42).

Anaemia was significantly associated with PPH in my study, with anaemic individuals showing a higher risk compared to non-anaemic participants. This aligns with literature linking anaemia to increased haemorrhagic complications due to lower haemoglobin

levels and weakened health, this is according to research done in Ethiopian by Abdurazec et al.2024 (43).

The strength of this study is its comprehensive approach on various risk factors for PPH, including age, education, hematinic use, and bleeding history. The well-defined follow-up period and the specific setting in Dar es Salaam regional referral hospitals provide valuable and relevant insights, enhancing the reliability and applicability of the findings to improve maternal health outcomes.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 CONCLUSION

This study highlights the continued occurrence of PPH, with an incidence of 17.7%, despite the use of Intramuscular oxytocin 10 I.U Where maternal anaemia was seen as significant factor .Other several factors influencing PPH outcomes were identified including advanced maternal age, non-use of hematinic supplements, and a history of bleeding. The significant disparity in haemoglobin levels between anaemic and non-anaemic women underscores the necessity of effective anaemia management during pregnancy to mitigate maternal health risks.

6.2 RECOMMENDATION

- Enhance Prenatal Care Services through strengthening access to comprehensive prenatal care, focusing on early identification and management of high-risk pregnancies.
- Routine Anaemia Screening, through implementing regular screening for anaemia during pregnancy and ensure timely intervention, such as supplementation with iron and folic acid.
- Promote Hematinic Use by Encouraging and further emphasis on the adherence to hematinic supplements through education and counseling during antenatal visits.
- Targeted Interventions for High-Risk Groups by developing tailored programs to support women with advanced maternal age, a history of bleeding, or other identified risk factors for postpartum haemorrhage.

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APPENDICES

Appendix I: Consent Form English Version

TITLE: THE EFFECTIVENESS OF OXYTOCIN IN PREVENTION OF POSTPARTUM HEMORRHAGE IN ANEMIC PATIENT DELIVERED AT THREE REGION HOSPITAL, TANZANIA.

Dear Sir/Madam,

Hello,

You have been invited to take part in a research study conducted by RUDOVICK BIZEZE**,** a student at Hurbert Kariuki University. This study is for his master's dissertation and your participation is voluntary. Before deciding to participate, please take the time to read the information provided below and ask any questions you may have. You have been chosen to participate because you are a CLIENT at three region hospitals in Dar es Salaam.

Purpose of the study: The aim of this study is to investigate whether oxytocin can effective prevention Postpartum Hemorrhage in anemic patients who have delivered at Amana, Temeke and Mwananyamala. The results will be shared through planned means of dissemination such as academic publications and thesis. You will be updated accordingly.

Voluntary participation: It's important to understand that your involvement in this study is completely optional, and you have full autonomy to decline participation if you choose. However, if you do decide to take part, you will need to sign a consent form and respond to questions from the interviewer.

Benefits: Participating in this study may not bring direct benefits, but it will determine the effectiveness of OXYTOCIN routine injectable drug for prevention bleeding after delivery) in preventing Postpartum Hemorrhage (excessive bleeding after delivery)

among anemic patients who deliver at Temeke, Amana and Mwananyamala hospital. The study's findings can assist the administration, policymakers, and health system in preventing Postpartum Hemorrhage.

Risks and discomfort: Effective management of all risks like drug reaction, pain, excessive bleeding and others will be managed properly by giving ant allergic reaction, ant pain and iv fluid and blood respectively. Participants will be asked questions that allow them to express their views and ideas about the study.

Compensation for time: Participating in this study will not result in any payment or compensation. Additionally, there are no fees associated with your participation.

Confidentiality: Any information that is obtained in connection with this study, that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. We will not use your name in any of the information we get from this study in any way we think is best for publication or education. Any information we use for publication will not identify your name.

Consent form

I confirm that I have read carefully, and I have understood the information provided and consent to participate in the study. I am aware that I can freely withdraw from this study anytime I wish to do so.

Whom to contact if you have any questions about the study If you ever have questions about this study, you should contact the Principal Investigator **Rudovick Bizeze** from Kairuki hospital, Dar es Salaam. If you ever have questions about your rights as a participant, you may call.

Secretory of KU Ethical Review Committee Tel: XXXX

Dr. Chiduo Tel: XXXX

Dr Rudovick Bizeze, Principal Investigator, Tel: 0754 888511

Do you agree? Yes…/No…

Participant agrees ……/Participant does not agree. ……

I.....Have read the contents of this consent form and my questions have been adequately answered. I therefore agree to participate in this study.

Signature of the participant …….. Date ……

Signature of the interviewer ……..... Date ……

Appendix II: Consent form, Swahili Version

UTAFITI JUU YA UFANISI WA OXYTOCIN KATIKA KUZUIA UTOKAJI WA DAMU BAADA YA KUZAA KWA WAGONJWA WENYE UPUNGUFU WA DAMU KATIKA HOSPITALI TATU, TANZANIA

Mpendwa

Habari,

Umealikwa kushiriki katika utafiti uliofanywa na RUDOVICK BIZEZE, mwanafunzi katika Chuo Kikuu cha Hurbert Kariuki. Utafiti huu ni Kwa ajili ya elimu ya juu ya uzamili na ushiriki wako ni wa hiari. Kabla ya kuamua kushiriki, tafadhali chukua muda kusoma taarifa iliyotolewa hapa chini na uulize maswali yoyote ambayo unaweza kuwa nayo. Umechaguliwa kushiriki kwa sababu wewe ni mmoja wa wapewa huduma katika hospitali tatu za mkoa wa Dar es Salaam.

Madhumuni ya utafiti: Madhumuni ya utafiti huu ni kuchunguza kama oxytocin inaweza kuzuia kutokwa na damu nyingi baada ya kujifungua kwa wagonjwa wenye upungufu wa damu waliojifungua Amana, Temeke na Mwananyamala. Matokeo yatashirikiwa kupitia njia zilizopangwa za usambazaji kama vile machapisho ya kitaaluma na thesis. Utasasishwa ipasavyo.

Kushiriki kwa hiari: Ni muhimu kuelewa kuwa ushiriki wako katika utafiti huu ni wa hiari kabisa, na una uhuru kamili wa kukataa ushiriki ukiamua. Hata hivyo, ikiwa utaamua kushiriki, utahitaji kusaini fomu ya idhini na kujibu maswali kutoka kwa mhojiwa.

Faida: Kushiriki katika utafiti huu kunaweza kutoleta manufaa ya moja kwa moja, lakini kutabainisha ufanisi wa OXYTOCIN katika kuzuia Kutokwa na damu baada ya kujifungua miongoni mwa wagonjwa wenye upungufu wa damu wanaojifungua katika hospitali ya Temeke, Amana na Mwananyamala. Matokeo ya utafiti yanaweza kusaidia utawala, watunga sera, na mfumo wa afya katika kuzuia Kuvuja kwa damu Baada ya Kuzaa.

Hatari na usumbufu: Udhibiti unaofaa wa hatari zote zinazohusiana na utafiti huu unahakikishwa. Washiriki wataulizwa maswali yatakayowaruhusu kutoa maoni na mawazo yao kuhusu utafiti.

Fidia kwa muda: Kushiriki katika utafiti huu hakutasababisha malipo yoyote au fidia. Zaidi ya hayo, hakuna ada zinazohusishwa na ushiriki wako.

Usiri: Taarifa yoyote ambayo itapatikana kuhusiana na utafiti huu, ambayo inaweza kutambuliwa nawe itaendelea kuwa siri na itafichuliwa kwa idhini yako tu au inavyotakiwa na sheria. Hatutatumia jina lako katika taarifa yoyote tutakayopata kutoka kwa utafiti huu kwa njia yoyote tunayofikiri ni bora kwa uchapishaji au elimu. Taarifa yoyote tunayotumia kuchapishwa haitatambua jina lako.

Fomu ya idhini

Ninathibitisha kuwa nimesoma kwa makini, na nimeelewa maelezo yaliyotolewa na kukubali kushiriki katika utafiti. Ninafahamu kwamba ninaweza kujiondoa kwa uhuru kutoka kwa utafiti huu wakati wowote ninapotaka kufanya hivyo.

Nani wa kuwasiliana naye ikiwa una maswali yoyote kuhusu utafiti huu Ukiwahi kuwa na maswali kuhusu utafiti huu, unapaswa kuwasiliana na Mtafiti Mkuu Rudovick Bizeze kutoka hospitali ya Kairuki, Dar-es-salaam. Ukiwahi kuwa na maswali kuhusu haki zako kama mshiriki, unaweza kupiga simu;

Mwenyekiti wa bodi ya KU IREC Simu: XXXXX

Dr. CHIDUO Simu: XXXX

Dkt RUDOVICK BIZEZE, Mtafiti Mkuu, Simu: 0754 888511

Unakubali/Ndio la…

Mshiriki anakubali ….

Mimi..... … Nimesoma yaliyomo katika fomu hii ya idhini na maswali yangu yamejibiwa vya kutosha. Kwa hivyo ninakubali kushiriki katika utafiti huu.

Saini ya mshiriki ……. Tarehe ……

Saini ya mhojiwa ……

Appendix III: Data Abstraction form (English version)

STUDY TITLE: THE IMPACT OF OXYTOCIN IN PREVENTION OF POST PARTUM HAEMORRHAGE IN ANAEMIC PT DURING ACTIVE MANAGEMENT OF LABOR

IDENTIFICATION

Case report form number……..

Telephone number of participants……

Date of data collection……..

PART I: DEMOGRAPHIC DATA

Please circle/fill the suitable response

1. The age of the mother……..(years)
2. The marital status of the mother
    a) Single
    b) Married
    c) Divorced
    d) widow
3. Gravidity of the mother
    a) Prim gravida
    b) Gravida……..
4. What is the residential area of the mother ……
    a) Temeke
    b) Ilala
    c)Kinondoni
    d) Others ……

5. What is the parity of the mother ……..
6. Level of education……
7. History of using hematinic…….
8. History of excessive bleeding during delivery…….

PART II: CLINICAL PARAMETERS

Hemoglobin and Hematocrit Levels

1. The haemoglobin levels in labor ward before delivery
    a) <7g/dL
    b) 7g/dl – 8.9g/dL
    c) 9.5g/dl – 10.9g/dL
    d) Above 11g/dL
2. The haemoglobin levels 24 hours post delivery
    a) <7g/dL
    b) 7g/dl – 8.9g/dL
    c) 9.5g/dl – 10.9g/dL
    d) Above 10.9g/dL

PART III: maternal outcome

1.Fever(by temperature centigrade)

a)YES

b) NO

2.Tachycard

a) YES

b) NO

3. Did the mother encounter Post-Partum Haemorrhage

a) Yes

b) No

4 .Did the mother given additional oxytocin after first dose

a) YES

b) NO

5. Did the mother given blood transfusion after delivery

a) YES

b) NO

3. BT Yes No
4. Oxytocin Yes No
5. Other Misoprostol/Carboprost

Appendix IV: Data Abstraction form (Swahili version)

KICHWA CHA SOMO: ATHARI ZA OXYTOCIN KATIKA KUZUIA HAEMORHAGE BAADA YA KUPATA MADHUBUTI KATIKA ANEMIC PT WAKATI WA USIMAMIZI HALISI WA KAZI.

KITAMBULISHO

Nambari ya fomu ya ripoti ya kesi …….

Nambari ya simu ya washiriki ……

Tarehe ya ukusanyaji wa data …….

SEHEMU YA I: DATA YA DEMOGRAFIA

Tafadhali duara/jaza jibu linalofaa

1. Umri wa mama ……...(miaka)

2. Hali ya ndoa ya mama

a) Mmoja

b) Kuolewa

c) Kuachwa

d) mjane

3. Mvuto wa mama

a) Prim gravida

b) Gravida……..

4. Je! ni eneo gani la makazi ya mama ……

a) Temeke

b) Ilala

c)Kinondoni

d) Wengine ……

5. Usawa wa mama ni upi …….

6. Kiwango cha elimu ……

7. Historia ya kutumia hematinic …….

8. Historia ya kutokwa na damu nyingi wakati wa kujifungua…….

SEHEMU YA II: TAARIFA ZA KIAFYA ZA MJAMZITO

Viwango vya Hemoglobin na Hematocrit

1. Viwango vya hemoglobini katika wodi ya leba kabla ya kujifungua

    a) <7g/dl

    b) 7g/dl - 8.9g/dl

    c) 9.5g/dl - 10.9g/dl

    d) Zaidi ya 11g/dl

2. Viwango vya hemoglobini saa 24 baada ya kujifungua

    a) <7g/dl

    b) 7g/dl - 8.9g/dl

    c) 9.5g/dl - 10.9g/dl

    d) Zaidi ya 10.9g/dl

Kiasi cha Kupoteza Damu

1. Upotezaji wa damu ulikutana na nini

    a) Ni vipande vingapi vya chachi vilivyolowa …….

    b) Taulo ngapi za chachi …….

    c) Sahani ya figo imejaa ……

SEHEMU YA TATU: MATOKEO YA UFUPI

1. Ni mtoto baada ya kuzaliwa

    a) Hai

    b) Amekufa

2. Uzito wa kuzaliwa wa mtoto saa 24 baada ya kujifungua

    a) Chini ya gramu 2500

    b) 2500gm - 4500gm

    c)> 4500gm

3. Je, mama alikumbana na Ugonjwa wa Kuvuja damu baada ya Part-Partum

    a) Ndiyo

    b) Hapana

Appendix V: Ethical clearance letter

JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA AFYA.
HOSPITAL YA RUFAA YA MKOA YA TEMEKE
Baruapepe:temekerh@afya.go.tz,S.L.P 45232 Dar es Salaam,Simu 0222856007

Kumb. Na. TRRH/RSC/9/10/01/5 **Tarehe: 02/05/2024**

Ndg. Rudovick Bernard Bizeze
Hurbert Kairuki Memorial University
S.L.P 65300
DAR ES SALAAM.

YAH: OMBI LA KUFANYA UTAFITI "THE EFFECT OF INTRAMUSCULAR OXYTOCIN IN ACTIVE MANAGEMENT OF THIRD STAGE OF LABOUR IN ANEMIC PATIENTS AT AMANA, MWANANYAMALA AND TEMEKE REGIONAL REFFERAL HOSPITALS." (RESEARCH)

Tafadhali husika na somo tajwa hapo juu.

2. Nimepokea barua yako ya tarehe 08 Aprili, 2024 kuhusu ombi lako la kufanya Utafiti (Research) katika Taasisi yetu, kuhusu **"the effect of intramuscular oxytocin in active management of third stage of labour in anemic patients at amana, mwananyamala and temeke regional refferal hospitals"**

3. Ombi lako limekubaliwa, utatakiwa kulipa ada kiasi cha **Tshs. 100,000/=**. Hivyo wasiliana na mhasibu wa mapato wa Hospitali **Ndg. Lusajo Nsajigwa** kwa namba **0717 959495** ili akupatie control Number kwa ajili ya malipo ya ada hii ili uweze kuruhusiwa kufanya utafiti.

4. Asante kwa ushirikiano.

Dkt. Husna Msangi
Kny: MKURUGENZI
HOSPITALI YA RUFAA YA MKOA YA TEMEKE

Nakala: CSCO/OBGY - ***Tafadhali hakikisha taarifa ya utafiti inabaki hospitalini***

Appendix VI: Permission letters

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH

AMANA REGIONAL REFERRAL HOSPITAL

Telegram "HEALTH", DODOMA
Phone No.: +255 026 – 2323267
Email: ps@afya.go.tz

P.O. Box 25411
DAR ES SALAAM
Phone: 022—2861903

REF. NO. MoHCDGEC/ARRH/R.1/VOL II/35

Date: 19/04/2024

Director Postgraduate Studies and
Research Institution,
HKMU,
P.O. B ox 65300,
DAR ES SALAAM.

Re: PERMISSION FOR DATA COLLECTION

Refer to your letter dated 15th April, 2024 which requested us to allow **Dr. Rudovick Bernard Bizeze** to conduct research and collect data in our institution.

We are here to acknowledge your request with the following conditions, that he must submit the results of his research after completion of analysis in order the hospital to make use of data's to solve hospital problems.

Regards.

For: MEDICAL OFFICER I/C
AMANA REGIONAL REFERAL HOSPITAL
P. O. Box 25411
DAR ES SALAAM

Dr. Rose Ntambuto
FOR: MEDICAL OFFICER INCHARGE
AMANA REGIONAL REFERRAL HOSPITAL

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH

Telephone Address:

Telephone: 022-2760500

Mwananyamala Regional
Referral Hospital,
P.O.Box 61665
Dar es Salaam.

RE: NO.: MA. 239/240/01/34

DATE: 02TH MAY,2024

Hubert Kairuki Memorial University,
Faculty of Medicine,
DAR ES SALAAM.

RE: DR. RUDOVICK BERNARD BIZEZE - TO CONDUCTI HIS RESEARCH IN MWANANYAMALA REGIONAL REFERRAL HOSPITAL

The captioned subject refers

2. May you be informed that your request to research Titled "***The effectiveness of Intramuscular oxytocin in active management of third stage of Labor in anemic patient at Mwananyamala Regional Referral Hospital.*" *Start*** **05St Mei,2024**, to **06th June,2024** is asserted.

3. The Institution charges **100,000/=**, as Research fee as per student spent. The payments are to be made upon reporting.

4. May she report to the Administration and HR department head for further instruction.

Thanks.

For:MEDICAL OFFICER INCHARGE
MwananyamalaRegionalReferralHospital
P O. Box 61665
DAR-ES-SALAAM

Dr. Mkiwa Akida
RESEARCH COORDINATOR
FOR: MEDICAL OFFICER INCHARGE
MWANANYAMALA REGIONAL REFERRAL HOSPITAL

COPY:
Heads of OBGY Department - **MWANANYAMALA REGIONAL REFERRAL HOSPITA**

Dr. Rudovick Bernard Bizeze - Report to the head of OBGY Department

HUBERT KAIRUKI MEMORIAL UNIVERSITY (HKMU)

70 Chwaku Street,
Mikocheni,
P.O BOX 65300,
Dar es Salaam,
Tanzania.

Tel: +255-22-2700021/4
Fax: +255-22-2775591
Email: Irec@hkmu.ac.tz
Website: www.hkmu.ac.tz

Ref. No. HKMU/IREC/27.10/435 **09th April 2024**

Rudovick Bernard Bizeze,
Hubert Kairuki Memorial University,
P.O. Box 65300,
Dar es Salaam, Tanzania.

RE: ETHICAL CLEARANCE CERTIFICATE FOR CONDUCTING HEALTH RESEARCH.

I am pleased to inform you that the research titled: **The Effect of Intramuscular Oxytocin in Active Management of Third Stage of Labor in Anemic Patients at Amana, Temeke and Mwananyamala Referral Hospitals (Bizeze R. B., 2024)** has been granted ethical approval.

This approval is in effect for one year from the above date. Any changes in the procedures should be reported to the Institutional Research Ethics Committee. Significant changes will require the submission of a revised request for ethical approval. You will be required to submit **study progress report** every six months.

Permission to publish your findings should be sought from the National Institute for Medical Research (NIMR) before submission to a publisher and not concurrently.

CHAIR PERSON

Name: Prof. Fredrick Kaijage

Signature:

SECRETARY

Name: Prof. Columba Mbekenga

Signature:

Appendix VII: Plagiarism Report

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Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

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File size:	210.84K
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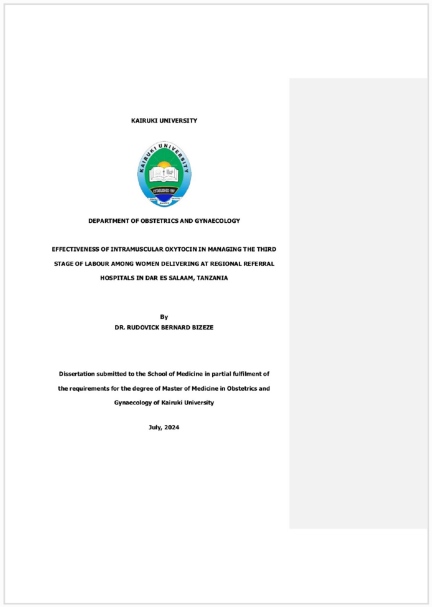

KAIRUKI UNIVERSITY

DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY

EFFECTIVENESS OF INTRAMUSCULAR OXYTOCIN IN MANAGING THE THIRD STAGE OF LABOUR AMONG WOMEN DELIVERING AT REGIONAL REFERRAL HOSPITALS IN DAR ES SALAAM, TANZANIA

By
DR. RUDOVICK BERNARD BIZEZE

Dissertation submitted to the School of Medicine in partial fulfilment of the requirements for the degree of Master of Medicine in Obstetrics and Gynaecology of Kairuki University

July, 2024

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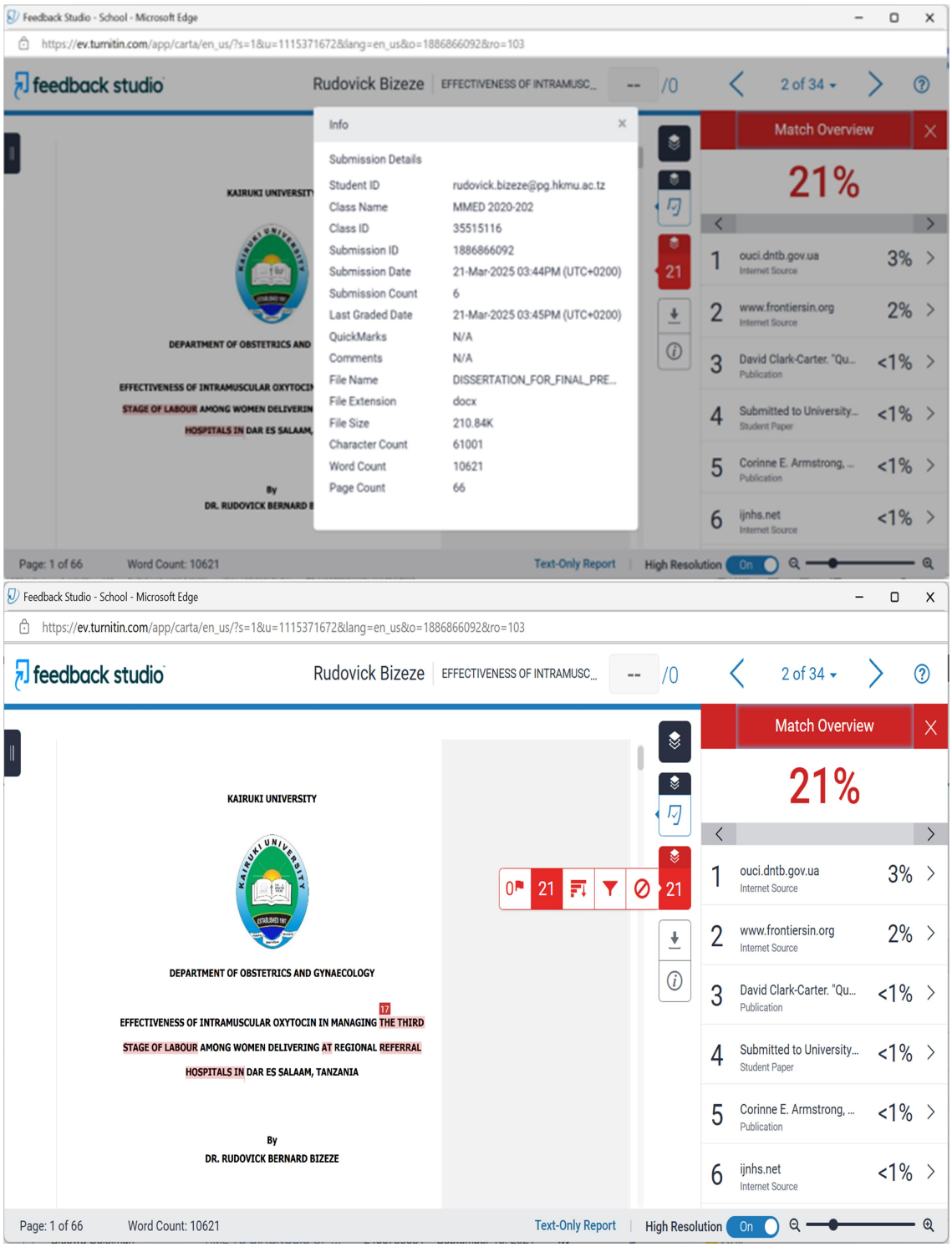
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