UTILIZATION OF POSTNATAL SERVICES AND ASSOCIATED FACTORS AMONG WOMEN ATTENDING POSTNATAL CLINIC IN KINONDONI DAR ES SALAAM: A CROSS-SECTIONAL STUDY

EDITH MANASE MBOGA

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN PUBLIC HEALTH OF THE KAIRUKI UNIVERSITY.

2024

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CERTIFICATION

It is hereby certified that the undersigned have read and hereby recommend acceptance by Kairuki University, a dissertation titled:

"UTILIZATION OF POSTNATAL SERVICES AND ASSOCIATED FACTORS AMONG WOMEN ATTENDING POSTNATAL CLINIC IN KINONDONI DAR ES SALAAM: A Cross-Sectional Study" in partial fulfillment of the requirements for the degree of Master of Science in Public Health.

Supervisor:	**Signature:**	**Date:**
Prof. Titus Kabalimu	**……**	**……**
Prof. Godwin D. Ndossi	**……**	**……**

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I Edith Manase Mboga, declare that this dissertation is my own effort and original work and that has not been presented and will not be presented to any other university for a similar or any other degree or any other academic award. Being a student Researcher, enrolled at KU I understand that plagiarism is a serious offence, and therefore confirm that the contents of this research are purely my own production.

Signature: ..... **Date: .....**

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DEDICATION

I dedicate this work for my family. Special dedication goes to my husband Dr Joseph Neligwa Mkilania for his love, prayers, encouragement and financial support and to my children Manase, Rose, Neligwa, Godian, and Martha for missing my attention, and care during my studies. More thanks for their encouragement, support, and prayers during my entire study.

ABSTRACT

Background: Postnatal care (PNC) is a critical period for ensuring the health and well-being of both mothers and their newborns. In Africa, many women and newborns do not seek healthcare services after childbirth, despite the fact that most maternal and neonatal deaths occur during this time.

Aim: The aim of the study was to investigate the utilization of postnatal services and associated factors among women attending postnatal clinic in Kinondoni Dar es salaam.

Methodology: A cross-sectional study was conducted among 384 postpartum women in the late phase of the postnatal period (6 weeks to 6 months). The study aimed to determine the prevalence of PNC service utilization and identify barriers and facilitators influencing its use. A multi-stage systematic sampling technique was employed to select participants, and data were collected using a structured questionnaire digitalized through the Kobo Toolbox. Bivariate logistic regression was used to analyze associations between categorical variables, and multivariate binary logistic regression was applied to identify predictors.

Results and Conclusion: Despite 95.1% of women delivering their most recent child at a health facility, only 40.5% attended at least one postnatal care visit within two days after birth, thus indicating suboptimal postnatal care service utilization. The most common reasons for attending PNC visits included vaccinations, breastfeeding support, and family planning advice. Factors influencing PNC service utilization included sociodemographic, obstetric characteristics, and service access. Strategies to enhance PNC utilization should focus on raising awareness, improving access, enhancing care quality, and strengthening counseling and education during antenatal care visits.

Key words: antenatal care, postpartum period, postnatal care services, mother-baby dyad.

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ABBREVIATIONS

ANC	Antenatal Care
AOR	Adjusted Odds Ratio
CHW	Community Health Workers
CI	Confidence interval
COR	Crude Odds Ratio
EmONC	Emergency Obstetric and Neonatal Care
HFs	Health Facilities
MoHSW	Ministry of Health and Social Welfare
N	Number
NBS	National Bureau of Statistics
PNC	Postnatal Care
PPC	Postpartum Care
RMNCAH	Reproductive, Maternal, Newborn, Child and Adolescent Health
SDGs	Sustainable Development Goals
SPSS	Statistical Package for services Solution
SRS	Simple Random Sampling
TDHS-MIS	Tanzania Demographic and Health Survey and Malaria Indicators Survey
UHC	Universal Health Coverage
WCBA	Women Childbearing Age
WHO	World Health Organization

DEFINITIONS OF TERMS

Maternal health According to WHO: "Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period birth (WHO, 2010)

Postnatal: Refers to the all issues pertaining to the mother and the baby after birth up to 6 weeks (WHO).

The postnatal period (or called postpartum, if in reference to the mother only) is defined as the period beginning one hour after the delivery of the placenta and continuing until six weeks (42 days) after the birth of an infant (WHO)

The postpartum period, begins after childbirth and typically lasts for **six weeks** however, it can be divided into three continuous phases:

- **Acute Phase**: Lasting for **six to twelve hours** after birth.
- **Sub-acute Phase**: Extending over to **six weeks.**
- **Late Phase** (6 weeks **- 6 months**):

Postnatal care services: Refer to the medical check-ups and support provided to mothers and their newborns **after childbirth**. These services typically take place within the first six weeks following delivery, although some programs may extend beyond that timeframe

Postnatal Care Utilization:

Postnatal care utilization refers to the extent to which postpartum women access and use the healthcare services offered at health facilities after childbirth. This typically occurs within the first six weeks following delivery

CHAPTER ONE

INTRODUCTION

1.1Background Information

The maternal postnatal period is the most neglected area globally. According to the World Health Organization report, every day about 830 women die due to health problems related to pregnancy or childbirth. Up to 30% of maternal deaths occur postpartum (WHO Report 2020). Nearly, all of these deaths occur in a low-resource country where a large number of births do not take place at health institutions and where postnatal care (PNC) is either not accessible or is of poor quality (Mwangi et al 2019). However, research evidence has shown this period to have an association with maternal health complications. This period is a critical time for women, newborn, partners, parents, caregivers and families. Yet, during this period, the burden of maternal mortality and morbidity remains unacceptably high, and opportunities to increase maternal well-being have not been fully utilized. Maternal postnatal care services are a fundamental component of the continuum of maternal care, and key to achieving the (SDGs) on reproductive, maternal and child health, including targets to reduce maternal mortality rates (WHO) recommendations on maternal and newborn care for positive postnatal experience (WHO ,2022: United Nations,2015).

The maternal postnatal period, defined here as the period beginning immediately after the birth of the baby can be divided into three continuous phases: acute phase: Lasting for six to twelve hours after birth, sub-acute phase: Extending over to six weeks and late phase (6 weeks - 6 months (WHO, 2024).

Postnatal care is one of the key strategies to reduce maternal and newborn morbidity

and mortality in many areas. However, postnatal care visit is the most critical part for survival of mothers and newborns, through early detection of risk factors and proper management of postpartum complications. Efforts to address maternal morbidity and mortality are based on 3 of 17 sustainable development goals with Goal number 3 seeking to ensure healthy lives, including the maternalpostnatal period (United Nations, 2015). Achieving gender equality and empowering all women (goal number 5) would assist women who seek maternal services and postnatal care. All global departments of health and all healthcare providers that are responsible for renderingthese services should develop and implement strategies that would help them to achieve these goals (Mohan et al,. 2015). Improving maternal health and reducing maternal mortality has been an issue of great concern, especially in low- and middle-income countries where about 99% of maternal deaths occur. Community healthcare workers, midwives, obstetricians and pediatricians all share an equal responsibility to contribute to postpartum care. Improving maternal health and reducing maternal mortality (Mamuye, 2016; UNICEF, 2016).

Globally, despite considerable advancements, maternal mortality continues to present a significant public health issue. The provision of maternal postnatal care services within healthcare facilities plays a crucial role in the prevention of maternal and newborn morbidity and mortality. However, utilization rates remain low, particularly in developing countries. In 2020, an estimated 239,000 women succumbed to complications related to pregnancy, with 86% of these fatalities recorded in low- and middle-income countries as reported by the WorldHealth Organization (WHO 2022; Ndugga et al., 2020). Considering Sub-Saharan Africa, the region exhibits the highest global maternal mortality ratio, with restricted access and utilization of postnatal care

services significantly contributing to this situation (Mohan et al., 2020). Globally, In the past two decades, significant reductions in maternal and neonatal mortality have been reported (Konje et al., 2021). In Sub-Saharan Africa account for 66% for Global maternal deaths due to pregnancy- and childbirth-related conditions such as severe bleeding, hypertensive disorder, infection, unsafe abortion, and birth complications (Konje et al., 2021; Marley et al., 2023).

Every day in 2017, about 808 women died due to complications of pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented (Machira and Palamulen, 2017). The primary causes of death are hemorrhage, hypertension, infections, and indirect causes, mostly due to the interaction between pre- existing medical conditions and pregnancy. Maternal mortality is a health indicator that shows very wide gaps between rich and poor and between countries (TDHS-MIS, 2016) i.e., the risk of a woman in a low-income country dying from a maternal-related cause during her lifetime is about 130 times higher compared to a woman living in a high-income country.Many other determinants have been recognized as influencing the non-utilization of maternal postnatal care, factors such as socioeconomic status, educational background, availability of healthcare facilities, awareness of pregnancy complications, and exposure to media (Machira and Palamulen, 2017; Somefun and Ibisomi 2016).

In Tanzania, factors such as limited educational achievement, absence of mobile phone access, insufficient antenatal care attendance, and residence in particular geographic areas have been linked to an increased probability of home deliveries aided by untrained birth attendants (TDHS-MIS, 2016). Integrating adding up, other

factors affecting maternal postnatal care attendance in developing countries such as availability of services, accessibility, and quality of health services including demographic characteristics of the women's socioeconomic status, knowledge of the importance of early postnatal care services, previous pregnancy experience and cultural beliefs have been linked up (Magoma et al., 2021).

Research evidence pointed out some factors which may affect post natal care (PNC) utilization. Among the factors include urban residence, mode of delivery, distance to the nearest health facilities (Berhe et al., 2019; Workineh & Hailu, 2014). Studies conducted in Ethiopia revealed that, women ability to make a final decision on healthcare service utilization and awareness of the mother on obstetric danger signs, place of delivery of the last baby, and birth outcomes contributed to the uptake of post natal care services (Limenih et al., 2016; Workineh & Hailu, 2014). The Government of Tanzania continue to increase access to high quality emergency obstetric and neonatal care and will increase focus on key instruments during delivery and immediate postnatal phase which save lives (HSSP V, 2019).

Low utilization of postnatal care (PNC) services in Tanzania is a significant public health concern. Several studies and reports highlight various factors contributing to this issue. Below are some key points and references that provide evidence of low PNC utilization within communities in Tanzania: (TDHS-MIS, 2016) and thus need for this study, especially in Kinondoni Municipal Council where there is low service utilization.

1.2 Statement of Problem

Postnatal care service utilization remains a significant public health concern in Tanzania, with low rates contributing to maternal morbidity and mortality (Lwelamira et al., 2015). Studies suggested that only around 50% of Tanzanian mothers receive at least one postnatal check-up within the recommended timeframe (TDHS, 2022).

Tanzania has made progress in reducing maternal mortality though the ratio remains high at 510 deaths per 100,000 live births according to the Tanzania Demographic and Health Survey (TDHS-MIS, 2016). The percentage of women with a live birth in the 2 years preceding the survey who received a postnatal check within 2 days after birth increased from 34% in the 2015–2016 TDHS-MIS to 51% in the 2022 TDHS-MIS but has not yet arrived at the expected target of 80% (HSSP V, 2019). Previous research in Tanzania has predominantly focused on factors influencing the utilization of postnatal care in community-based or rural settings thus inadequacy of studies examining the specific determinants impacting the utilization of services provided at healthcare facilities, particularly in urban settings like Kinondoni Municipal Council.

In view of the above this study investigated the determinants of maternal postnatal care service utilization among post-partum women attending health facilities in Kinondoni Municipal Council-Dar es Salaam

1.3 Study Objectives

1.3.1 Broad Objective

To investigate the utilization of postnatal services and associated factors among women attending postnatal clinic in Kinondoni Dar es salaa-Tanzania.

1.3.2 Specific objectives

1. To determine the prevalence of postnatal care service utilization among women attending postnatal clinic in Kinondoni Dar es salaam -Tanzania.
2. To assess barriers and facilitators that influences the use of postnatal care services utilization among women attending postnatal clinic in Kinondoni Dar es salaam Tanzania.

1.4 Rationale of the study

Low maternal postnatal care service utilization among postpartum women is a critical public health concern, especially in Sub-Saharan Africa with high maternal mortality rates (UNDP, 2023; WHO, 2022). While Tanzania aims to reduce maternal mortality, post-natal care services utilization remains low, highlighting the need for targeted interventions (TDHS-MIS, 2022).

This study will address this gap by investigating the determinants of maternal postnatal care service use at health facilities in Kinondoni Municipal Council. It will determine the prevalence, identify barriers and facilitators, and develop strategies for improvement. This comprehensive approach will inform policy and practice to improve maternal health outcomes in Tanzania. Ultimately, these efforts can lead to improved maternal health outcomes not only in Kinondoni but also in other areas.

1.5 Research questions

1. What is the prevalence of postnatal care service utilization among postpartum women attending health facilities in Kinondoni Municipal Council-Tanzania?
2. What are the barriers and facilitators that influence the use of postnatal

care services utilization among postpartum women attending health facilities in Kinondoni Municipal Council-Tanzania?

CHAPTER TWO

LITERATURE REVIEW

The literature review in this chapter reviewed: the postnatal period, prevalence of maternal postnatal care service utilization at health facilities, barriers and facilitators that influences the use of maternal postnatal care services at health facility, recommended strategies for improving the utilization of maternal postnatal care services and the conceptual framework.

2.1 Postnatal care service concepts

Postnatal care (PNC) refers to the healthcare services provided to a woman and her child for six weeks consecutively following childbirth. It includes a set of activities such as observation, treatment, and advice given in order to prevent and treat complications that may occur to the mother or her baby. Postnatal care is essential for ensuring the optimal health of women and their newborns. In Africa, most mothers and newborn do not visit healthcare facilities following childbirth despite the fact that majority of maternal and neonatal deaths occur during this period. Regardless the existence of several programs for improving maternal and child health, the utilization of post-natal care services at health facilities, yet remains low (Laizer et al., 2020).

According to World Health Organization (WHO, 2023) PNC is concerned with preventive care, practices, and assessments designed to identify and manage maternal and newborn complications during the first six weeks after birth. This period needs a close follow-up for both mother and newborn baby to prevent maternal and

neonatal deaths which mostly occur within this period. The best practices of post-natal care services utilization according to WHO includes: (i) provision of postnatal care in the first 24 hours to all mothers and babies regardless of the place of delivery, (ii) Make sure that, all women without complications and their newborn babies stay at a health facility at least 48 hours before they are discharged, (iii) ensuring all mothers and newborn babies attend at least four postnatal checkups throughout postpartum period. Immediately after the third stage of labor, skilled healthcare providers need to ensure that mothers are checked for vaginal blood loss, blood pressure, and temperature regularly which are part of PNC services.

2.2 Prevalence of Postnatal Care Service Utilization at Health Facilities

There are many factors affecting utilization of maternal postnatal care attendance at health facilities in developing countries such as social demographic characteristic of the women and social economic status, availability of services, accessibility and quality of health services, knowledge of the importance of early PNC services, previous pregnancy experience and norms and cultural beliefs (Konje et al., 2021).

The majority of maternal and neonatal deaths are caused by preventable conditions such as hemorrhage, sepsis, hypertensive disorders, or neonatal sepsis, birth asphyxia and prematurity, respectively (WHO, 2022). Research done in Bahi-Dodoma, Tanzania at the early of initiating maternal postnatal care reported that only 41.7% of the postnatal mothers-initiated care within 7 days. Contributing factors to low utilization of maternal PNC services included low education level, low income, long distance to facilities, negative perception on quality of care, home delivery, negative attitude towards maternal PNC services (Lweramila et al., 2022).

Among the independent variables, marital status, maternal decision making on her health, parity, birth outcome, educational status, nature of last pregnancy, place and mode of delivery, and income, had shown association to low utilization. Mothers' education, the higher the educational level of mothers, the more they attended to health facilities for postnatal care services (Hailu et al., 2014). On top of that, in order to improve the health and survival of mothers during postpartum period and after the quality and attendance rates of postpartum care (PPC) must be increased, particularly in low-resource settings (Pallangyo et al., 2017)

2.2.1 Determinants for utilization of postnatal care services

Several factors reported to influence the utilization of maternal postnatal care services (PNC) which may differ between rural and urban settings in many countries (Pallangyo et al., 2017). Research conducted at North Ethiopia in 2020 result reveled that, the magnitude of PNC service utilization was 37 % and the major determinant factors that affect utilization of PNC identified includes last pregnancy and birth outcome, monthly income of household, educational status of the women, mode and place of delivery were significantly associated with postnatal care service utilization (Mamuye, 2016). Some studies show that, early initiation of the postnatal care visit at health facilities is important for ensuring a continuum of care and good health outcomes for women and babies.

There are many factors affecting utilization of PNC attendance at health facilities in developing countries such as demographic characteristic of the women and socio economic, availability of services, accessibility and quality of health services, knowledge of the importance of early postnatal care services, previous pregnancy

experience and cultural beliefs (Konje at al., 2021) Similar study conducted at Dodoma reported that, the proportion of PNC utilization was 32.2%, Knowledge level 39.8% and the overall perception level on postnatal care services utilization was 54% (Lweramila et al., 2016). Study conducted in Ndola, Zambia on the level of knowledge on postnatal care and its associated factors recommended that Information, Education, and Communication (IEC) materials could be one of the appropriate sources for transferring information to postnatal mothers on PNC services (Chembe & Siziya, 2017). Attitudes towards PNC services and perception on quality of health services in health facilities were strong predictors for utilization of PNC services among women in many areas (Mohan et al., 2015).

In Tanzania, there appears to be a problem with maternal health care access. The Tanzania Health and Demographic Survey of 2016 and 2022 asked a number of questions about the challenges women have in accessing healthcare (TDHS, 2022). Money accounted for 40% of the women's concerns, followed by travel time (38%), distance to the health facilities (37%), transportation (37%). Additionally, they stated that access to health was corresponded with the quality of PNC care received, 14% of respondents cited hostile health care providers as a problem, and 8% expressed fear that there might not be a female provider accessible (Asumah et al., 2023; Ojendal et al., 2023). The proportion of PNC utilization was 32.2%, Knowledge level 39.8% and the overall perception level on PNC utilization was 54%.

2.3 Barriers and Facilitators of use of Postnatal Care Services

Despite the recognized benefits of PNC in health facilities, several barriers hinder PNC utilization as follows, limited availability and accessibility, Geographic distance, inconvenient clinic hours, lack of transportation, and inadequate health care workers is significant challenges, especially, poor quality, cost of services, lack of social support from family members and community, harmful cultural norms, limited community awareness.

Study conducted in Zanzibar women shows that, although generally positive about (ANC) at health facilities and postnatal care (PNC), also perceived PNC as a service for children, lasting well beyond 42 days after delivery. Dhakal et al., (2017) also reported that (47%), of women and their families lack awareness or do not perceive a need for postnatal care services.

Tanzania is among the countries that adopted the United Nation's Sustainable Development Goals (SDGs), with the third Goal targeting the reduction of global maternal mortality to less than 70 maternal deaths per 100,000 live births by 2030 (UNDP, 2015). An assessment surveyconducted in 2022, at health facilities on the Emergency Obstetric and Neonatal Care (EmONC) identified the most common causes of maternal deaths. The leading cause of maternal death is hemorrhaging which accounts for 39% of maternal deaths followed by hypertensive disorders in pregnancy (13%), abortion complications (11%) and anemia account (11%) with most of these deaths occurring in the early postpartum period (Ndugga et al., 2020). The Tanzanian Ministry of Health and Social Welfare (MoHSW) guidelines call for at least 3 visits during the postnatal period (within one week, at 28 days, and at 42

days) apart from theimmediate postnatal care around the time of delivery. CHWs are expected to encourage the mother to attend postnatal appointments at the health facility according to the following schedule: within 48 hours in case of home deliveries, within seven days, at 28 days, and at 42 days. These visits (except the 48-h visit for home deliveries) are expected to be made by women, irrespective of whether they deliver at a facility or at home (Mohan et al., 2015; WHO, 2022).

2.4 Strategies for improvement of postnatal care services utilization

Study conducted in Dodoma shows that, the uptake of adequate PNC visits as recommended among postnatal mothers was low. Strategies for improvement is to call for community-based interventions to create awareness of adequate utilization of PNC services, (Ngowi et al., 2023).

However, the Government should launch education campaign and promotion interventions to create awareness to the community on PNC services and emphasize on the importance of PNC utilization. Improvements should also address availability and accessibility of services (Laizer et al, 2020).

Quality postnatal care services utilization is one of the key components to reduce maternal mortality and improve the reproductive health outcome of women. Postnatal care, specifically, helps to prevent the majority of maternal and child morbidity, disabilities, and mortality. PNC helps HCWs to identify post-delivery problems including complications and helps to provide treatments timely and correctly. For that reason, it is crucial to prevent post-delivery problemsand mortality for the health of both mothers and babies. The WHO, (2022) furthermore

recommended that health care providers and other health stakeholders to strengthen health education about PNC services during antenatal, and schedule the mothers based on the guideline of PNC follow-up, especially before discharge following birth.

To attain the targets and objectives of Tanzania National Strategy for Maternal Health 2019– 2030, post-natal care services should be made accessible to all women in need irrespective of their socio-economic status; thus, opening the door towards achieving Universal Health Coverage within 2030 by reducing maternal morbidity and improving overall maternal health and well-being.

2.5 Conceptual framework for the study

Principal Investigator (PI) developed a conceptual framework for the study, whereby the relationship between dependent variable and independent variables is depicted. This is shown in Figure 1 below.

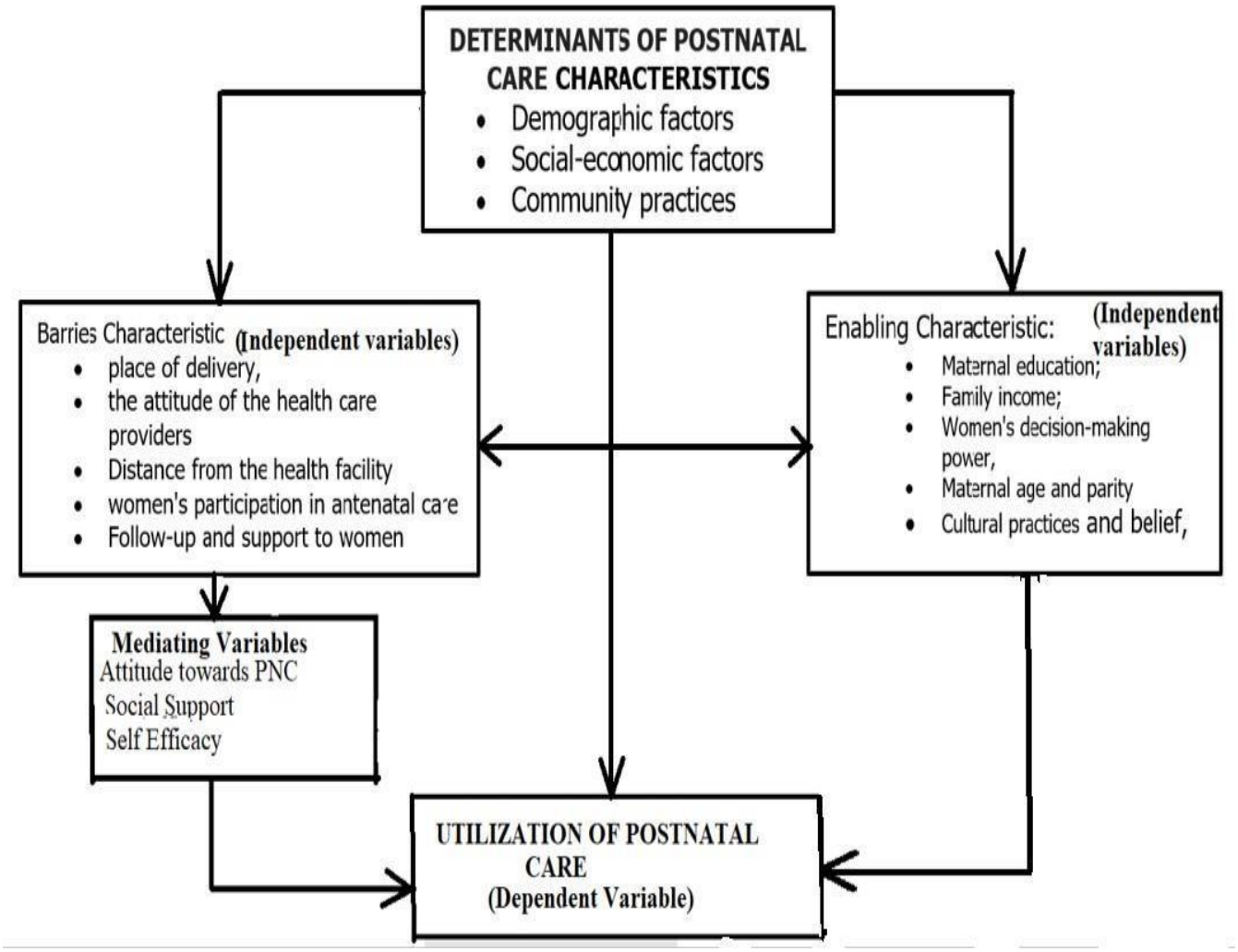


Figure 1: Conceptual framework for study on determinants on postnatal utilization at health facilities

(Source: Researcher)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Study area and population

The study was conducted at Kinondoni Municipal Council -Tanzania, one of the Municipalities of the five Municipals of the city of Dar es Salaam. The Municipality is divided into 2 divisions Kawe and Kinondoni and 20 wards and 106 sub wards while being bordered by Indian Ocean on the Northeast, Ilala Municipal to the South, Bagamoyo district to the North and Ubungo Municipality to the West according to the Kinondoni Municipal Council Website.

The Municipality has a total area of 321 square kilometers and according to the 2022 population Census, the Municipality had a population of 982,328 where male i.e., 474,825 and female 507,503 with an estimated 299,200 households and 146, 862 Women of Childbearing Age (WCBA).

To add on, Kinondoni Municipal council has a total of 322 health facilities of which 33 are government owned, while the remaining 289 are owned by Private and of all these, there exists only a total of 82 health facilities, both public and private, that provide Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH) services (Kinondoni Municipal Council Website).

The selection of the location for the research depended on the health facilities that provided postnatal Care to expectant mothers and their infants. The targeted study population consisted of women who had given birth within the time frame of three to six months prior to the commencement of data collection.

The study population was women in the late phase of the postpartum period from 6 weeks to 6 months (after delivery) who had given birth either at a health care institution or at their residence and were currently attending postnatal care services at RCH clinics situated within the Kinondoni Municipal Council health facilities during the study period.

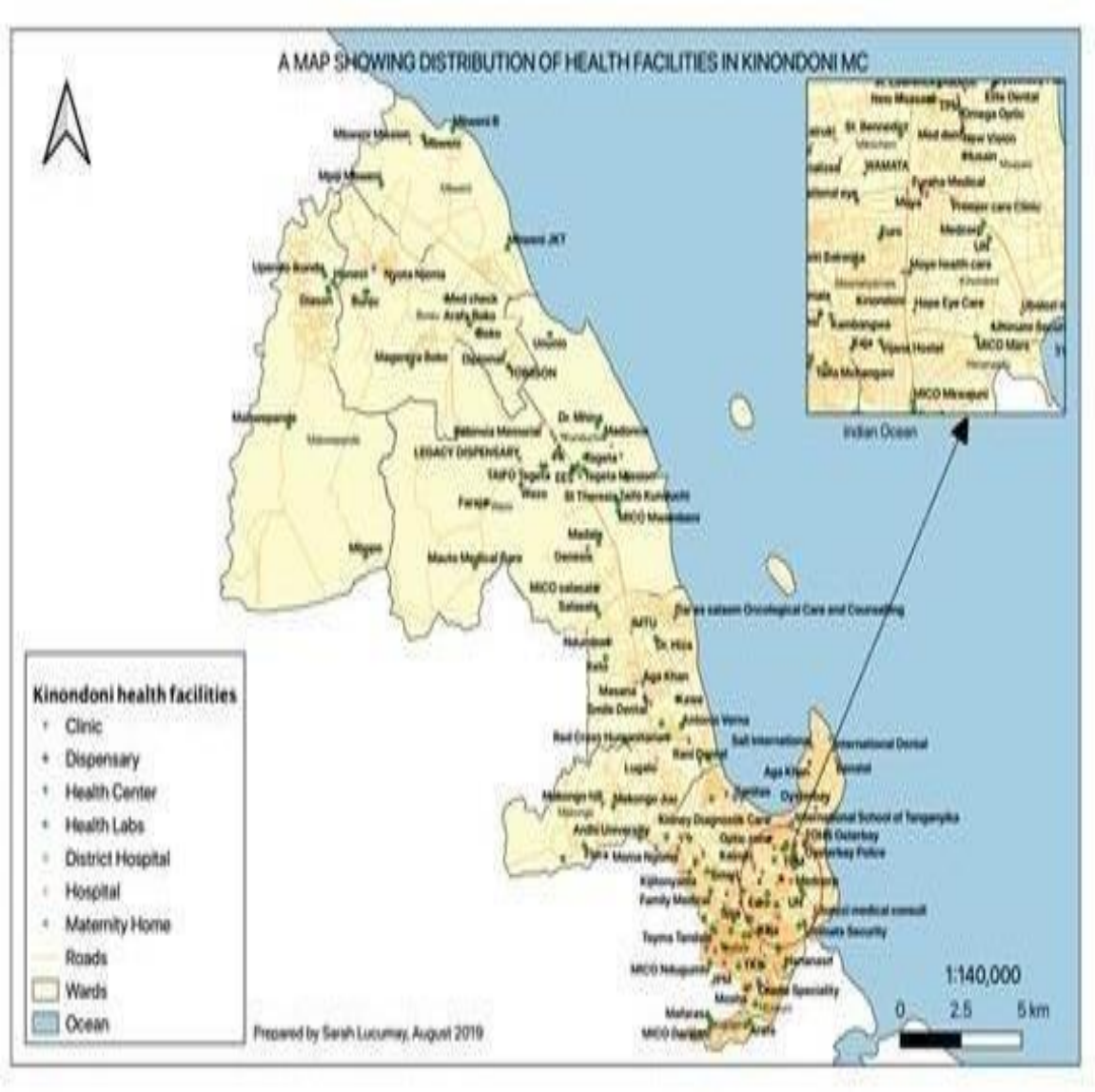


Figure 2. Map of Health facilities distribution at Kinondoni Municipal Council

(Source: District Health Information Software2)

3.2 Study Design

This study employed a cross-sectional study design because it focused on a specific point in time while aiming to understand factors influencing maternal postnatal care service utilization at a particular time among recently delivered women in the late phase of thepost-partum period (6 weeks to 6 months) in Kinondoni.

Cross-sectional studies designs are well-suited to identify relationships between variables without needing to follow participants over time and allow to determine the prevalence of postnatal service utilization (Specific objective 1) and identify factors associated with it (Specific objective 2).

Study Population

Postpartum women in the late phase of the postpartum period (6 weeks to 6 months after delivery) who had given birth either at a healthcare institution or at their residence and were currently in search of postnatal care services at RCH clinics situated within the Kinondoni Municipal Council hospitals, health centers, and dispensaries while considering other factors such as ownership of the health facilities (Public and private health facilities).

3.3.1 Inclusion Criteria

i. Were currently residing in Kinondoni Municipal Council, Dar Es Salaam, Tanzania.

ii. In the late phase of postpartum (between 6 weeks and 6 months after delivery).

iii. Gave birth at either a healthcare facility or at home.

iv. Women who were currently seeking postnatal care services at RCH clinics within Kinondoni Municipal Council hospitals, health centers, or dispensaries (public or private).

v. Women who were willing to provide informed consent to participate in the study.

3.3.2 Exclusion Criteria

i. Unable to communicate effectively in the language of the study (English and Swahili).

ii. Experiencing a severe illness that would prevent participation.

3.4 Sample size and Sampling Method

3.4.1 Sample size Estimation

The Sample size was determined using Cochran's formulae with an estimated prevalence of 50% according to survey TDHS-MIS 2022, Mother who receive postnatal checkup within 2 days after delivery.

$$n = \frac{z^2 p\ (1-p)}{E^2}$$

Whereby.

- z: The critical value corresponding to a 95%confidence interval (CI)is set at 1.96.
- p: The estimated proportion of PNC utilization was 50% based on a previous study.
- E: The margin error was set 5%

$$= \frac{1.96 \times 1.96 \times 50 \times (100-50)}{5^2} = 384.1$$

n = 384 study participants.

Therefore, the minimum sample size is **384** study participants i.e. women attending postnatal services.

3.5 Sampling Technique

A multi-stage systematic sampling approach was used i.e

Table 1: Shows sample size distribution according to selected health facility.

Stage 1: One health facility from each category listed below of public and private health facilities was randomly selected depending on the hierarchy level of health services within Kinondoni Municipal Council			
Level of Health Facilities	**Number of Public Health Facilities within**	**Number of private health facilities within**	**Total**
Hospital	2	17	19
	Selected: **Mabwepande**	Selected: **Rabininsia**	
Health Center	8 Selected: **Magomeni**	6 Selected: **Sisa**	14
Dispensaries	23 Selected: **Tegeta**	26 Selected:**Kigogo Moravian**	49
TOTAL			**82**

Stage 2: Proportionate allocation of sample size to each selected in both public and private categories depending on the hierarchy level of health services given.			
Level of Health facility	**Number of participants within selected public health facility**	**Number of participants within selected private health facility**	**Total**
Hospital	(2/82) ×384 =9	(17/82) ×384 =80	89
Health Center	(8/82) × 384=38	(6/82) ×384=29	66
Dispensaries	(23/82) ×384 =108	(26/82) ×384 =121	229
Total			**384**

Stage 3: Convenience sequential sampling was done to get representatives from health facilities at RCH clinics so as to reach the desired sample size expected for each specific healthfacility.

3.6 Study Variables

3.6.1 Independent Variables (Factors influencing utilization):

1. Sociodemographic characteristics:

i. **Age:** Was measured in years (18-24 years, 25-34 years, 35-44 years, 45 years and above)

ii. **Education level:** Was measured by highest level of education completed (No formal education, Primary school, Secondary school, College/University degree, Other (participant to please specify)

iii. **Occupation:** Was measured by current or most recent occupation (Employed (full-time/part-time), Unemployed, Homemaker, Student, Retired, Other (participant to please specify)

iv. **Socioeconomic status:** Was determined based on a separate scoring system combining income, education, and housing i.e., low, medium, high.

v. **Parity (number of previous births):** Was measured by the number of live births a woman has had i.e., Primiparous (first birth) or Multiparous (more than one birth)

vi. **Type of delivery;** Was measured as self-reported (vaginal birth or cesarean section)

vii. **ANC attendance in last pregnancy:** Was measured by number of visits one has had i.e., 0 visit, 2 visit, 3 visit, 4 or more visits.

viii. **Counseling on PNC attendance in last pregnancy:** Was measured as self-reported data. Including provision of learning materials concerning postnatal care services?

2. Knowledge and attitudes:

i. **Knowledge of postnatal care services:** Was measured by ticking all that

applied: Vaccinations for baby, Breastfeeding support, Physical check-ups for mother, Mental health support for mother, Family planning advice and Nutritional counseling, HIV and malaria prevention.

ii. **Attitudes towards postnatal care:** Was measured by a questionnaire assessing beliefs about the importance of postnatal care and rated with a scale of 1-5 i.e., Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) Strongly Agree (5). The ratings were used then to score these statements.

a. Postnatal care is important for my baby's health.

b. Postnatal care is important for my own physical recovery.

c. Postnatal care can help identify and address any postpartum problems.

d. Postnatal care can provide emotional support and advice for new mothers.

3. Access and service factors:

i. **Distance to nearest health facility:** Participant were asked to estimate the distance in kilometers.

ii. **Availability of transportation:** Was measured by Yes (reliable access to car/public transport) No

iii. **Cost of services:** Was measured by perceived or actual cost of postnatal care services at the facility i.e., is it free, low cost, high cost.

iv. **Waiting times at the facility:** Was measured by perceived or reported average waiting time for postnatal care services. i.e., Short (less than 30 minutes), Moderate (30 minutes - 1 hour) and Long (more than 1 hour)

v. **Quality of care at the facility:** Was measured by a questionnaire assessing satisfaction with healthcare providers and services by rating satisfaction with a scale: Very Dissatisfied (1), Dissatisfied (2), Neutral (3), Satisfied (4) Very

Satisfied (5). Rating was then used to assess these on quality of care at the facility.

a. The healthcare providers were knowledgeable and helpful.

b. The clinic was clean and well-equipped.

c. I felt comfortable asking questions and discussing my concerns.

d. I received all the information and support I needed during mypostnatal visits.

3.6.2 Dependent Variable (Outcome)

Postnatal care service utilization was measured by self-reported number of total postnatal care visits **ever** received i.e., (attended 0 visits, 1 visit, 2 or more visits, or continuous (number of visits).

3.7 Data Collection

Data collection started between Mid-July to Mid-August (2 months) involving Postpartum women residing in Kinondoni Municipal Council, Tanzania, who were 6 weeks to 6 months postpartum and seeking postnatal care services at public and private health facilities within the Municipality. This was a facility-based data collection process with participants accessed at RCH clinics of each randomly selected hospital, health center, and dispensary in Kinondoni from each of the public and private ownership categories.

3.7.1 Data Collection tool

A Structured questionnaire was developed to capture information on the study variables defined. This questionnaire included 3 part.

Part 1, Socio-demographic characteristics i.e., Age, education level, occupation, socioeconomic status (derived scoring system), parity, type of delivery (self-reported).

Part 2, Knowledge and attitudes i.e., Knowledge of postnatal care services: A tick-box format where women can select all services, they are aware of (vaccinations, breastfeeding support, etc.), Attitudes towards postnatal care: A 5-point Likert scale questionnaire assessing agreement with statements about the importance of postnatal care.

Part 3, Access and service factors i.e., Distance to nearest health facility: Self-reported estimated distance in kilometers, Availability of transportation: Yes/No question about access to reliable transportation, Cost of services: Perceived or actual cost categorized as free, low cost, or high cost, Waiting times: Perceived or reported average waiting time categorized as short (less than 30 minutes), moderate (30 minutes - 1 hour), or long (more than 1 hour), Quality of care: A 5-point Likert scale questionnaire assessingsatisfaction with healthcare providers and services.

This questionnaire was digitalized into the Kobo toolbox. The Kobo form created with different sections corresponding to the study variables and appropriate question types for each variable was made available to two research assistants who were trained and then Kobo Collect apps were installed on a smartphones and tablets used to collect data.

Data Quality Control

i) Validity

To ensure validity in study, several strategies were employed. Two research assistants were used to supplement on the efforts of the principal investigator. This enabled ease of collection of quality data.

Also, the study findings were reviewed by independent researchers with expertise in quantitative research methods. This peer review helped to identify any potential biases or limitations in the study design and analysis.

ii) Reliability

To ensure the reliability of the quantitative data collected through Kobo forms, the research implemented several measures. Internal consistency was assessed using Cronbach's alpha coefficient for multi-item scales, ensuring that the items within each scale measured the same underlying construct. A high alpha (>0.7) indicated that the items within each scale were measuring the same underlying construct reliably (Taber, 2018).

Inter-rater reliability was established by conducting a pilot study with a small group of participants and having multiple authorized researchers independently score the responses. This helped to identify any inconsistencies in interpretation and ensure that the data is being collected and analyzed reliably. Additionally, the survey data was carefully reviewed for missing values, outliers, and inconsistencies while implementing appropriate data cleaning and imputation techniques as needed.

3.8 Data Management

All collected data, including filled kobo forms and field notes, were stored on secure, encrypted servers. Access to these servers were restricted to authorized research team members, ensuring confidentiality. A backup system was in place to safeguard the data against potential loss or damage.

Also, a systematic data organization system was developed to facilitate easy retrieval and analysis. This system included clear labeling and indexing of all data files, as well as a detailed data dictionary that defined the variables and codes used in the analysis.

3.9 Data analysis

Data analysis was done systematically to answer each specific objective and show how results were to be interpreted.

3.9.1 Prevalence of PNC service utilization (Specific Objective 1)

The frequency and percentage of postpartum women who reported attending 0 visits, 1 visit, 2 or more visits, or continuous postnatal care visits was calculated using descriptive characteristics. The results were interpreted to show the overall prevalence of PNC service utilization among postpartum women in Kinondoni Municipal Council.

3.9.2 Barriers and facilitators of PNC service utilization (Specific Objective 2)

Bivariate and multivariate analysis were used to assess the association between independent variables i.e., sociodemographic and Obstetric information

characteristics with PNC service utilization (dependent variable). This included variables that showed a significant association in the Chi-square tests such that the logistic regression analysis performed was to determine factors significantly associated with PNC service utilization. Lastly, logistic regressions for public and private health facilities and/or hierarchy (hospitals, health centers, dispensaries) were ran to explore potential differences in the influence of factors on PNC service utilization within each ownership type or hierarchy of health service. Results were interpreted to reveal which factors (e.g., distance to facility, knowledge of services, waiting times) are associated with higher or lower utilization of PNC services. The stratified analysis highlighted if these factors have a different impact depending on whether women attend public or private facilities or attend at the hospital, health center or dispensary.

3.10 Ethical Considerations

i. A clear and concise consent form explaining the study's purpose, data collection methods (electronic survey via Kobo Toolbox), data usage, and participant rights (confidentiality, withdrawal) was prioritized, and the study population was made to understand the consent form which were to be involved offering it in the local language or having someone translate it verbally.

ii. Data anonymization was considered during data collection with Kobo apps which also offered data encryption features and proper password protection and access restrictions to collected data. The data was then securely stored on a password- protected server or cloud storage with strong encryption.

iii. To add on, considering that postpartum women are a potentially a vulnerable population, sensitive to their emotional and physical state was prioritized to ensure that the survey doesn't cause undue stress or discomfort. A consultant psychologist and social worker was always to be available in any case.

iv. Participants were informed about how their data was to be used in publications or presentations and the research findings with the participants (anonymously recognized) would be shared with the Kinondoni Municipal Council health department.

3.11 Dissemination of the research findings

Dissemination will be targeted to audiences involving academics at the Department of Community Medicine at KU, Policymakers like the Director of Kinondoni Municipal Council and representatives from PORALG (President's Office - Regional Administration and Local Government Authority), healthcare providers in Reproductive and Child Health (RCH) clinic staff within Kinondoni Municipal Council hospitals, health centers, and dispensaries (including both public and private facilities) and postpartum women in Kinondoni Municipal Council (indirectly).

Dissemination Methods to be used will involve detailed formal research reports with clear methodology, findings, discussion, and recommendations which will be submitted to the Department of Community Medicine at KU.

A concise summary of the study's key findings and recommendations for improving postnatal care service utilization shall be translated into Kiswahili for better reach within the community and a policy brief would be shared with the Director of Kinondoni Municipal Council and representatives from PORLGA so as to use this information to develop or revise policies related to maternal health services.

Educational materials (pamphlets, posters) in Kiswahili highlighting theimportance of maternal postnatal care and addressing identified barriers will be disseminated with key massages of the study on postpartum women to partnered local health authorities and RMNCAH implementing partners. The research findings will to be published in relevant scientific journals to reach a wider academic audience.

CHAPTER FOUR

RESULTS

4.1 Enrollment log

During the study period, a total of 384 women attending postnatal care services in the selected study facilities in Kinondoni were screened for eligibility criteria to be included into the study. Included in the final data analysis is 384 study participants.

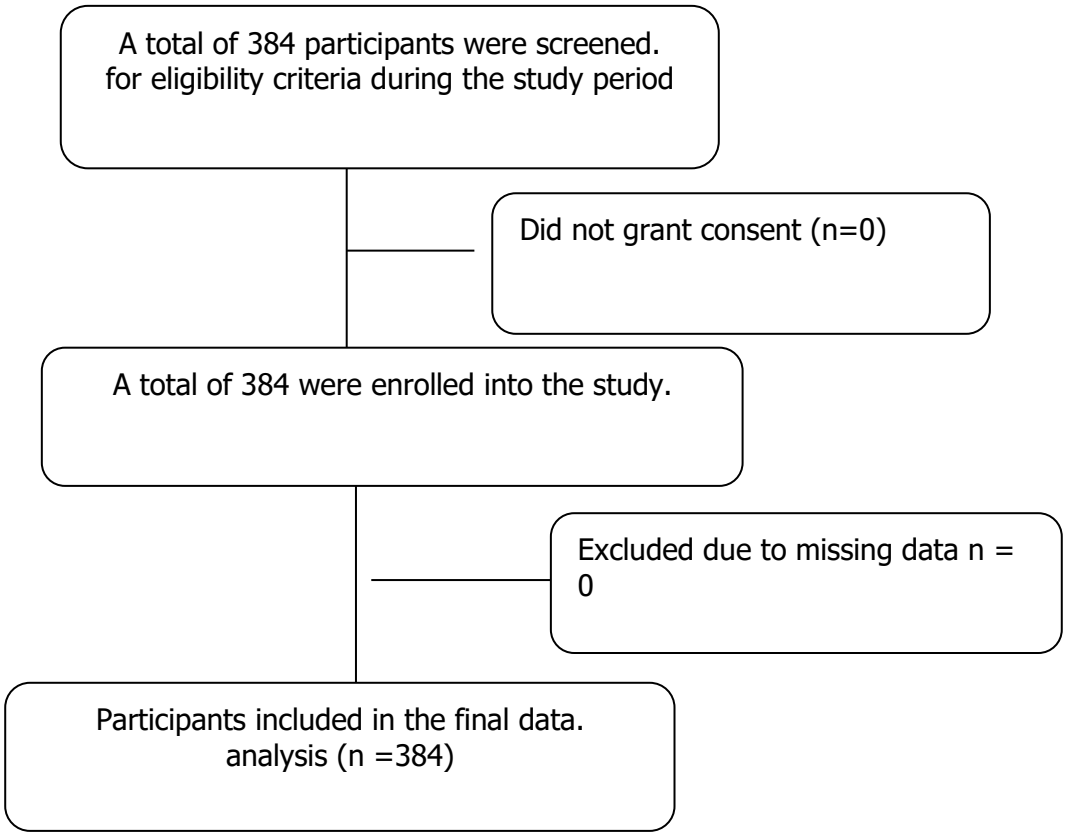


Figure 3: Enrollment flow chart of the study participant

2 Study participants enrolled at administrative wards and health facilities

Most of the study participants were from Bunju Administrative ward 49% and Kigogo 31.5%; Kigogo Moravian Dispensary enrolled 31.5% of study participants. Dispensaries enrolled 9.6% of study participants and private sector contributed 59.6%. This is shown in Table 3 below.

4.2 Descriptive Characteristics

4.2.1 Sociodemographic Characteristics

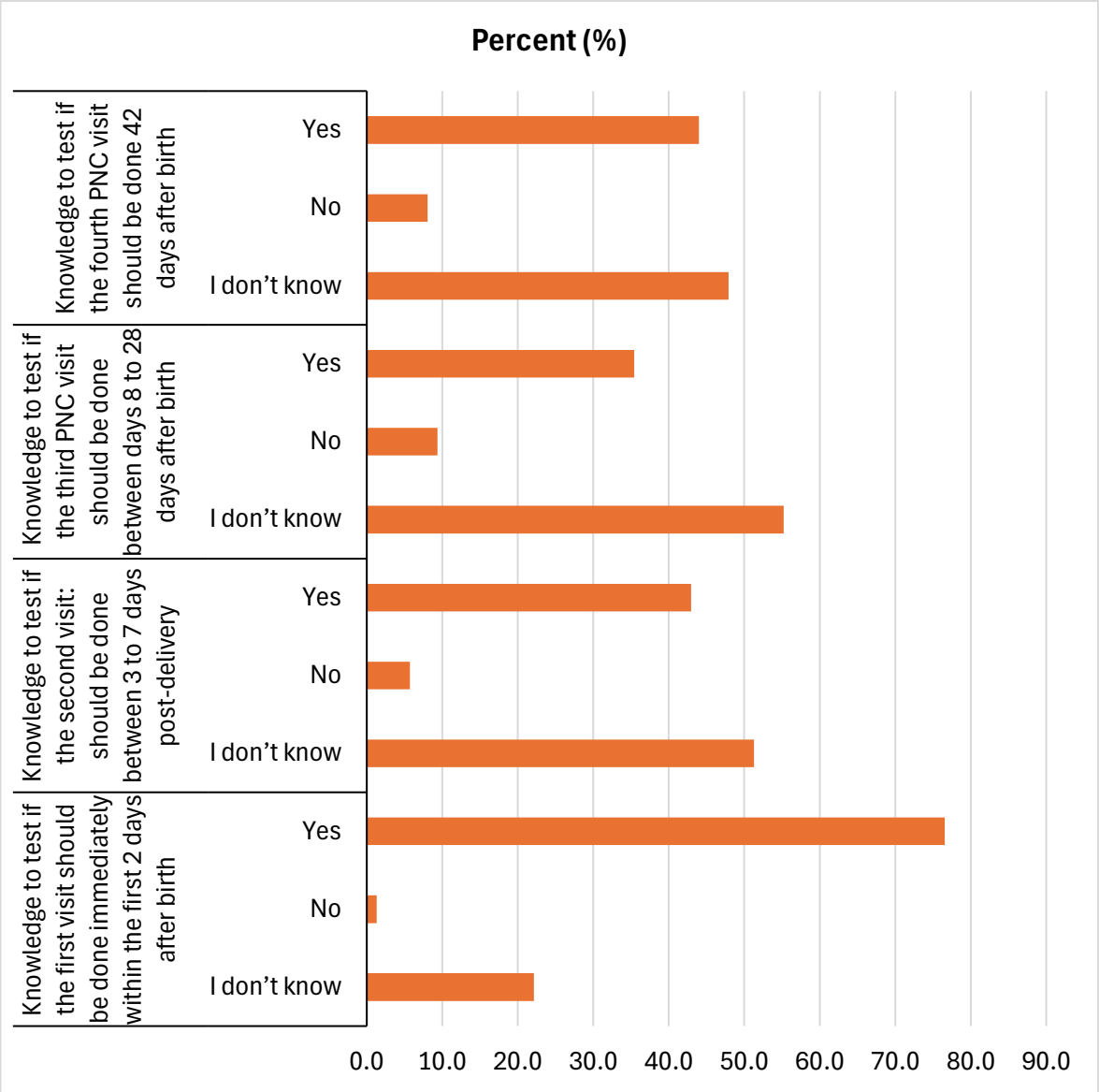
Table 2: Shows Baseline sociodemographic characteristics.

		Frequency	Percent (%)
Participants	Bunju ward	188	49.0
	Kigogo ward	121	31.5
	Mabwepande ward	9	2.3
	Mwananyamala ward	28	7.3
	Ndugumbi ward	38	9.9
Health facility	Kigogo Morovian disp	121	31.5
	Mabwepande hosp	9	2.3
	Magomeni HC	38	9.9
	Rabininsia Hosp	80	20.8
	Sisa HC	28	7.3
	Tegeta disp	108	28.1
Level of health facility	Dispensary	229	59.6
	Health Center	66	17.2
	Hospital	89	23.2
Ownership	Private	229	59.6
	Public	155	40.4
Age range	18-24 years	133	34.6
	25-34 years	166	43.2
	35-44 years	71	18.5
	45 and above	14	3.6
Marital Status	Divorced/Separated	42	10.9
	Married living with partner	256	66.7
	Single	85	22.1
	Widowed	1	.3
Educational Level	Non-formal	2	.5
	Primary School	129	33.6
	Secondary School	226	58.9
	University/College	27	7.0
Occupation	Employed	74	19.3
	Housewife	36	9.4
	Self-employed	209	54.4
	Unemployed	65	16.9
Monthly Household Income	Less than TZS 100,000	145	37.8
	TZS 100,000 - 200,000	79	20.6
	TZS 200,000 - 300,000	63	16.4
	More than TZS 300,000	97	25.3

The study consisted of 384 participants. Bunju (49%) and Kigogo (31.5%) were the most represented wards. Kigogo Morovian dispensary (31.5%) and Rabininsia Hospital (20.8%) were the primary health facilities utilized. Dispensaries (59.6%) were the most common type of health facility. Private health facilities (59.6%) were more prevalent than public ones (40.4%). The majority of participants were between 25 and 34 years old (43.2%). Most participants were married living with their partners (66.7%). Secondary school (58.9%) was the highest level of education attained by most participants. Self-employed individuals (54.4%) made up the largest occupational group. Most participants earned less than TZS 100,000 per month (37.8%).

4.2.1.1 Mother's baseline Knowledge on PNC visits

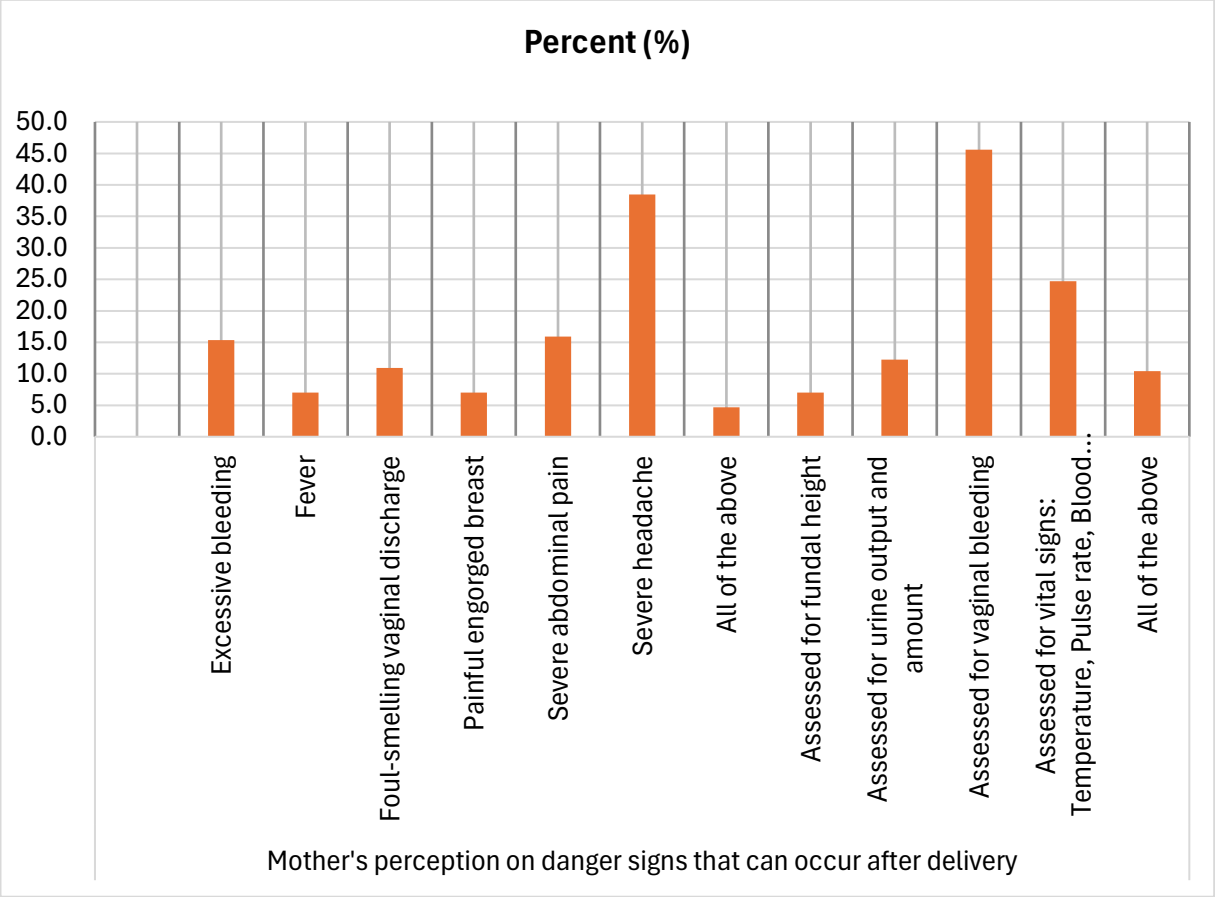
Figure 4: Shows baseline mother's knowledge on PNC visits.



A significant majority (76.6%) were aware that the first postnatal care (PNC) visit should occur within the first two days after birth. While over half (51.3%) did not know about the timing of the second visit (3-7 days post-delivery), knowledge about the third (8-28 days) and fourth (42 days) visits was variable as well, with around half of respondents expressing uncertainty i.e., 55.2% and 47.9% respectively.

4.2.1.2 Mother's baseline perceptions on PNC services offered.

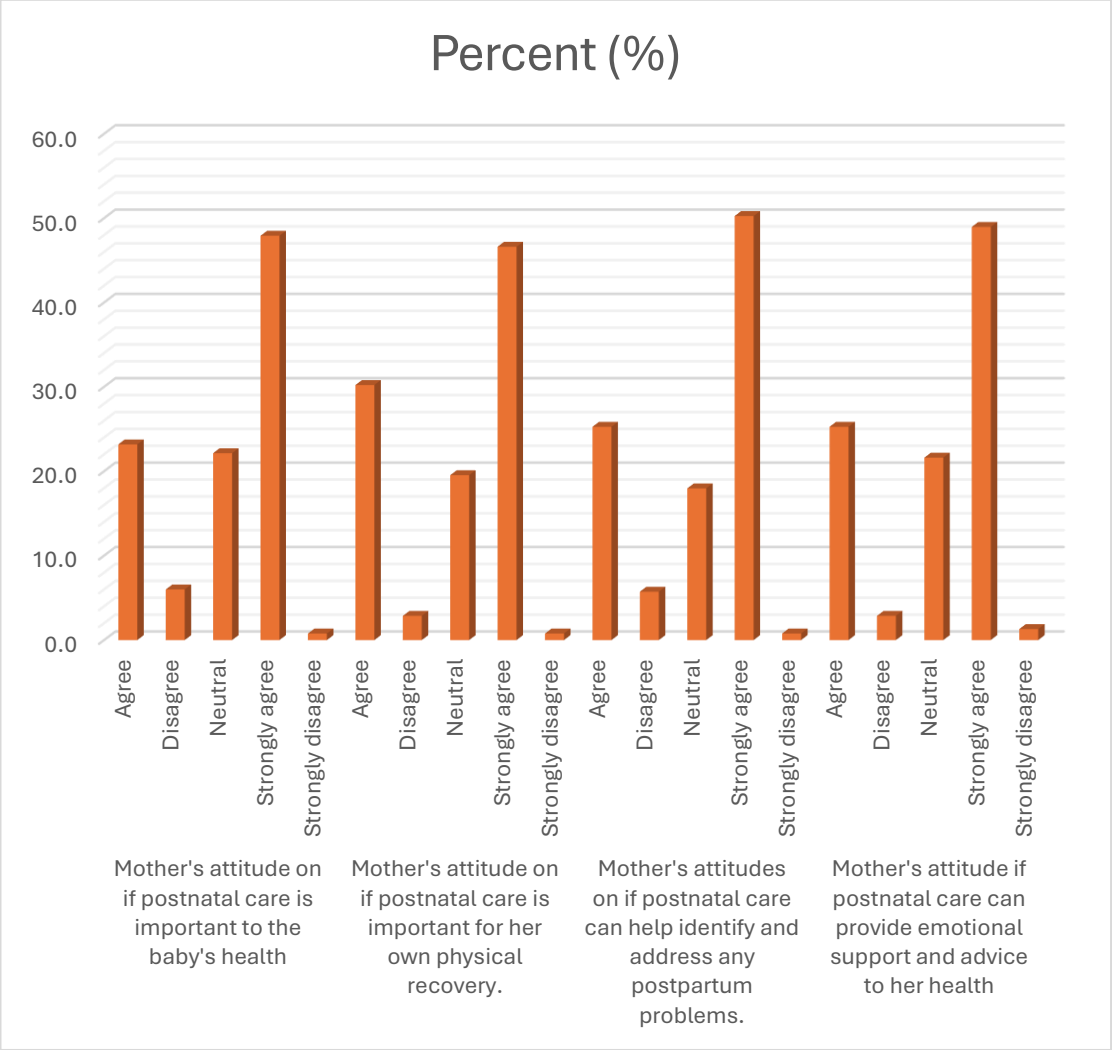
Figure 5: Shows baseline mother's perceptions on PNC services offered.



Most recognized danger sign was severe headache (38.5%). Other frequently recognized signs included Excessive bleeding (15.4%), Severe abdominal pain (15.1%), Foul-smelling vaginal discharge (10.9%) while less recognized signs i.e., Painful engorged breast (7%), Fever (7%). PNC Services Received Within Two Days of Birth had most commonly received service being assessed for vaginal bleeding (45.6%). Other frequently received services included assessment for vital signs (24.7%), assessment for fundal height (7%), assessment for urine output and amount (12.2%).

4.2.1.3 Mother's baseline attitudes on importance of PNC services

Figure 6: Shows baseline mother's attitudes on importance of PNC services



47.9 % of mothers believed postnatal care is important for their baby's health. 179 mothers (46.6%) believed postnatal care is important for their own physical recovery. 193 mothers (50.3%) believed postnatal care could help identify and address postpartum problems while also 188 mothers (49%) believe postnatal care can provide emotional support and advice.

4.2.2 Baseline Obstetric Background Characteristics

Table 3: Shows distribution of Baseline obstetric background characteristics.

		Frequency	Percent (%)
Frequency of deliveries	1 to 2	180	46.9
	3 to 5	184	47.9
	More than 5	20	5.2
Place of birth for the last delivered child	Dispensary	104	27.1
	Health Center	162	42.2
	Home	19	4.9
	Hospital	99	25.8
Mode of delivery for the last delivered child	Caesarean section	54	14.1
	Normal vaginal delivery	330	85.9
If attended any postnatal care (PNC) visits at a health facility after the last baby's delivery	No	44	11.5
	Yes	340	88.5
Frequency of received antenatal care (ANC) during the last pregnancy	1 visit	56	14.6
	2 visits	67	17.4
	3 visits	62	16.1
	4 or more visits	199	51.8
If counselled about postnatal care services during ANC visits	No	171	44.5
	Yes	213	55.5
If provided with learning materials concerning postnatal care services at clinic	No	349	90.9
	Yes	35	9.1
If attended any postnatal care (PNC) visits at a health facility after the last baby's delivery	No	155	40.4
Frequency of PNC visits attended	0 visits	155	40.4
	1 visit	70	18.2
	2 visits	55	14.3
	3 visits	18	4.7
	4 or more visits	86	22.4

Most women (94.8%) have delivered at least 3 times, with nearly half (47.9%) having delivered between 3 and 5 times. The majority of women (95.1%) delivered their last child at a health facility (dispensary or health center or hospital). The vast majority (85.9%) delivered their last child vaginally, while 14.1% had a cesarean section. A high percentage (99.6%) attended at least one ANC visit during their last delivery.

Over half of the women (51.8%) had attended 4 or more ANC visits during their last pregnancy. A significant proportion (55.5%) were counseled about PNC services during their ANC visits, but only 9.1% received learning materials on PNC. Among those who attended PNC visits, 41.4% attended at least 2 visits.

4.3 Prevalence of maternal postnatal care service utilization among postnatal women

4.3.1 Prevalence of PNC utilization distributed according to sociodemographic characteristics.

Table 4: Shows distribution of prevalence of PNC utilization across visits versus sociodemographic characteristics.

		Frequency of PNC visits attended during mother's last delivery					
		NO	YES				
		0 visits	1 visit	2 visits	3 visits	4 or more visits	Total
Ward	Bunju	46	31	19	12	80	188
		24.5%	16.5%	10.1%	6.4%	42.6%	100.0%
	Kigogo	50	33	31	2	5	121
		41.3%	27.3%	25.6%	1.7%	4.1%	100.0%
	Mabwepande	7	1	0	1	0	9
		77.8%	11.1%	0.0%	11.1%	0.0%	100.0%
	Mwananyamala	18	4	3	2	1	28
		64.3%	14.3%	10.7%	7.1%	3.6%	100.0%
	Ndugumbi	34	1	2	1	0	38
		89.5%	2.6%	5.3%	2.6%	0.0%	100.0%
Health facility	Kigogo Moravian	50	33	31	2	5	121
		41.3%	27.3%	25.6%	1.7%	4.1%	100.0%
	Mabwepande	7	1	0	1	0	9
		77.8%	11.1%	0.0%	11.1%	0.0%	100.0%
	Magomeni	34	1	2	1	0	38
		89.5%	2.6%	5.3%	2.6%	0.0%	100.0%
	Rabininsia	42	9	5	6	18	80
		52.5%	11.3%	6.3%	7.5%	22.5%	100.0%
	Sisa	18	4	3	2	1	28
		64.3%	14.3%	10.7%	7.1%	3.6%	100.0%
	Tegeta	4	22	14	6	62	108
		3.7%	20.4%	13.0%	5.6%	57.4%	100.0%
Level of health facility	Dispensary	54	55	45	8	67	229
		23.6%	24.0%	19.7%	3.5%	29.3%	100.0%
	Health Center	52	5	5	3	1	66
		78.8%	7.6%	7.6%	4.5%	1.5%	100.0%
	Hospital	49	10	5	7	18	89
		55.1%	11.2%	5.6%	7.9%	20.2%	100.0%
Ownership	Private	110	46	39	10	24	229
		48.0%	20.1%	17.0%	4.4%	10.5%	100.0%
	Public	45	24	16	8	62	155
		29.0%	15.5%	10.3%	5.2%	40.0%	100.0%
Age range	18-24 years	62	24	14	8	25	133
		46.6%	18.0%	10.5%	6.0%	18.8%	100.0%
	25-34 years	70	25	24	4	43	166
		42.2%	15.1%	14.5%	2.4%	25.9%	100.0%

	35-44 years	23	17	12	4	15	71
		32.4%	23.9%	16.9%	5.6%	21.1%	100.0%
	45 and above	0	4	5	2	3	14
		0.0%	28.6%	35.7%	14.3%	21.4%	100.0%
Marital Status	Divorced/Separated	12	12	5	4	9	42
		28.6%	28.6%	11.9%	9.5%	21.4%	100.0%
	Married living with partner	126	33	37	7	53	256
		49.2%	12.9%	14.5%	2.7%	20.7%	100.0%
	Single	16	25	13	7	24	85
		18.8%	29.4%	15.3%	8.2%	28.2%	100.0%
	Widowed	1	0	0	0	0	1
		100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Education level	Non-formal	1	0	0	0	1	2
		50.0%	0.0%	0.0%	0.0%	50.0%	100.0%
	Primary School	53	23	13	8	32	129
		41.1%	17.8%	10.1%	6.2%	24.8%	100.0%
	Secondary School	94	42	32	9	49	226
		41.6%	18.6%	14.2%	4.0%	21.7%	100.0%
	University/College	7	5	10	1	4	27
		25.9%	18.5%	37.0%	3.7%	14.8%	100.0%
Occupation	Employed	21	12	21	3	17	74
		28.4%	16.2%	28.4%	4.1%	23.0%	100.0%
	Housewife	17	5	3	3	8	36
		47.2%	13.9%	8.3%	8.3%	22.2%	100.0%
	Self-employed	95	35	23	7	49	209
		45.5%	16.7%	11.0%	3.3%	23.4%	100.0%
	Unemployed	22	18	8	5	12	65
		33.8%	27.7%	12.3%	7.7%	18.5%	100.0%
Monthly Household Income	Less than TZS 100,000	68	20	10	7	40	145
		46.9%	13.8%	6.9%	4.8%	27.6%	100.0%
	TZS 100,000 - 200,000	57	5	6	3	8	79
		72.2%	6.3%	7.6%	3.8%	10.1%	100.0%
	TZS 200,000 - 300,000	17	22	16	4	4	63
		27.0%	34.9%	25.4%	6.3%	6.3%	100.0%
	More than TZS 300,000	13	23	23	4	34	97
		13.4%	23.7%	23.7%	4.1%	35.1%	100.0%

The mean prevalence across the wards for participant frequency for PNC utilization with at least one visit was 40.5% with Bunju recording the highest (75.6%) followed by Kigogo (58.7%) while Ndugumbi being the last with 10.5%. In terms of health facilities for at least one PNC visit made, mean prevalence across was 45.2% with

Tegeta recording highest at 96.4% followed by Kigogo Moravian (58.7%) while the rest following below 50%. A mean prevalence of 47.5% was noticed across level of health facilities for at least one PNC visit made during mother's last delivery with dispensaries (76.5%) highest compared to health centres (21.2%) and hospitals (44.9%).

Public health facilities had the highest prevalence recorded for mothers who had at least one PNC visit during their last delivery i.e., 71%. The mean prevalence across age group was 59.7% with 18–24-year mothers being least (13.3%) in utilization of at least one visit for PNC service during their last delivery while across marital status, mean prevalence was 50.8% with single mothers being recorded as highest with 81.1% for attending at least one visit for PNC service after last delivery.

In terms of education level, mean prevalence was 60.3% with university educated mothers reporting to have had at least one PNC visit during mother's last delivery (74%) while a mean prevalence of 61.3% was recorded across occupation categories with employed participants having a prevalence of 71.7%. Mean prevalence for PNC utilization across monthly household income was 60.1% with those with incomes between TZS 200,000 -300,000 recording the highest prevalence for at least one visit for PNC service during the last pregnancy i.e., 72.9%.

4.3.2 Prevalence of PNC utilization distributed within Obstetric information characteristics.

Table 5: Shows distribution of prevalence of PNC utilization across visits versus obstetric characteristics.

		Frequency of PNC Visits attended during mother's last delivery					
		NO	YES				
		0 visit	1 visit	2 visits	3 visits	4 visits	Total
Frequency of deliveries	1 to 2	79	29	19	9	44	180
		43.9%	16.1%	10.6%	5.0%	24.4%	100.0%
	3 to 5	72	34	30	9	39	184
		39.1%	18.5%	16.3%	4.9%	21.2%	100.0%
	More than 5	4	7	6	0	3	20
		20.0%	35.0%	30.0%	0.0%	15.0%	100.0%
Place of birth for the last delivered child	Dispensary	50	13	11	6	24	104
		48.1%	12.5%	10.6%	5.8%	23.1%	100.0%
	Health Center	65	30	22	4	41	162
		40.1%	18.5%	13.6%	2.5%	25.3%	100.0%
	Home	9	3	3	2	2	19
		47.4%	15.8%	15.8%	10.5%	10.5%	100.0%
	Hospital	31	24	19	6	19	99
		31.3%	24.2%	19.2%	6.1%	19.2%	100.0%
If received any antenatal care (ANC) services during the last pregnancy	No	37	1	2	4	0	44
		84.1%	2.3%	4.5%	9.1%	0.0%	100.0%
	Yes	118	69	53	14	86	340
		34.7%	20.3%	15.6%	4.1%	25.3%	100.0%
If provided with learning materials concerning postnatal care services at clinic	No	154	70	55	16	54	349
		44.1%	20.1%	15.8%	4.6%	15.5%	100.0%
	Yes	1	0	0	2	32	35
		2.9%	0.0%	0.0%	5.7%	91.4%	100.0%
Frequency of received antenatal care (ANC) during the last pregnancy	1 visit	32	12	11	0	1	56
		57.1%	21.4%	19.6%	0.0%	1.8%	100.0%
	2 visits	41	9	10	6	1	67
		61.2%	13.4%	14.9%	9.0%	1.5%	100.0%
	3 visits	21	20	11	2	8	62
		33.9%	32.3%	17.7%	3.2%	12.9%	100.0%
	4 or more visits	61	29	23	10	76	199
		30.7%	14.6%	11.6%	5.0%	38.2%	100.0%

The mean prevalence for frequency of PNC visits attended during mother's last delivery across frequency of deliveries, was 65.7% with mothers having more than 5 pregnancies recording a prevalence of 80%. In terms of place of birth for the last delivery, mean prevalence was 58.3% with hospitals having the highest for at least one PNC visit made i.e., 68.7%. Many participants who had attended ANC services had a prevalence of 65.3% for having attended at least one visit for PNC service and of those, 91.4 % were provided with learning materials for PNC service during their 4^{th} or more PNC visit. The prevalence for frequency of PNC visits made during mothers' last deliveries across the ANC visit type was highest in mothers who had attended the fourth ANC visit i.e., 69.4%.

4.3.3 Prevalence distribution of PNC utilization versus reason to attend PNC service.

Table 6: Shows prevalence distribution of PNC utilization versus reason to attend PNC service.

		Frequency of PNC visits attended during mother's last delivery					
		NO	YES				
		0 visit	1 visit	2 visits	3 visits	4 visits or more	Total
	HIV Prevention	2	1	0	0	1	4
		50.0%	25.0%	0.0%	0.0%	25.0%	100.0 %
	Breastfeeding Support	10	1	1	1	11	25
		40.0%	4.0%	4.0%	4.0%	44.0%	100.0 %
	Family planning advice and services	19	6	4	4	13	46
		41.3%	13.0%	8.7%	8.7%	28.3%	100.0 %
	Malaria Prevention	27	0	2	0	8	37
		73.0%	0.0%	5.4%	0.0%	21.6%	100.0 %
	Mental health support for mother	14	0	0	0	0	14
		100.0%	0.0%	0.0%	0.0%	0.0%	100.0 %
	Nutrition counseling	6	1	1	0	0	8
		75.0%	12.5%	12.5%	0.0%	0.0%	100.0 %
	Physical checkup for mother	21	3	5	4	11	44
		47.7%	6.8%	11.4%	9.1%	25.0%	100.0 %
	Vaccination for baby	56	57	42	9	42	206
		27.2%	27.7%	20.4%	4.4%	20.4%	100.0 %

The prevalence for mothers who had attended one or more PNC visit across those seeking for HIV prevention services was 50%, breastfeeding (56%), Family planning advice and services (58.7%), malaria prevention (10%), mental health support for

mother (0%), nutrition counseling (25%), physical check-up for mother (52.3%) and lastly vaccination for baby (72.9%).

4.4 Barriers and Facilitators that influence use of PNC service utilization.

4.4.1 Socio-demographic characteristics as Barriers and facilitators that influence use of PNC services.

4.4.1.1 Bivariate analysis

Table 7: Shows bivariate analysis on socio-demographic characteristics.

		Freq. (n)	P	COR	95% C.I. for COR	
					Lower	Upper
Ward	Ndugumbi	38		1		
	Bunju	188	.000	100.145	20.946	478.813
	Kigogo	121	.020	4.306	1.257	14.751
	Mabwepande	9	.435	2.260	.291	17.524
	Mwananyamala	28	.285	2.158	.527	8.840
Health Facility	Tegeta	108		1		
	Rabininsia	80	.000	.034	.010	.110
Age range	45 years and above	14		1		
	18-24 years	133	.998	.000	0.000	
	25-34 years	166	.998	.000	0.000	
	35-44 years	71	.998	.000	0.000	
Marital Status	Widowed	1		1		
	Divorced	42	1.000	1183761563.075	0.000	
	Married	256	1.000	2042389592.280	0.000	
	Single	85	1.000	7805614444.126	0.000	
Education level	University Education	27		1		
	Non-formal education	2	.922	1.169	.052	26.296
	Primary Education	129	.849	.878	.232	3.331
	Secondary Education	226	.880	1.099	.322	3.750
Occupation	Unemployed	65		1		
	Employed	74	.356	.597	.200	1.783
	Housewife	36	.244	.514	.167	1.576
	Self-Employed	209	.103	.518	.235	1.142
Monthly household income	TZS 200,000 - 300,000	63		1		
	Less than TZS 100,000	145	.006	.296	.125	.702
	More than TZS 300,000	97	.312	1.656	.623	4.402
	TZS 100,000 - 200,000	79	.004	.259	.104	.646

Significant associations were found between wards (Bunju, P=0.000 and Kigogo, P=0.020) and the use of maternal postnatal care services with Bunju ward having higher odds (COR=100.145) of using the services compared to Kigogo (COR=4.306). No significant associations were found between a specific health facility and odds of being visited for postnatal care services. Similarly, there were no significant associations found between age range, marital status, education level and occupation category to the use of maternal postnatal care services.

Women with monthly household incomes between TZS 200,000 and 300,000 (P=0.004; COR=0.259) had significant association with utilization of maternal postnatal care services despite the lower odds compared to those with an income of less than TZS 100,000 (P=0.006, COR=0.296). However, there was no significant difference amongst those with incomes more than TZS 300,000 (P=0.312).

4.4.1.2 Multivariate analysis

Table 8: Shows multivariate analysis on sociodemographic characteristics.

		(n)	P	AOR	95% Confidence Interval for AOR	
					Lower Bound	Upper Bound
Participants	Bunju	188	.000	.010	.002	.048
	Kigogo	121	.020	.232	.068	.796
	Mabwepande	9	.435	.443	.057	3.431
	Mwananyamala	28	.285	.463	.113	1.899
	Ndugumbi	38				
Health Facility	Kigogo Morovian	121				
	Mabwepande	9				
	Magomeni	38				
	Rabininsia	80	.000	29.836	9.122	97.581
	Sisa	28				
	Tegeta	108				
Level of health facility	Dispensary	229				
	Health Center	66				
	Hospital	89				
Ownership	Private	229				
	Public	155				
Age range	18-24 years	133	.984	9455047.193	0.000	
	25-34 years	166	.985	3618225.235	0.000	
	35-44 years	71	.985	2633891.879	0.000	
	45 and above	14				
Marital Status	Divorced/Separated	42	.000	1.168E-07	2.694E-08	5.063E-07
	Married living with partner	256	.000	6.769E-08	2.780E-08	1.648E-07
	Single	85		1.771E-08	1.771E-08	1.771E-08
	Widowed	1				
Education	Non-formal	2	.922	.856	.038	19.248
	Primary School	129	.849	1.138	.300	4.317
	Secondary School	226	.880	.910	.267	3.102
	University/College	27				
Occupation	Employed	74	.356	1.674	.561	4.997
	Housewife	36	.244	1.947	.634	5.974
	Self-employed	209	.103	1.931	.876	4.259
	Unemployed	65				
Monthly household income	Less than TZS 100,000	145	.006	3.378	1.424	8.010
	More than TZS 300,000	97	.312	.604	.227	1.606
	TZS 100,000 - 200,000	79	.004	3.855	1.547	9.604
	TZS 200,000 - 300,000	63				

Significant associations were found betweem (Bunju, P=0.000 and the use of maternal postnatal care services despite having lower odds, AOR=0.010. Similarly, Rabininsia had also a significant association i.e., P=0.000 with highest odds AOR=29.836. There was also significant association in those divorced and married i.e., both P=0.000 despite the fact that the odds were very low. Another significant association was within household income i.e., those with less than TZS 100,000 (P=0.006; AOR=3.378) which though had lower odds compared to participants with incomes of between TZS 100,000 and 200,000 (P=0.004, AOR=3.855). Some categories had missing AOR values, possibly due to insufficient sample size.

4.4.2 Baseline Obstetric Background information characteristics as Barriers and facilitators that influence use of maternal Postnatal care services.

4.4.2.1 Bivariate analysis

Table 9: Shows bivariate analysis on obstetric characteristics.

		(n)	P	COR	95% C.I. for COR	
					Lower	Upper
Frequency of deliveries	More than 5	20		1		
	1 to 2	180	.223	.447	.122	1.633
	3 to 5	184	.215	.441	.121	1.608
Place of Birth	Hospital	99		1		
	Dispensary	104	.911	.962	.483	1.915
	Health Centre	162	.648	.863	.458	1.625
	Home	19	.982	1.014	.297	3.462
Mode of delivery	Normal Vaginal delivery	330		1.000		
	Caesarean section	54	.666	1.187	.545	2.585
Frequency of received ANC services during the pregnancy	4 visits or more	199		1		
	1 visit	56	.011	.409	.205	.815
	2 visits	67	.017	.450	.233	.869
	3 visits	62	.823	.923	.460	1.853
Counseling about postnatal care services during ANC visits	Yes	213		1.000		
	No	171	.000	3.776	2.259	6.311
Provision of learning materials concerning postnatal care services	Yes	35		1.000		
	No	349	.001	.036	.005	.273

Significant association was found between frequency of received ANC services for the participants with one visit, P=0.011 and 2 visits, P= 0.017 despite having lower odds i.e., COR=0.409 and 0.450 respectively. Counseling about postnatal care services during ANC visits also had a significant association, P=0.000 with higher odds COR=3.776 for not utilizing PNC services if done improperly. Similarly, significant association was found between provision of learning materials concerning postnatal care services, P=0.001 those with low odds COR=0.36 for not utilizing PNC services

if not provided. There was no significant association with other categories such as place of birth, mode of delivery.

4.4.2.2 Multivariate analysis

Table 10: Shows multivariate analysis on obstetric characteristics.

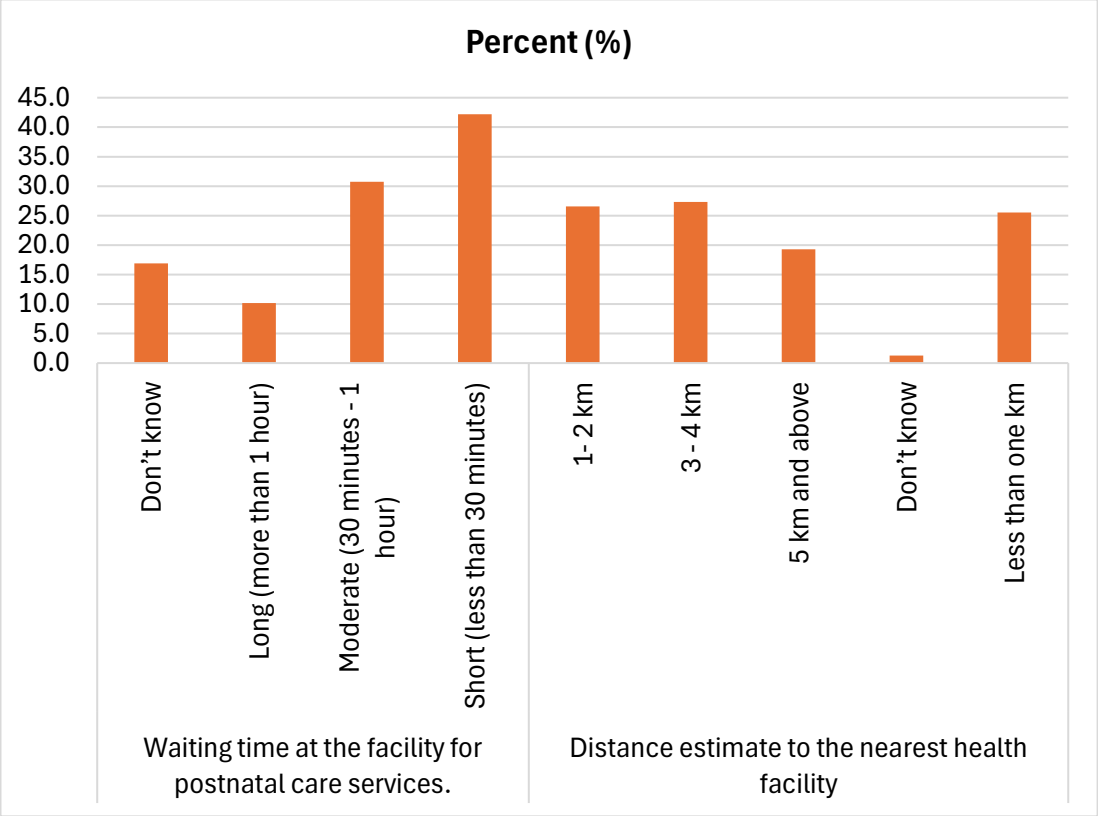
		(n)	P	AOR	95% Confidence Interval for AOR	
					Lower Bound	Upper Bound
Frequency of deliveries	1 to 2	180	.223	2.238	.612	8.180
	3 to 5	184	.215	2.268	.622	8.271
	More than 5	20				
Place of delivery	Dispensary	104	.911	1.040	.522	2.071
	Health Center	162	.648	1.159	.615	2.182
	Home	19	.982	.986	.289	3.364
	Hospital	99				
Mode of delivery	Caesarean section	54	.666	.842	.387	1.834
	Normal vaginal delivery	330				
Frequency of received ANC services	1 visit	56	.011	2.446	1.228	4.875
	2 visits	67	.017	2.222	1.151	4.287
	3 visits	62	.823	1.083	.540	2.173
	4 or more visits	199				
Counselling about PNC services during ANC visits	No	171	.000	.265	.158	.443
	Yes	213				
Provision of learning materials concerning PNC services	No	349	.001	27.908	3.662	212.669
	Yes	35				

Significant associations were only found in counseling about PNC services during ANC visits, P=0.000 and Provision of learning materials concerning PNC services, P=0.001. The odds for not utilizing PNC services were lower if a proper counseling is not done, AOR=0.265 but higher if provision of learning materials concerning PNC services not being given, AOR=27.908.

4.4.3 Other Barriers and facilitators that influence use of PNC services

4.4.3.1 Percentage responses on waiting time and distance to nearest health facility.

Figure 7: Shows % responses on waiting time and distance to nearest health facility.



A significant proportion of women (42.2%) experienced short waiting times (less than 30 minutes) for postnatal care services. However, a considerable number of women (30.7%) still faced moderate waiting times. Notably, 16.9% of women were unsure about the waiting time.

Regarding the distance to the nearest health facility, the data showed that majority of women resided within a 5 km radius. Nevertheless, 19.3% of women live 5 km or more away.

4.4.3.2 Other Barriers and facilitators to utilization of PNC services

4.4.3.2.1 Bivariate analysis

Table 12: Shows bivariate analysis on barriers and facilitators to utilization of maternal PNC service.

		n	P	COR	95% C.I. for COR	
					Lower	Upper
Distance to nearest health facility	Less than 1 km	98	1.000			
	1 -2 km	102	.028	.337	.128	.889
	3-4 km	105	.548	.742	.280	1.964
	5km and above	74	.584	1.376	.440	4.305
	Don't know	5	.973	.961	.099	9.340
Comfortability asking questions	Very satisfied	193	1.000			
	Dissatisfied	4	.599	2.569	.076	86.834
	Neutral	62	.031	6.593	1.190	36.539
	Satisfied	124	.201	1.950	.701	5.421
	Very dissatisfied	1	1.000	.000	0.000	
PNC site cleanliness	Very satisfied	185	1.000			
	Dissatisfied	10	.864	1.344	.046	39.160
	Neutral	48	.463	1.784	.380	8.369
	Satisfied	138	.016	3.777	1.284	11.106
	Very dissatisfied	3	.645	.283	.001	61.288
Availability of transport	Yes	229	1.000			
	No	155	.978	1.010	.509	2.002
Cost of PNC services offered	Medium Cost	75	1.000			
	Don't know	60	.673	.606	.059	6.237
	High cost	15	.109	3.293	.766	14.160
	Free	145	.000	15.675	4.831	50.857
	Low cost	89	.304	1.571	.664	3.715
Waiting time at clinic for PNC service	Short (less than 30 minutes)	162	1.000			
	Don't know	65	.271	3.995	.340	46.917
	Long (more than 1 hour)	39	.250	1.889	.639	5.583
	Moderate (30minutes - 1hr)	118	.585	.785	.329	1.872

There was a significant association between distance to the nearest facility being 1-2 km i.e., P=0.028 though with markedly low odds to PNC service utilization, COR=0.337. Association in terms of comfortability in asking questions on PNC

services at clinics was significantly neutral i.e., P=0.031 which had high odds for PNC service utilization, COR=6.593. Similarly, participants were satisfied with cleanliness of PNC service sites to increasing PNC service utilization i.e., P=0.016; COR=3.777. Free offered PNC services had a significant association with PNC service utilization with high odds i.e., P=0.00; COR=15.675. There was no association in availability of transport and waiting times at the PNC service site.

4.4.3.2.2 Multivariate analysis

Table 11: Shows multivariate analysis on barriers and facilitators to utilization of maternal PNC services.

					95% Confidence Interval for AOR	
		n	P	AOR	Lower Bound	Upper Bound
PNC site cleanliness	Dissatisfied	10	.864	.744	.026	21.691
	Neutral	48	.463	.560	.119	2.629
	Satisfied	138	.016	.265	.090	.779
	Very dissatisfied	3	.645	3.536	.016	766.461
	Very satisfied	185				
Comfortability asking questions	Dissatisfied	4	.599	.389	.012	13.159
	Neutral	62	.031	.152	.027	.841
	Satisfied	124	.201	.513	.184	1.426
	Very dissatisfied	1		321204837.837	321204837.837	321204837.837
	Very satisfied	102				
Distance to nearest health facility	1- 2 km	102	.028	2.970	1.125	7.837
	3 - 4 km	105	.548	1.348	.509	3.569
	5 km and above	74	.584	.727	.232	2.275
	Don't know	5	.973	1.041	.107	10.113
	Less than one km	98				
Availability of transport	No	155	.978	.990	.499	1.964
	Yes (reliable access to public transport)	229				
Cost of PNC services offered	Don't know	60	.673	1.651	.160	17.005
	High cost	15	.109	.304	.071	1.306
	Free	145	.000	.064	.020	.207
	Low cost	89	.304	.637	.269	1.506
	Medium cost	75				
Waiting time at clinic for PNC service	Don't know	65	.271	.250	.021	2.940
	Long (more than 1 hour)	39	.250	.529	.179	1.564
	Moderate (30 minutes - 1 hour)	118	.585	1.275	.534	3.042
	Short (less than 30 minutes)	162				

There was a significant association between distance to the nearest facility being 1-2 km i.e., P=0.028 though with markedly higher odds to PNC service utilization, AOR=2.970. Association in terms of comfortability in asking questions on PNC services at clinics was significantly neutral i.e., P=0.031 which had low odds for PNC service utilization, AOR=0.152. Similarly, there was association between satisfaction with cleanliness of PNC service sites to PNC service utilization i.e., P=0.016 despite the low odds i.e., AOR=0.265. Free offered PNC services had a significant association with PNC service utilization with low odds i.e., P=0.000; AOR=0.064. There was no association in availability of transport and waiting times at the PNC service site.

Interpretations

Crude Odds Ratio: This represents the unadjusted association between an exposure (e.g., a demographic factor, health condition, or other variable) and the outcome of health service utilization**.**

COR = 0.337 shows that initially (unadjusted), the exposure might be negatively associated with health service utilization.

Adjusted Odds Ratio: This represents the association between the exposure and the outcome after controlling for other potential confounding variables (like age, income, education level, etc.)

AOR () = 2.970 indicates that after adjusting for confounding factors, the exposure is positively associated with health service utilization, suggesting that the initial crude association was potentially influenced by other variables not accounted for in the COR.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussions

5.1.1 Prevalence of utilization of postnatal health services among women attending postnatal clinics

The study found that the overall prevalence of maternal postnatal care service utilization among postpartum women in Kinondoni Municipal Council-Tanzania was 40.5%. This rate was relatively low compared to the national average of 51% reported in the 2022 TDHS-MIS (TDHS-MIS, 2022). However, it was important to note that the study focused on women in the late phase of the postpartum period (6 weeks to 6 months), which may contribute to a lower utilization rate compared to earlier timeframes. Majority of women (95.1%) delivered their last child at a health facility, only 41.4% attended at least two postnatal care (PNC) visits. This suggested a significant gap between the delivery location and postnatal care utilization. These findings aligned with previous research conducted in Tanzania, which reported low PNC attendance rates (Lweramila et al., 2022).

5.1.2 Barriers and facilitators that influence the use of maternal postnatal care services utilization among women attending postnatal clinic.

In terms of sociodemographic factors, while the mean prevalence across age groups was 59.7%, younger women aged 18-24 years had the lowest utilization (13.3%). This aligned with findings from Hailu et al. (2014), who reported that younger women were less likely to attend PNC services. To add on women with higher incomes (TZS

200,000-300,000) had higher odds of attending PNC services (AOR=3.855), suggesting that financial constraints may be a barrier to utilization. This aligns with previous research highlighting the economic burden of healthcare access in Tanzania (TDHS, 2022).

In terms of Obstetric background factors women who attended more ANC visits were more likely to utilize PNC services (65.3%). This aligned with previous research suggesting that ANC attendance can be a predictor of PNC utilization (Konje et al., 2021). Proper counseling and provision of learning materials during ANC visits were significant facilitators of PNC utilization (AOR=3.776 and 27.908, respectively). This emphasized the importance of educating women about the benefits of PNC after pregnancy.

To add on, while a majority of women lived within a 5 km radius of health facilities, those living 1-2 km away had significantly higher odds of utilizing PNC services (AOR=2.970). This highlighted the importance of accessibility in influencing health service utilization. A significant proportion (42.2%) experienced short waiting times; moderate waiting times (30.7%) remained a challenge for some women. This aligned with previous research highlighting waiting times as a barrier to health service utilization (Ojendal et al., 2023).

5.2 Limitations

This cross-sectional study, while providing valuable insights into the determinants of maternal postnatal care service utilization in Kinondoni Municipal Council, it was subject to certain limitations. Firstly, the cross-sectional design limited the ability to

establish causality between variables. This meant that while significant associations were identified, it could not definitively be concluded that these factors directly caused or prevented PNC service utilization. To address this, future longitudinal studies could explore the temporal sequence of events to strengthen causal inferences. Secondly, the study relied on self-reported data, which may have introduced recall bias. Participants may have had difficulty in accurately remembering past events, potentially leading to inaccuracies in their responses. To mitigate this, efforts were made to use clear and concise survey questions, and to provide reminders or prompts to aid recall. Additionally, the use of independent researchers to review the data helped identify any inconsistencies or biases in the reporting.

Thirdly, the sample size, while adequate for detecting significant associations, may have not been large enough to generalize the findings to the entire population of Kinondoni Municipal Council. Future studies with larger sample sizes could enhance the generalizability of the results.

Finally, the study focused on postnatal care services provided at health facilities. While this is a crucial aspect of maternal health, it is important to note that some women may seek care from traditional birth attendants or community health workers. Future research could explore the factors influencing PNC utilization in these settings as well. Despite these limitations, the study provides valuable insights into the determinants of maternal postnatal care service utilization in Kinondoni Municipal Council. The findings can inform targeted interventions to improve access and utilization of these essential services, ultimately contributing to better maternal and child health outcomes.

5.3 Conclusions

This study aimed to investigate the determinants of maternal postnatal care service utilization among postpartum women attending health facilities in Kinondoni Municipal Council, Dar es Salaam, Tanzania. The cross-sectional study design involved 384 postpartum women who were 6 weeks to 6 months postpartum and found that while most women (95.1%) delivered their last child at a health facility, the prevalence of maternal postnatal care service utilization was still suboptimal. Only 40.5% of women attended at least one PNC visit within two days of birth. The most common reasons for attending PNC visits were for vaccinations (72.9%), breastfeeding support (56%), and family planning advice (58.7%).

Several factors were identified as influencing PNC service utilization. Sociodemographic characteristics, such as residence in specific wards (Bunju, Kigogo), marital status (divorced, married), and income levels (less than TZS 100,000) were associated with higher odds of PNC utilization. Obstetric background characteristics, including proper counseling and provision of learning materials on PNC during ANC visits, were also significant determinants. Additionally, factors related to access and service quality, such as distance to the nearest health facility, waiting times, and the comfort of healthcare providers, played a role in PNC utilization. Based on these findings, strategies to improve PNC service utilization in Kinondoni Municipal Council should focus on increasing awareness and knowledge about PNC services, especially among women in specific wards and those with lower socioeconomic status. Enhancing access to PNC services by reducing waiting times, improving the quality of care provided, and ensuring adequate counseling and education during ANC visits are also crucial. Furthermore, targeted interventions are needed to address the specific

barriers faced by women in different sociodemographic groups.

In conclusion, this study highlighted the importance of addressing multiple factors to improve maternal postnatal care service utilization in Kinondoni Municipal Council. By implementing comprehensive strategies that address both sociodemographic and health system-related barriers, the goal of reducing maternal morbidity and mortality can be achieved. Further research is needed to explore the long-term impact of these interventions on maternal and child health outcomes.

5.4 Recommendations

Based on the findings of this study, the following recommendations are proposed to improve maternal postnatal care service utilization in Kinondoni Municipal Council:

i. Targeted Community Mobilization and Awareness Campaigns:

Implement community-based interventions to increase awareness about the importance of postnatal care, especially in areas like Kigogo where utilization is lower (P=0.020, COR=4.306). Also focus on dispelling myths and misconceptions about postnatal care services.

ii. Enhance the Quality of Antenatal Care:

Strengthen the role of antenatal care in promoting postnatal care by ensuring that all pregnant women receive comprehensive counseling on the importance of postnatal visits (P=0.000, COR=3.776). Also providing women with educational materials on postnatal care during antenatal visits (P=0.001, COR=0.36).

iii. Improve Accessibility to Postnatal Care Services:

Reduce waiting times at health facilities (42.2% of women experienced short waiting times, while 30.7% faced moderate waiting times). Also, increase the availability of

free postnatal care services (P=0.000, COR=15.675) while improving the physical infrastructure of health facilities, particularly in terms of cleanliness and comfort (P=0.016, COR=3.777) and enhancing transportation options for women, especially those living in remote areas.

iv. Socioeconomic Interventions:

Implement targeted interventions to improve the socioeconomic status of women, particularly those with low incomes (less than TZS 100,000 per month, P=0.006, COR=0.296) while exploring options for reducing the cost of postnatal care services.

v. Capacity Building for Healthcare Providers:

Provide training of health care providers across the continuum of care for maternal, newborn, child and adolescent health in light of advances and changes in Guidelines – eight antenatal contacts/visits and four postnatal contacts/visits for positive experience. Incorporate postnatal care counselling during antenatal care before childbirth and provide educational materials on postnatal care.

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APPENDICES

Questionnaire (English version)

Introduction

We appreciate your participation in this research project. The purpose of this questionnaire is to identify the variables that affect mothers in Kinondoni Municipal Council's utilization of postnatal care services. Your answers are private and will only be utilized for research.

Questionnaire Number…….

Date of Interview…….

Name of Interviewer (Optional) ……

District……..

Ward…….

Health facility ……

PART 1

Part A. SOCIODEMOGRAPHIC INFORMATION OF THE PARTICIPANT(S)

1. How old are you?
a) 18-24 years c) 35-44 years
b) 25-34 years d) 45 and above

2. Please **encircle** your current marital status.
a) Single c)Divorced/separated
b) Married living with partner d)Widowed

3. What is your highest education level completed?
a) Non-formal c)Secondary school
b) Primary School d)University/college
4)Other specify

4. Please **encircle** your current occupation status.
a) Employed c)Unemployed
b) Self-employed d)Housewife e)Other specify

5. Monthly Household Income:
a) Less than TZS 100,000 c) TZS 200,000 - 300,000
b) TZS 100,000 - 200,000 d) More than TZS 300,000

B: OBSTETRIC BACKGROUND OF PARTICIPANT(s)

6. How many times have you had delivery?

a) 1 to 2 b) 3 to 5 c) More than 5

7. Where did you deliver your last child?

a) Hospital b) Health Center

c) Dispensary d) Home

e) Other specify

8. What was your mode of delivery of your current baby?

a) Normal vaginal delivery

b) Caesarean section

c) Instrument vaginal delivery

9. Did you receive any antenatal care (ANC) services during your last pregnancy?

a) Yes b) No

10. How many times did you receive antenatal care (ANC) during the last pregnancy of your young child?

a) 1 visit

b) 2 visits

c) 3 visits

d) 4 or more visits

11. Were you counseled about postnatal care services during ANC visits?

a) Yes b) No

12. At the clinic, were you provided with learning materials concerning postnatal care services?

a) Yes b) No

PART II: KNOWLEDGE AND ATTITUDES

A. KNOWLEDGE TOWARD POSTNATAL CARE

13. Did you attend any postnatal care (PNC) visits at a health facility after delivery of your last child?

a) Yes

b) No

14. If yes, how many PNC visit did you attend?

a. 1 visit

b. 2 visits

c. 3 visits

d. 4 or more visits

15. The following is the timing of postnatal care services to mothers after birth

i. The first visit should be done immediately within the first 24 h after birth

a) Yes b) No

ii. Second visit: 48 – 72 h post-delivery

a) Yes b) No

iii. The third PNC visit should be done at the 28th day after birth

a) Yes b) No

iv. The fourth PNC visit should be done 6 weeks after birth

a) Yes b) No

16. Which of the following was the reason(s) for you to attended PNC services

a. Physical checkup for mother
b. Mental health support for mother
c. Vaccination for baby

d. Breastfeeding Support
e. Family planning advice and services
f. Nutrition counseling
g. HIV and Malaria Prevention Other
(Specify): _____

17. Which of the following PNC services does the mother receive immediately after birth within24 hours?

a. Assessed for vaginal bleeding
b. Assessed for vital signs: Temperature, Pulse rate, Blood pressure
c. Assessed for urine output and amount
d. Assessed for fundal height

18. The following are postnatal danger signs to the mother

a. Fever
b. Foul-smelling vaginal discharge
c. Excessive bleeding
d. Severe abdominal pain
e. Painful engorged breast

B. ATTITUDE TOWARDS POSTNATAL CARE

Key	***5***	***4***	***3***	***2***	***1***
	Strongly agree	***Agree***	***Undecided***	***Disagree***	***Strongly disagree***

19. To what extent do you agree on the following influence on postnatal care service utilization?

		5	4	3	2	1
		Strongly agree	***Agree***	***Un decided***	***Disagree***	***Strongly disagree***
a	Postnatal care is Important for my baby's health					
b	Postnatal care is important for my own physical recovery.					
c	Postnatal care can help identify and address any postpartum problems.					
d	Postnatal care can provide emotional support and advice for new for new mothers					

PART III: ACCESS AND POSTNATAL CARE SERVICES FACTORS

A. ACCESS AND SERVICE FACTORS

20. What factors encouraged you to attend a PNC visit at the health facility? (select all that apply)

a. Recommendation from a healthcare provider
b. Awareness of the importance of PNC for mother and baby
c. Encouragement from family or friends
d. Availability of childcare during visits
e. Positive past experiences with PNC

21. Estimate the distance to the nearest health facility (distance in kilometers)

a. Less than one km
b. 1- 2 km
c. 3-4 km
d. 5 km and above

22. Availability of transportation from home to health facility

a. Yes (reliable access to car/public transport)
b. No

23. Cost of services cost of postnatal care services at the facility

a. It is free
b. Low coast
c. medium cost
d. High cost

24. Waiting times at the facility: Measured by perceived or reported average waiting time forpostnatal care services.

a. Short (less than 30 minutes),

b. Moderate (30 minutes - 1 hour)
c. Long (more than 1 hour)

B. Quality of care at the facility

25. How satisfied were you with the availability of PNC services at the health facility?

		5	4	3	2	1
		Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
a	The health care providers were knowledgeable and helpful.					
b	The clinic was clean and well-equipped.					
c	I felt comfortable asking questions and discussing myconcerns.					
d	I received all the information andsupport I needed during my postnatal visits					

PART IV: CONSENT (ENGLISH VERSION)

I am Edith Manase Mboga, a student at the Kairuki University, pursuing a Master of Science in Public Health working on research that seeks to investigate the determinants of maternal postnatal care service utilization at Health Facilities among Post-partum women at Kinondoni Municipal Council-Dar Es Salaam. Tanzania.

The postnatal period is six weeks following the delivery of a baby. This period represents a critical phase in determining the health and survival of the mother. Low maternal postnatal careservice utilization among postpartum women is a critical public health concern, especially in Sub-Saharan Africa with high maternal mortality rates, as well as in Tanzania. This study will address this gap by investigating the determinants of maternal postnatal care service use at health facilities in Kinondoni Municipal Council. It will determine the prevalence, identify barriers, facilitators, and identify strategies for improvement.

If you agree to participate, you will be asked to complete a questionnaire. Your participation will take approximately 30minutes.

There are no anticipated risks associated with participating in this study. All information collected during this study will be kept confidential. Your identity will not be disclosed in any reports or publications.Your participation in this study is entirely voluntary. You have the right to refuse to participate or to withdraw from the study at any time without penalty.

If you have any questions about the study, please contact :

Principal Investigator: Edith Manase Mboga

Email. mbogaedith@yahoo.com **Phone no:** 0754899972

I have read and understood the information provided above. I voluntarily agree to participate inthis study.

Participant's Signature

Date

Investigator's Signature

Date

Appendix 2: Questionnaire (Swahili version)

Utangulizi; Karibu kushiriki katika kuboresha huduma ya afya ya uzazi baada ya kujifungua. Madhumuni ya dodosohili ni kubainisha vigezo vinavyoathiri akina mama katika utumiaji wa huduma za afya baada ya kujifungua katika Halmashauri ya Manispaa ya Kinondoni. Majibu yako ni ya faragha na usiri yatatumika kwa utafiti pekee. Nambari ya mhojaji……..

Tarehe ya Mahojiano……..

Wilaya ……..

Kata…….

Kituo cha afya ……

SEHEMU YA I: 1. TABIA ZA KIJAMII

A. MAELEZO YA KIJAMII YA MSHIRIKI

1. Una umri gani? Weka alama ya tiki kwenye umri wako.

a) Miaka 18-24 c) Miaka 35-44

b) Miaka 25-34 d) 45 na zaidi

2. Tafadhali zungushia hali yako ya sasa ya ndoa?

a) Kuishi na ndoa na mwenzi b) Sijawahi kuolewa

c) Kuachwa/Kutengana d) Mjane

3. Je! ni kiwango gani cha juu cha elimu umehitimu?

a) Isiyo rasmi b) Shule ya Msingi

c) Shule ya Sekondari d) Elimu ya kati e) Chuo Kikuu/Chuo

4. Tafadhali zungushia hali yako ya sasa ya kazi?

a) Kuajiriwa c) Kukosa ajira

b) Kujiajiri d) Mama wa nyumbani e) Nyingine .....

5. Mapato ya Kila Mwezi ya Kaya:

a) Chini ya TZS 100,000 c) TZS 200,000 - 300,000

b) TZS 100,000 - 200,000 d) Zaidi ya TZS 300,000

B: USAILI WA MASWALA YA AFYA YA UZAZI

6. Je, umejifungua mara ngapi?

a) 1 hadi 2 b) 3 hadi 5 c) Zaidi ya 5

7. Ulijifungulia wapi mtoto wako wa mwisho?

b) Hospitali b) Kituo cha Afya

c) Zahanati d) Nyumbani

d) Nyingine ……..

8. Njia yako ya kujifungua mtoto wako wa sasa ilikuwa ipi?

a. Kujifungua kwa njia ya kawaida b) Kujifungua kwa njia ya upasuaji

c) Kujifungua kwa kutumia chombo ukeni

9. Je, ulipokea huduma zozote za utunzaji katika ujauzito (ANC) wakati wa ujauzito wako wa mwisho?

b. Ndiyo b) Hapana

10. Ni mara ngapi ulipokea huduma muhimu wakati wa ujauzito (ANC) wakati wa ujauzito uliotangulia kwa mtoto wako mdogo?

a) Hudhurio moja (1) b) Mahudhurio mawili (2)

c) Mahudhurio matatu (3) d) Mahudhurio (4) au zaidi

11. Je, ulishauriwa kuhusu huduma za umuhimu baada ya kujifungua (PNC) wakatiwa ziara za ya huduma muhimu wakati wa ujauzito (ANC) ?

a) Ndiyo b) Hapana

12. Je, ulipewa vifaa vya kujifunzia (vipeperushi) katika kliniki kuhusu umuhimu wa huduma baada ya kujifungua (PNC)?

a) Ndiyo b) Hapana

SEHEMU YA PILI: UJUZI NA MITAZAMO

A. MAARIFA KUELEKEA HUDUMA YA BAADA YA KUJIFUNGUA (PNC)

13. Je, ulihudhuria ziara zozote za huduma muhimu baada ya kujifungua (PNC) kwenye kituo cha afya baada ya kujifungua mtoto wako wa mwisho?

a) Ndiyo b) Hapana

14. Je, ulihudhuria ziara ngapi za huduma muhimu baada ya kujifungua (PNC)?

a) Hudhurio moja (1) b) Mahudhurio mawili (2)

c) Mahudhurio matatu (3) d) Mahudhurio manne (4) au zaidi….

15. Ni ipi kati ya zifuatazo ilikuwa sababu ya wewe kuhudhuria huduma baada ya kujifungua?

a) Uchunguzi wa kimwili kwa afya ya Mama

b) Msaada wa afya ya akili kwa Mama

c) Chanjo kwa Mtoto/Mama

d) Msaada wa Kunyonyesha

e) Ushauri na huduma za uzazi wa Mpango

f) Ushauri wa lishe

g) Ushauri na upimaji VVU na Kuzuia Malaria

Nyingine (Ainisha): .....

16. Ni huduma zipi kati ya zifuatazo za umuhimu baada ya kujifungua (PNC) ambazo Mama hupokea mara baada ya kujifungua ndani ya saa 24?

a) Kupimwa kwa kutokwa na damu ukeni

b) Kupimwa kwa ishara muhimu: Joto, Kiwango cha Mapigo, Shinikizo la Damu

c) Kupimwa kwa kiasi cha mkojo na kiasi cha wingi wa damu

d) Kupimwa kwa urefu wa fandasi

17. Zifuatazo ni dalili za hatari kwa mama baada ya kujifungua

a) Homa kali

b) Kutokwa na uchafu ukeni/Majimaji yenye harufu

c) Kutokwa na damu nyingi mara baada ya kujifungua

d) Maumivu makali ya kichwa

e) Maumivu makali ya tumbo

f) Maumivu makali kwenye matit

B. MTAZAMO KUELEKEA HUDUMA BAADA YA KUJIFUNGUA

18. Je, umeorodhesha yafuatayo kwa kiwango gani katika matumizi wa hudumaya muhimubaada ya kujifungua?

		5	4	3	2	1
		Ni muhimu sana	Ni muhimu	Sijui	Siyo muhimu	Siyo muhimu kabisa
a	Huduma baada ya kujifungua ni muhimu kwa afya ya mama.					
b	Huduma baada ya kujifungua ni muhimu kwa kupona kwangu kimwili.					
c	Huduma muhimu baada ya kujifungua ni muhimu kwa sababu kunaweza kusaidia kutambua na kushughulikiamatatizo yoyote ya baada ya kujifungua.					
d	Huduma muhimu baada Ya kujifungua ni muhimu kutoa usaidizi wa kihisia naushauri kwa mama wachanga.					

SEHEMU TATU: UPATIKANAJI WA HUDUMA ZA AFYA MARA BAADA YA KUJIFUNGUA

A. MAMBO YA KUZINGATIA

19. Ni mambo gani muhimu yalikuhimiza kuhudhuria ziara ya (huduma mara baadaya kujifungua) PNC kwenye kituo cha afya?

a) Mapendekezo kutoka kwa mtoa huduma ya afya

b) Ufahamu wa umuhimu wa PNC kwa mama na mtoto

c) Kutiwa moyo na familia au marafiki

d) Upatikanaji wa huduma ya watoto wakati wa ziara

e) Uzoefu wa muda mrefu

20. Kadiria umbali kutoka nyumbani hadi kituo cha afya kilicho karibu (umbali wakilomita)

a) Chini ya kilomita moja b) Kilomita 1-2

d) kilomita 3 hadi 4 c) kilomita 5 na zaidi

21. Uwepo wa usafiri kutoka nyumbani hadi kituo cha afya

a) Ndiyo (ufikiaji wa kuaminika wa gari/usafiri wa umma)

B) Hapana

22. Gharama ya huduma za afya mara baada ya kujifungua kwenyekituo cha kutolea huduma za afya?

a) Ni bila malipo b) Gharama ya chini/uchangiaji (cost sharing)

c) gharama ya kati d) Gharama kubwa

23. Muda wa kusubiri kwenye kituo: Hupimwa kwa muda unaofahamika au ulioripotiwa wa kusubiri kwa huduma za utunzaji baada ya kuzaa.

a) Mfupi (chini ya dakika 30),

b) Wastani (dakika 30 - saa 1)

c) Muda mrefu (zaidi ya saa 1)

B.

C.

D.

E.

F.

G.

H.

I.

J.

K.

L.

M.

N.

O.

P.

Q. UBORA WA HUDUMA KATIKA KITUO CHA KUTOLA HUDUMA ZA AFYA

24. Umeridhishwa kwa kiasi gani na upatikanaji wa huduma za mara baada yakujifungua (PNC)kwenye kituo chako cha afya?

		5	**4**	**3**	**2**	**1**
	Huduma	**Nimeridhika sana**	**Nimeridhika kiasi**	**Siko upande wowote**	**Sijaridhika**	**Sijaridhika kabisa**
a	Unaridhika nawahudumu wa afya kuwana ujuzi na msaada kwako?					
b	Unaridhika na usafi wa Kliniki navifaa vyake vilikuwa vya kutosha.					
c	Unaridhika na kujisikia vizuri kuuliza maswali na kujadili wasiwasi wako.					
d	Unaridhika na upokeaji wa taarifa na usaidizi wote uliohitaji wakati wa ziara za huduma mara baada ya kujifungua.					

Asante kwa ushirikiano

SEHEMU YA 4: CONSENT FORM (SWAHILI VERSION)

Mimi ni Edith Manase Mboga, Mwanafunzi wa Chuo Kikuu cha Kairuki, Mikocheni Dar-es- Salaam, ninasoma Shahada ya Uzamili ya Sayansi ya Afya ya Jamii nikifanya tafiti yenye nia ya kuchunguza viashiria vya matumizi ya huduma ya uzazi baada ya kujifungua katika Vituo vya Afya miongoni mwa wanawake waliojifungua katika Halmashauri ya Manispaa ya Kinondoni-Dar Es Salaam.

Kipindi cha baada ya kujifungua ni wiki sita baada ya kujifungua. Kipindi hiki kinawakilisha awamu muhimu katika kuamua afya na maisha ya mama. Matumizi madogo wa huduma ya uzazi baada ya kujifungua miongoni mwa wanawake baada ya kujifungua ni tatizo kubwa la afya ya Mama, hasa katika Afrika Kusini mwa Jangwa la Sahara yenye viwango vya juu vya vifo vya uzazi na pia nchini Tanzania. Utafiti huu utashughulikia pengo hili kwa kuchunguza viashiria vya matumizi ya huduma ya uzazi baada ya kujifungua katika vituo vya afya katika Halmashauriya Manispaa ya Kinondoni. Itabainisha kiwango cha mapungufu, itabainisha vikwazo na wawezeshaji, na kubainisha mikakati ya kuboresha.

Ukikubali kushiriki, utaulizwa maswali ambayo utatumia takribani dakika 30 tu kujibu. Hakunaathari zozote pia kwenye tafiti hii.

Taarifa zozote zitazokusanywa zitatunzwa kwa usiri mkubwa na wala ata majina yako hayatotokea kwenye chapisho zozote.

Ushiriki wako katika tafiti hii ni wa hiari kabisa. Una haki zote za kukataa kushiriki na wala hakutokuwa na adhabu yoyote.

Kama unayo maswali yoyote, Tafadhali wasiliana na.

Mtafiti Mkuu: Edith Manase Mboga

Anwani. mbogaedith@yahoo.com Simu: 0754899972

Nimesoma vyema nakuelewa na ninakubali kushiriki katika utafiti huu kwa hiari kabisa.

Sahihi ya mshiriki

Tarehe

Sahihi ya mtafiti

Tarehe

Appendices 3

Research Clearance from Kairuki University

KAIRUKI UNIVERSITY (KU)

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

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

Ref. No. KU/IREC/27.10/456 **1st July 2024**

Dr. Edith Manase Mboga,
Kairuki University,
Box 65300,
Dar es Salaam, Tanzania.

RE: ETHICAL CLEARANCE CERTIFICATE FOR CONDUCTING HEALTH RESEARCH.

I am pleased to inform you that the research titled: **Determinants of Maternal Postnatal Care Service Utilization at Health Facilities in Kinondoni Municipal Council, A Cross-Sectional Study (Mboga E. M., 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 a 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:

DIRECTOR POSTGRADUATE STUDIES AND RESEARCH INSTITUTE KAIRUKI MEMORIAL UNIVERSITY P. O. Box 65300 DSM

SECRETARY

Name: Prof. Columba Mbekenga

Signature:

Research permit from Kairuki University

KAIRUKI UNIVERSITY (KU)

70 Chwaku Street
Regent Estate – Mikocheni
P.O. Box 65300,
Dar es Salaam
Tanzania

Tel: +255-22-2700021/4
Email: secvc@ku.ac.tz
Website: www.ku.ac.tz

REF: KU/PT/30.5/485

9th July 2024

District Medical Officer,
Kiondoni Municipal,
Dar es Salaam.

Re: Letter of introduction Dr. EDITH MANASE MBOGA (MScPH – Public Health)

The above named is a MScPH postgraduate student taking Master of Science in Public Health. As part of fulfilling her master's degree programme, she plans to undertake a study titled **"DETERMINANTS OF MATERNAL POSTNATAL CARE SERVICES UTILIZATION AT HEALTH FACILITIES IN KINONDONI MUNICIPAL COUNCIL, A CROSS-SECTIONAL STUDY".**

This study was reviewed and has been granted with an ethics approval No. **KU/IREC/27.10/456** by the KU Institutional Research Ethics Committee that will be valid for one year with effect from 1st July 2024.

This letter serves to introduce **Dr. EDITH MANASE MBOGA** who will be conducting her study in Dar es Salaam, please accord her with the needed support.
Thank you for your support and cooperation in developing human resources for health in our country.

Regards,

KAIRUKI UNIVERSITY
P. O. Box 65300
Dar es Salaam

Professor Columba Mbekenga, PhD
Director Postgraduate Studies & Research Institute

c. c. Prof. Titus Kabalimu, Chairperson, School of Public Health, KU.

General Contact:
Email: info@ku.ac.tz
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Academic:
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Research permit from District Medical Officer

JAMHURI YA MUUNGANO WA TANZANIA

OFISI YA RAIS,
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

HALMASHAURI YA MANISPAA YA KINONDONI

Unapojibu tafadhali taja:

Kumb. Na. HB.345/520/01 15 Julai, 2024

Mganga Mfawidhi

Kituo cha Afya Magomeni

Tegeta Dispensary

Rabininsia Hospital

Kituo cha Afya Sisa

Zahanati ya Kigogo Morovian

YAH: KIBALI CHA KUFANYA UTAFITI KATIKA KITUO CHA KUTOLEA HUDUMA CHA AFYA CHA SERIKALI KATIKA MANISPAA YA KINONDONI

Tafadhali rejea somo tajwa hapo juu.

2. Ofisi ya Mganga Mkuu wa Manispaa ya Kinondoni inapenda kumtambulisha kwako mtafiti **Editha Manase Mboga** ambaye anafanya utafiti Kuhusu **"Determinants of Maternal postinal care Services Utilization at Health Facilities in Kinondoni Council, A cross – Sectional study"** amepewa kibali cha kufanya utafiti katika Kituo chako.

4. Utafiti utafanyika kuanzia tarehe **15/07/2024 hadi 8/09/2024**.

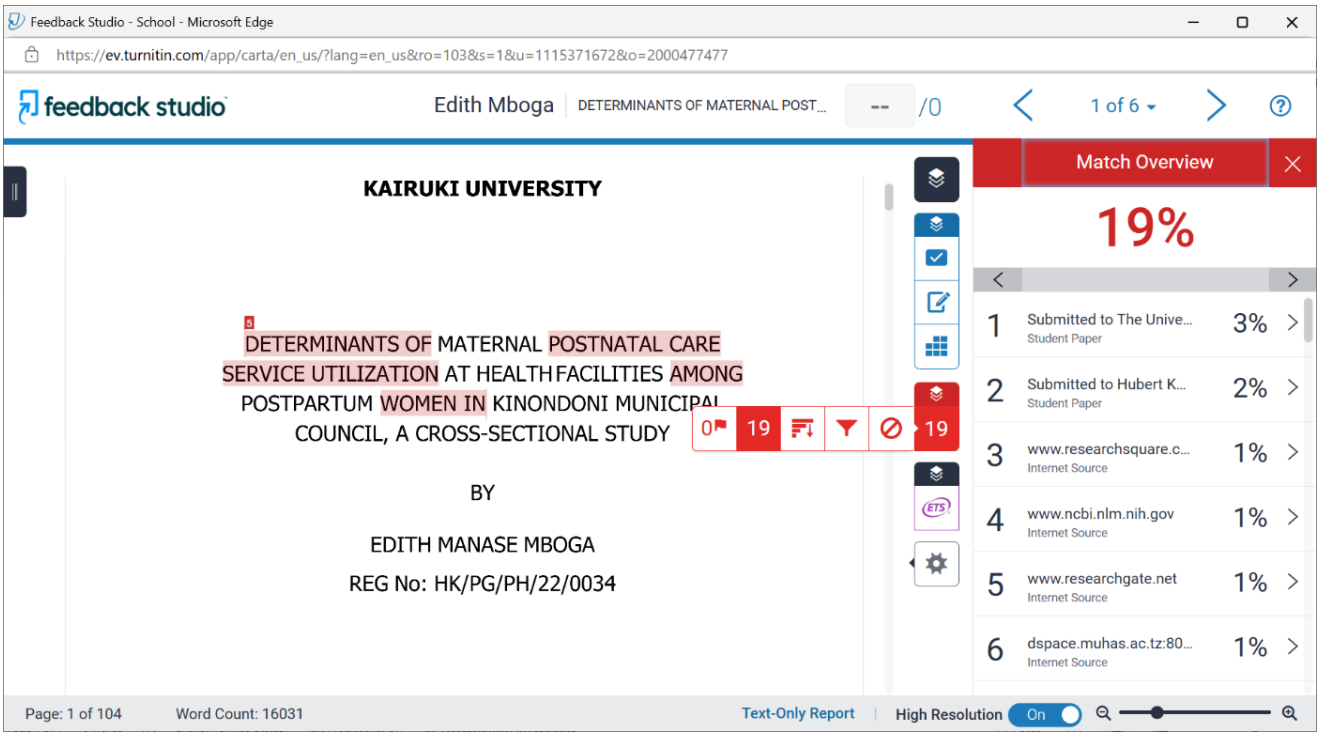
5. Kwa barua hii unaombwa kutoa ushirikiano kwa Mtafiti huyo ili kumuwezesha kukamilisha jukumu hilo kikamilifu na kwa wakati.

Nawasilisha.

Kny:MGANGA MKUU WA MANISPAA
HALMASHAURI YA MANISPAA YA KINONDONI

Dkt. Ezra Ngereza
Kny: MGANGA MKUU WA MANISPAA

Barua zote zitumwe kwa Mkurugenzi wa Manispaa Manispaa ya Kinondoni, S.L.P. 31902, 2 Barabara ya Morogoro, 14883 Dar es Salaam,
Unaweza pia kuwasiliana nasi kwa Simu: +255 2170173 Nukushi: 2172606, Barua pepe – info@kinondonimc.go.tz


Feedback Studio - School - Microsoft Edge
https://ev.turnitin.com/app/carta/en_us/?lang=en_us&ro=103&s=1&u=1115371672&o=2000477477
feedback studio
Edith Mboga
DETERMINANTS OF MATERNAL POST...
-- /0
1 of 6
KAIRUKI UNIVERSITY
DETERMINANTS OF MATERNAL POSTNATAL CARE SERVICE UTILIZATION AT HEALTH FACILITIES AMONG POSTPARTUM WOMEN IN KINONDONI MUNICIPAL COUNCIL, A CROSS-SECTIONAL STUDY
0 19 19
BY
EDITH MANASE MBOGA
REG No: HK/PG/PH/22/0034
Match Overview
19%
1 Submitted to The Unive... 3%
Student Paper
2 Submitted to Hubert K... 2%
Student Paper
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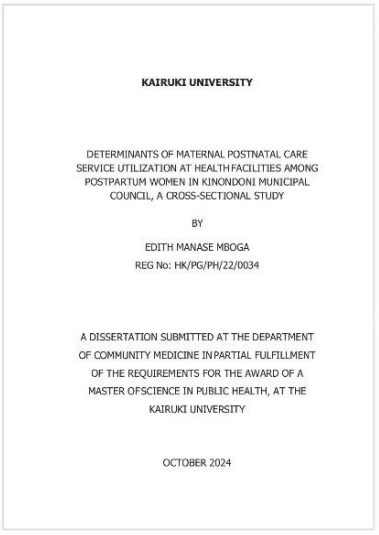

KAIRUKI UNIVERSITY

DETERMINANTS OF MATERNAL POSTNATAL CARE SERVICE UTILIZATION AT HEALTH FACILITIES AMONG POSTPARTUM WOMEN IN KINONDONI MUNICIPAL COUNCIL, A CROSS-SECTIONAL STUDY

BY

EDITH MANASE MBOGA

REG No: HK/PG/PH/22/0034

A DISSERTATION SUBMITTED AT THE DEPARTMENT OF COMMUNITY MEDICINE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A MASTER OF SCIENCE IN PUBLIC HEALTH, AT THE KAIRUKI UNIVERSITY

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