PREVALENCE AND FACTORS ASSOCIATED WITH MATERNAL NEAR MISS AMONG MOTHER ATTENDING KAWEMPE NATIONAL REFERRAL HOSPITAL

BY

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MARCH, 2024

DECLARATION

I BONABANA EDITOR, hereby declare that this dissertation "**Prevalence and factors associated with maternal near miss among mother attending Kawempe national referral hospital"** is my original work and has not been submitted to any other institution for an academic award to the best of my knowledge.

Signature:…… Date:…….

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APPROVAL

I hereby accept this report authored by Bonabana Editor, titled **"Prevalence and factors associated with maternal near miss among mother attending Kawempe national referral hospital"** and approve it for submission to the Department of Nursing of King Ceasor University



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DEDICATION

I dedicate this study to my family that has persevered with me in all these times of my studies at KCU. Special dedication to my Parents and my children Agaba, Serena, and Olivia, Your unwavering dedication and support to me is unforgettable.

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LIST OF ABBREVIATIONS

ANC	Antenatal care
MNM	Maternal near-miss
MOH	Ministry of Health
PLTCs	Potentially Life-Threatening Conditions
UK	United Kingdom
WHO	World Health Organization

OPERATIONAL DEFINITIONS

Antenatal care: The care given to pregnant women before their babies are born.

Delay: A period of time by which something is late or slowly done.

Maternal near-miss: When a gravely ill woman survives a complication as a result of the standard of care she receives or by chance during gestation, childbirth, or within 42 days of the termination of pregnancy.

Morbidity: The condition of suffering from a disease or medical condition.

Mortality: The state of being subject to death

Postnatal care: This is care given to the mother after delivery.

ABSTRACT

Background : According to the recent UDHS report (2022), maternal mortality ratio stands at 189 per 100,000 live births. Maternal death is frequently described as just "tip of the iceberg" while maternal morbidity as the "base," and for every woman who dies, many more will survive but often suffer from lifelong disabilities. Today, maternal near miss is increasingly used as an indicator of the quality of obstetric care and clinical practice. This study set out to investigate the prevalence and factors associated with maternal near miss among mother attending Kawempe national referral hospital.

Methods: A facility based cross-sectional study was conducted among 120 participants who attended kawempe women's hospital from december 2023 to March 2024. The researcher conducted structured interviews using a 33-item questionnaire consisting of 3 sub-sections. Data analysis at univariate and bivariate levels (at a significance level below 0.05) was done using SPSS version 2 to determine the prevalence and factors associated with maternal near miss.

Results: The prevalence of self-reported maternal near miss at Kawempe Women's Hospital stands at 14% and key factors associated were having a history of smoking ($X2=3.838$, $p=0.05$), alcohol consumption ($X2=16.569$, $p<0.001$), infections during pregnancy ($X2=12.21$, $p=0.03$), and antenatal attendance ($X2=6.974$, $p=0.01$), living 6km and above from the facility and for those waiting for 61 minutes and above at the health facility before receiving care.

Conclusion and recommendation: The current prevalence of maternal near miss at Kawempe Women's Hospital stands at 14%. Maternal and health facility related factors such as age, religious affiliation, and lifestyle habits like smoking and alcohol consumption and long distance from the facility (more than 6km) and prolonged waiting times (more than 61 minutes) were significantly associated with the occurrence of maternal near miss (MNM) incidents. We recommend that targeted interventions to address maternal factors such as smoking, alcohol consumption, and infections during pregnancy should be put in place

Key words : Maternal near miss, Mortality, Morbidity

CHAPTER ONE: INTRODUCTION

1.0 Overview

This chapter contains of the background to the study, statement of the problem, research objectives, research questions, significance of the study and conceptual framework.

1.1 Background of the study

Maternal morbidity is defined as ill-health in a woman during pregnancy, irrespective of pregnancy site or duration, which is caused or aggravated by the pregnancy or its management but which is not caused by accident or incident (WHO, 2017). This concept ranges from mild to severe maternal morbidity (Snowden et al, 2021). Maternal near-miss (MNM) and potentially life-threatening conditions (PLTCs) are included as severe maternal morbidity (Snowden et al, 2021).

Maternal near miss refers to situations where women experience severe life threatening obstetric complications during pregnancy, delivery or within 42 days of termination of pregnancy which they survive either by chance or because they receive good care at a facility (Habte and Wondimu, 2021). Studies have shown that predictors of maternal near misses are, previous cesarean section, pre-existing medical disorders, induction of labor, lack of antenatal care and the three delays (Kalhan et al. 2017, Habte & Wondimu 2021).

The World Health Organization developed the disease specific criterion to identify maternal near miss which bases on five core diagnostic groups that include: (1) hemorrhage leading to an emergency hysterectomy, shock, coagulation, or need two or more units of blood transfusion; (2) pregnancy-induced hypertension including pre-eclampsia and eclampsia with clinical or laboratory indication necessitating termination of pregnancy to save the life of women; (3) dystocia leading to uterine rupture and imminent uterine rupture due to prolonged

obstructed labor or previous cesarean section; (4) infections causing hypothermia or hyperthermia or clear manifestation of infection; and (5) anemia with a hemoglobin level of less than 6 g/dl or clear clinical sign of anemia (WHO, 2011).

Globally, cases of maternal near misses occur in larger numbers than maternal deaths and it has been estimated that up to 9 million women survive obstetric complications every year, and the consequences of these may be permanent and long term complications (Teka et al. 2022). A study done in Brazil revealed that the prevalence of maternal near miss was 2.11% (Cecatti et al, 2015). The prevalence of maternal near miss in Sub-Saharan African countries ranges from 2.21% to 12% (Liyew et al, 2017). The study conducted in central Uganda revealed that the maternal near miss is 27% (Nansubuga & Ayiga 2015).

The three delays are also among the main cause of maternal near miss (Worke et al, 2019). The first delay is related to delay in seeking care due to cultural or low awareness. The second delay is related to delay in reaching health facility due to lack of access, transport problem, and cost related issues. While, the third delay is delay in receiving care due to either lack of trained personnel, equipments or poor quality of care (Worke et al, 2019).

A cross-sectional study conducted in Brazil revealed that 68.7% of near misses were associated with delays (Cecatti et al, 2015). Another study in Gabon reported that 40% of women delayed more than 45 min before seeing any qualified personnel (Worke et al, 2019).

In sub-Saharan Africa, a high proportion of women who arrived at hospital were already in a life threatening condition, and highlights the significance of the first two delays in contributing to maternal near misses (Musarandega et al, 2021).

Recent studies with women reveal a range of interconnected factors that explain the delays including: gender issues (women's lack of decision making power regarding prenatal care and place of delivery); perceptions of illness (not recognizing the severity of the symptoms); costs or poverty (prohibitive user fees or high cost of transport) and a lack of facilities or providers to treat the patient (Worke et al, 2019, Liyew et al, 2017, Musarandega et al, 2021).

A study done by Kasahun and Wako, (2018) showed low socioeconomic status, unemployment, high parity, being single, and prior caesarean section as risk factors for maternal near miss.

In Kenya, the national annual incidence of maternal near miss was 7.2 per 1,000 live births and the intra-hospital maternal mortality ratio was 36.2 per 100,000 live births and the major causes of maternal near miss were postpartum haemorrhage and severe pre-eclampsia or eclampsia (Owolabi et al, 2020).

In Uganda, a cross sectional study reported maternal near miss rates of 10.1% and the factors associated with their occurrence were hemorrhage, unwanted pregnancies, a history of maternal near miss, prim parity, and pregnancy danger signs (Nansubuga & Ayiga 2015).

In regard to this background, this study will be conducted in Kawempe National Referral Hospital with the aim of establishing the factors associated with maternal near miss among mothers.

1.2 Problem statement

Pregnancy and childbirth are physiological processes that may bring joy to many families and unexpected sorrows and suffering to some families. The tragedy of maternal deaths has been a great problem worldwide, and any woman who is pregnant is at risk of developing complication.

In Uganda, previous cross sectional study reported maternal near miss rates of 10.1% and the factors associated with the occurrence of maternal near miss were hemorrhage, unwanted pregnancies, a history of maternal near miss, primiparity, and pregnancy danger signs (Nansubuga & Ayiga 2015). The three delays also play a role in bringing maternal near miss. The first delay is related to delay in seeking care. The second delay is related to delay in reaching health facility while, the third delay is delay in receiving care at the facility (Worke et al, 2019).

Maternal near misses are quite common and they lead to separation of the mothers and their newborns, interfering with bonding, lengthy hospital stays, increased hospital bills, and emotional distress to the mothers and their relatives.

The government through the Ministry of health has created awareness to the public about maternal near miss prevention through health education and sensitization, obstetric services have been brought nearer to the people though constructing health centers and hospitals near the community, and hospital and health centers have been equipped with health workers.

Despite the efforts in place by the ministry of health, maternal near misses are still on arise. The researcher is more interested in establishing the factors associated with maternal near miss increase among mothers attending Kawempe National Referral Hospital.

1.3 Objectives of study

1.3.1 General objective

To establish the prevalence and factors associated with maternal near miss among mothers attending Kawempe National Referral Hospital.

1.3.2 Specific objectives

1) To establish the prevalence of maternal near miss cases at Kawempe National Referral Hospital.
2) To examine the maternal related factors associated with maternal near miss among mothers attending Kawempe National Referral Hospital.
3) To determine the health facility related factors associated with maternal near miss among mothers attending Kawempe National Referral Hospital.

1.4 Research questions

1) What is the prevalence of maternal near-miss cases at Kawempe National Referral Hospital?
2) What are the maternal related factors contributing to maternal near miss increase among mothers attending Kawempe National Referral Hospital?
3) What are the health facility related factors contributing to maternal near miss among mothers attending Kawempe National Referral Hospital?

1.5 Significance of the study

The results of this study will avail the mothers with the required information about the prevalence of maternal near miss and will enable them to prevent their occurrence.

The findings of this study will enable the Kawempe hospital management to understand the maternal near miss situation at the hospital and it will aid them to evaluate the ongoing and completed projects in relation to maternal care.

The findings of this study will also update the ministry of health about the maternal near miss which will lead to improvement of the quality of obstetric care in the study area and the country at large.

This study will also act as a source of information for other nursing researchers doing the related topics on mental health.

1.6 Conceptual Framework

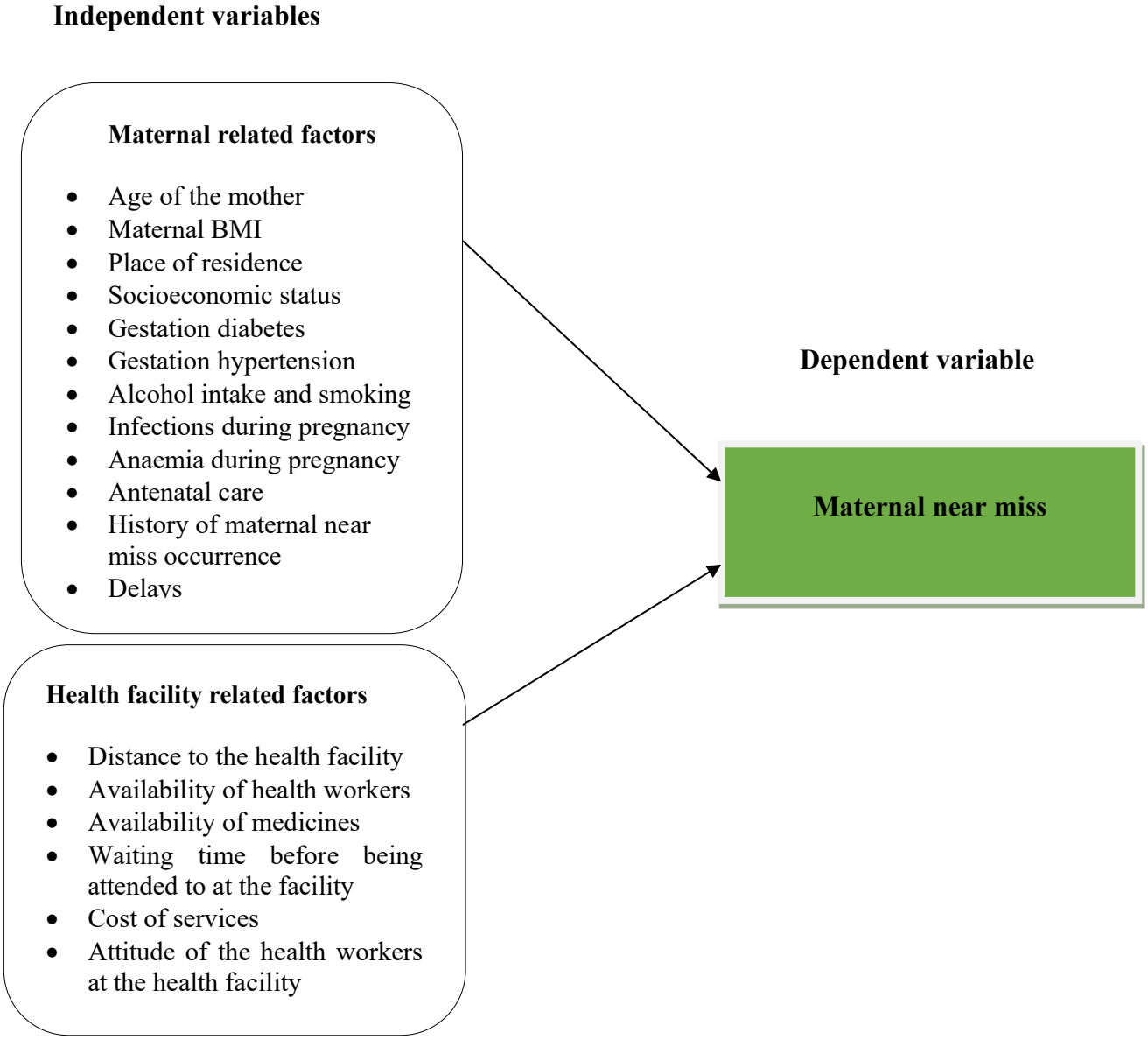


Figure 1: A conceptual frame work showing the relationship between the independent variables which maternal related factors and health facility related factors and dependent variable (maternal near miss).

Source: *Developed and modified by the researcher based on reviewed literature*

Narration of the conceptual frame work

The conceptual framework above illustrates the relationship between the dependent variable and the independent variable. The dependent variable is maternal near miss.

The independent variables include maternal related factors with determinants such as age of the mother, maternal BMI, place of residence, socioeconomic status, gestation diabetes, gestation hypertension, alcohol intake and smoking, infections during pregnancy, anaemia during pregnancy, antenatal care, delays and history of maternal near miss occurrence.

Health facility related factors with determinants such as distance to the health facility, availability of health workers, availability of medicines, waiting time before being attended to at the facility, cost of services and attitude of the health workers at the health facility.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

In this chapter, the researcher obtained information from different studies which have been conducted by various researchers worldwide about factors associated with maternal near miss increase among mothers. It will be obtained from diverse sources like, magazines, journals, dissertations, and use of data bases like PubMed, and google scholar. This chapter is addressed according to the specific study objectives.

2.1 Prevalence of maternal near miss among mothers

According to the cross sectional study conducted to examine the maternal near miss events in India, it was found out that the incidence of maternal near miss varied widely from 3.9 to 379.5 per 1000 live births (Kulkarni et al, 2021). In Australia, maternal near miss rate was 7 per 1000 live-births (Jayaratnam et al, 2018) while a study done in Brazil revealed that the prevalence of maternal near-miss ranges was 2.11% (Cecatti, et al, 2015).

In Sub-Saharan Africa, the prevalence of maternal near miss ranges from 2.21% to 12% (Liyew et al, 2017). A cross sectional study of maternal near miss and mortality at a rural tertiary centre in southern Nigeria, found out that of the 262 deliveries, 5 women died and 52 women had a near miss event and the maternal near miss rate was 11.4% (Mbachu, et al. 2017).

In Kenya, the national annual incidence of maternal near miss was 7.2 per 1,000 live births and the intra-hospital maternal mortality ratio was 36.2 per 100,000 live births (Owolabi et al, 2020).

In Uganda, a cross sectional study conducted in central part of the country reported maternal near miss rates of 10.1% (Nansubuga & Ayiga 2015).

2.2 Maternal related factors associated with maternal near miss increase among mothers

Maternal related factors play an important role in the occurrence of maternal near miss. A close look at this factors involves examining the determinants such as age of the mother, maternal BMI, place of residence, socioeconomic status, gestation diabetes, gestation hypertension, alcohol intake and smoking, infections during pregnancy, anaemia during pregnancy, antenatal care, delays and history of maternal near miss occurrence.

A study conducted to determine the factors associated with maternal near miss occurrence among mothers in selected Hospitals in North-East India reported that most of the near miss cases experienced either phase one delays (delay in seeking health care) and phase two delays (delay in reaching health facility) which resulted from underestimating the severity of various pregnancy related conditions, lack of available transport particularly for problems occurring in the night as well as first seeking care from a facility that is ill-equipped to provide emergency obstetric care (Akoijam ,et al, 2021).

Further still, poor knowledge of risk associated with various pregnancy warning signs and low socioeconomic status of the mother or poverty played a major part in the delay of management which resulted to maternal near miss (Akoijam, et al, 2021).

According to another cross sectional study to determine the factors associated with maternal near miss in Kerala, India, it was reported that about 65.6% of the respondents delayed making a decision to go to the health facility and delayed accessing the health facility and by the time they reached the health facility the condition of the mother had worsened which resulted into maternal near miss occurrence (Reena & Radha 2018).

In Africa, according to the study to determine the factors leading to maternal near miss in the public health sector of Harare, Zimbabwe, it was found out that obstetric haemorrhage (31.8%), hypertensive disorders (28.2%) and complications of miscarriages (20%) were the factors that were associated with the occurrence of maternal near miss among mothers under the study (Chikadaya, et al, 2018).

A cross-sectional study conducted in Ghana, to explore the factors associated with maternal near miss found out that the major factors that caused maternal near miss were pre-eclampsia or eclampsia (41.0%), haemorrhage (12.2%), maternal sepsis (11.1%) and ruptured uterus (4.2%) (Oppong, et al. 2019).

In a case-control study to determine the factors associated with maternal near miss among 321 women admitted in west Arsi Zone Public Hospitals, Ethiopia, it was found out that the major maternal near miss morbidities were associated with severe obstetric hemorrhage (32.5%), pregnancy induced hypertensive disorders (31.3%), and obstructed labor (26.3%), followed by 6.3% and 3.8% of severe anemia and pregnancy induced sepsis respectively (Fikadu et al, 2020). Furthermore in the above study, there was a significant association between maternal near miss and women's lack of formal education, not attending antenatal care, having prior history of cesarean section, and having experienced first delay (Fikadu, et al, 2020).

A study done in Egypt, to determine the factors associated with maternal near miss cases admitted to a maternal intensive care unit, Alexandria, found out that low maternal education, inadequate antenatal care, severe pre-eclampsia and post-partum hemorrhage were the common maternal factors associated with the occurrence of maternal near miss (Sultan, et al, 2017).

Another case-control study conducted to determine the predictors of maternal near miss in public hospitals of west shoa zone, central Ethiopia, found out that delay at home due to delay

in decision making to seek health care was the predictor of a maternal near miss and if mothers delay recognizing danger signs during pregnancy, childbirth, postpartum, and fail to decide to seek health care quickly lead to maternal near miss (Kababa, et al, 2020).

In Rwanda, a study on factors associated with maternal near miss occurrences was conducted and the study revealed that the most common causes of maternal near miss were sepsis (33.9%), postpartum hemorrhage (28.1%), and complications from eclampsia (18.2%), severe preeclampsia (5.8%) (Benimana, et al, 2018). Further still, delays in seeking care contributed to 22.3% of cases and delays in arrival from home to care facilities resulted in 9.1% of near misses, previous cesarean delivery (24%) and obstructed or prolonged labor (13.2%) contributed to maternal near miss (Benimana, et al, 2018).

A study conducted in Sudan, to establish the factors associated with maternal near miss in a rural hospital found out that hemorrhage accounted for the most common event (40.8%), followed by infection (21.5%), hypertensive disorders (18.0%), anemia (11.8%) and dystocia (7.9%), 2.4% for infection were the factors associated with maternal near miss (Khojali, 2011). In Kenya, a cross sectional study to determine the factors associated with maternal near miss reported that the major causes of maternal near miss were postpartum haemorrhage and severe pre-eclampsia or eclampsia, lack of antenatal care, and poor socioeconomic status of the mother which poses challenges in accessing maternal care and thus resulting to maternal near miss (Owolabi, et al, 2020).

In Uganda, according to the cross sectional study to examine the factors associated with maternal near miss among mothers, it was found out that hemorrhage, unwanted pregnancies, history of maternal near miss, primipara, pregnancy danger signs, primary level of education

and age below 18 years and above 45 years were associated with the occurrence of maternal near miss (Nansubuga & Ayiga 2015).

In another cross sectional study, to determine the factors associated with maternal near misses and capacity of lower-level public health facilities to offer related care in western Uganda Bunyoro Sub-Region, it was found out that among near miss cases, postpartum haemorrhage was the most common event 38.1%, followed by sepsis (30.7%), complications of abortion (25.7%), severe pre-eclampsia (3.6%) and eclampsia (1.4%) (Makubuya, 2021). Further still, in the similar study, other factors significantly associated with maternal near misses include age above 35 years, parity of 6 children and above, pre-existing medical conditions, anaemia, chronic hypertension and caesarean section (Makubuya, 2021).

2.3 Health facility related factors associated with maternal near miss increase among mothers

Health facility related factors play an important role in occurrence of maternal near miss. To clearly understand the association a close look at the determinants such as distance to the health facility, availability of health workers, availability of medicines, waiting time before being attended to at the facility, cost of services and attitude of the health workers at the health facility has been taken in to consideration. A study conducted to determine the factors associated with maternal near miss occurrence among mothers in selected Hospitals in North-East India reported that most of the near miss cases were experienced as a result of failure of the health facilities in providing emergency obstetrical care to the mothers due to unavailability of services and stock outs of medicines and required sundries (Akoijam, et al, 2021).

According to another cross sectional study to determine the factors associated with maternal near miss in Kerala, India, about 65.6% of the respondents reported that they stay over 10km away from the health facility and they have to travel for over 1 hour to be able to access the

health facility which is quite troublesome to the mothers in order to access maternal care which results into delays which in turn leads to maternal near miss (Reena & Radha 2018).

In Africa, according to the study to determine the factors leading to maternal near miss in the public health sector of Harare, Zimbabwe, it was found out that long distances to the health facility and prolonged waiting time before being attended to by the health workers at the facility were the factors which lead to the delays in receiving timely care resulting to the maternal near miss (Chikadaya, et al, 2018).

A case-control study conducted in central Ethiopia, reported that the longer the distance to reach a health facility to receive health care, the higher odds of maternal near miss due to poor infrastructure and lack of transportation leading the mothers to delays in arriving at the health facility with severe maternal complications thus maternal near miss (Kababa, et al, 2020).

A cross-sectional study conducted in Ghana, to explore the factors associated with maternal near miss found out that the delays to receive care at the heath facility was more associated with occurrence of maternal near miss among mother mostly due to unavailable health workers at the health facility, regular stock outs of medicines and long distance to the nearby health facility (Oppong, et al. 2019).

In Rwanda, a study on factors associated with maternal near miss occurrences was conducted and the study revealed that facility level delays (diagnostic and therapeutic) through human error or mismanagement (provider issues) were the most common preventable factors accounting for 65.3% of preventable maternal near miss (Benimana, et al, 2018). Further still lack of supplies, blood, medicines, Intensive Care Unit space, and equipment (system issues) were responsible for 5.8% of preventable maternal near misses (Benimana, et al, 2018).

In Kenya, according to a cross sectional study done to determine the factors associated with maternal near miss, it was found out that transport costs were high which made the mothers to delay to reach the hospital and also when they reach the hospital, they had to wait for long hours before being attended to by the health workers which poses challenges in accessing maternal care and thus resulting to maternal near miss (Owolabi, et al, 2020).

In Uganda, a cross sectional study to examine the factors associated with maternal near miss among mothers, reported that unavailability of health workers at the health facility, long distance of over 10km made the mothers created delays which leads to the occurrence of maternal near miss among mothers (Nansubuga & Ayiga 2015).

In another cross sectional study, to determine the factors associated with maternal near misses and capacity of lower-level public health facilities to offer related care in western Uganda Bunyoro Sub-Region, it was found out that the medicines were not always available, the health workers too were not always available at the health facility, and the health workers were rude which creates delays in the acquisition of maternal care thus leading to maternal near miss occurrence among mothers (Makubuya, 2021).

CHAPTER THREE: METHODOLOGY

3.0 Introduction

This chapter presents the methods that were used to obtain the data for the study including study design, study area, study population, sources of data, sample size determination, sampling procedure, eligibility criteria (inclusion and exclusion) criteria of participants, study variables, techniques of data collection, plan for data analysis, quality control, ethical considerations and plan for dissemination of findings.

3.1 Study Design

The study adopted a facility based across sectional study design. . Across sectional study design was used because it includes gathering information from the study participants at a particular period of time and it does not involve follow up of the respondents. It is also effective and easy to conduct.

3.2 Study Area

This study was conducted at Kawempe General Hospital, also known as Kawempe Specialized National Referral Hospital. It is an urban, specialized hospital built between 2014 and 2016 by the government of Uganda, with funding from the African Development Bank and the Nigeria Trust Fund. The hospital is in Kawempe Division, one of the five administrative units of the Kampala Capital City Authority. This location is approximately 5 kilometres (3 mi), by road, north of Mulago National Referral Hospital, Along the Kampala–Gulu Highway. This hospital offers both gynaecological and obstetrics services to the clients. It was selected because it is the national referral where most mothers visit and deliver from and is easily accessible.

3.3 Sources of Data

The main source of data were the post-natal mothers who at Kawempe National Referral Hospital.

3.4 Study Population

This study targeted 120 postnatal mothers at Kawempe National Referral Hospital.

3.5 Eligibility Criteria

3.5.1 Inclusion Criteria

This study included 120 the postnatal mothers who attended Kawempe National Referral Hospital.

3.5.2 Exclusion Criteria

All the postnatal mothers who were sick, dumb and deaf or not in a well mental state were excluded from the study and those who refused to consent to the study.

3.6 Sample size calculation.

The sample size was determined using the Keish Leislie formula as shown below;

$$n = \frac{z^2 p\,(q)}{e^2}$$

Where n is the sample size

Z is the standard normal deviation at 95% confidence level with a constant value of 1.96

P is the proportion of maternal near miss is 10.1% (0.101) (Nansubuga and Ayiga 2015).

(1-p) also known sometimes as (q) 1-0.101 which is 0.899

e is the acceptable error margin of 5% also equivalent to 0.05

Substituting the figures in to the formula n= Z2 p (1-p) / e2

n = 1.96x1.96 x 0.101 (1-0.101) / 0.05x0.05

n = 3.8416 x 0.101 (0.899) / 0.0025 = 120

Therefore, the sample size of this study is **120** participants.

3.7 Sampling Procedures

The researcher used simple random sampling technique to attain the participants for the study. The researcher used coded papers with codes Yes and No. These papers were put in the box. The respondents were asked to pick one paper randomly from the box without putting it back. The respondents who picked papers with code yes participated in the study while those who picked No did not participate in the study.

3.8 Study Variables

3.8.1 Dependent Variable

Maternal near miss.

3.8.2 Independent Variables

The independent variables included maternal related factors with determinants such as age of the mother, maternal BMI, place of residence, socioeconomic status, gestation diabetes, gestation hypertension, alcohol intake and smoking, infections during pregnancy, anaemia during pregnancy, antenatal care, delays and history of maternal near miss occurrence.

Health facility related factors with determinants such as distance to the health facility, availability of health workers, availability of medicines, waiting time before being attended to at the facility, cost of services and attitude of the health workers at the health facility.

3.9 Data Collection Techniques

To aid data collection process, the researcher recruited and trained two research assistants. The research assistants were trained on how to obtain consent from the study participants and protect participant's privacy and confidentiality. Researcher - administered questionnaires were used in obtaining the data

3.10 Data Management

All the filled questionnaires were checked for completeness and missing information obtained before leaving the respondents.Data was coded, entered into SPSS software , cleaned and analyzed.

3.11 Plan for Data Analysis

All answered questionnaire were carefully checked for completeness, mistakes and any missing data. The data was coded, entered into SPSS where it was cleaned and analysed

Bivariate Analysis

To determine the association between the variables such as dependent variable and the independent variables, a bivariate analysis was performed. Using the Chi-square test, the study variables were cross tabulated and their probability values (p-value) obtained. In this study, the p-value of 0.05 was used as minimum level of statistical significance.

3.12 Quality Control Issues

To ensure quality of data collected, two research assistants were recruited and trained on data collection process. The research assistants were trained on how to obtain consent from the study participants and protect their privacy and confidentiality. The tools that were used in data collection were checked and verified by the researcher to ensure their validity and reliability. The data collection tool was pretested on 5% of the total sample size. Unnecessary questions were erased before data collection activity.

3.13 Ethical Consideration

Upon completion of the proposal, it was submitted to the supervisor for approval. A permission letter was obtained from the University School of Nursing and Midwifery introducing the researcher to the relevant authorities of Kawempe Women's hospital. Authorization to collect data for the study was sought from the relevant authorities in Kawempe hospital. All respondents signed an informed consent form before taking part in the study.

3.14 Plan for Dissemination.

The findings of this study will be submitted to the School of Nursing of King Ceaser University for the ward of the Bachelor's Degree in Nursing Science and to be kept in the library as reference for other researchers.

The study results will also be submitted to the management of Kawempe hospital to enable them to gain insight about the maternal near miss and also enable them evaluate the completed and ongoing projects regarding maternal care.

The copy of the study results will be submitted to the supervisor and another copy will be kept by the researcher.

CHAPTER FIVE: RESULTS

4.0 Introduction

This chapter presents results of a study about the factors associated with maternal near miss among mothers attending Kawempe Women's Hospital, Uganda. Data was collected from 120 respondents between december 2023 and march 2024. The researcher conducted structured interviews using a 33-item questionnaire consisting of 3 sub-sections. The subsections encompassed socio demographic, maternal associated and health facility related factors. Data cleaning and analysis followed using SPSS version 2. Below is a presentation of the key findings.

4.1 Socio demographic and economic characteristics of respondents

Table 1: Socio demographic and economic characteristics of respondents

N=120

Characteristic	Frequency (n)	Percentage (%)
Mothers' age (years)		
<20	*2*	*1.7*
20-34	*67*	*55.8*
>/=35	*51*	*42.5*
Mean(+/-SD)	*31.71(+/- 6.9)*	
Gravidity		
<1	*20*	*16.7*
2-5	*82*	*68.3*
>5	*18*	*15*
Mean(+/-SD)*	*2(+/-0.6)*	
Level of education		
None	*2*	*1.7*
Primary	*26*	*21.7*
Secondary	*45*	*37.5*
Tertiary	*47*	*39.2*
Religion		
Christian	*93*	*77.5*
Moslem	*26*	*21.7*
Others	*1*	*0.8*
Employment Status		
Business	*38*	*31.7*
Civil servant	*37*	*30.8*
Self employed	*17*	*14.2*
Unemployed	*28*	*23.3*
Level of Income		
<4000	*26*	*21.7*
40001 - 50000	*94*	*78.3*
Mean(SD)*	*43,2906Ugs(43,8268Ugshs)*	
Timing of Complications		
Before admission	*69*	*57.5*
Before arrival to hospital	*22*	*18.3*
During hospitalization	*29*	*24.2*
Place of residence		
Urban	*97*	*80.8*
Rural	*23*	*19.2*
Marital status		
Single	109	90.8
Married	11	9.2

***SD = Standard deviation**

The participants' average age is around 31.71 years (SD 6.9), with the majority (55.8%) falling between 20-34 years old. Most participants have experienced 2-5 pregnancies (68.3%), averaging around 2 pregnancies per participant. A significant portion have attained secondary (37.5%) or tertiary education (39.2%). The majority identify as Christian (77.5%), with business (31.7%) and civil service (30.8%) being the most common employment statuses. The majority earn between 40,001 and 50,000 Ugandan Shillings monthly (78.3%), with a smaller percentage earning less than 4,000 Ugandan Shillings (21.7%). Complications mostly occurred before hospital admission (57.5%), followed by during hospitalization (24.2%) and before arrival at the hospital (18.3%). Most participants reside in urban areas (80.8%), and the majority are single (90.8%), with a smaller percentage being married (9.2%).

4.2 Prevalence of maternal near miss at Kawempe women's hospital

Results for this objective was obtained from data that was collected using a self-reporting item adapted from a standardized tool adapted from peer reviewed articles

Figure 1: Prevalence of maternal near miss at Kawempe National Referral Hospital

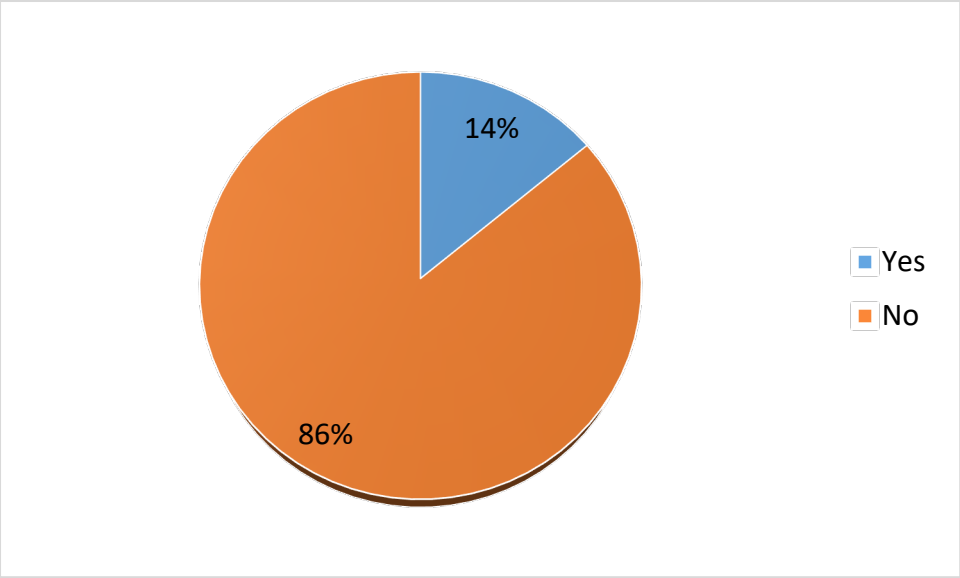


Figure 1 above, shows that the prevalence of self-reported maternal near miss stands at 14%.

Table 2: Association of socio-demographic and economic characteristics of mothers attending Kawempe Women's Hospital with maternal near miss

Characteristic	Yes	No	Chi-square	df	P-value
Mother's age(years)					
<20	1(0.3)	1(1.7)			
20-34	14(9.5)	53(57.5)	9.009	2	**0.01***
>/=35	2(7.2)	49(43.8)			
Mean(+/-SD)		*31.71(+/- 6.9)*			
Gravidity					
<1	4(2.8)	16(17.2)			
2-5	13(11.6)	69(70.4)	3.722	2	0.16
>5	0(2.6)	18(15.5)			
Mean(+/-SD)*		*2(+/-0.6)*			
Level of education					
None	0(0.3)	2(1.7)			
Primary	3(3.7)	23(22.3)	1.036	3	0.79
Secondary	8(6.4)	37(38.6)			
Tertiary	6(6.7)	41(40.3)			
Religion					
Christian	11(13.2)	82(79.8)			
Moslem	5(3.7)	21(22.3)	7.025	2	**0.03***
Others	1(0.1)	0(0.9)			
Employment Status					
Business	5(5.4)	33(32.6)			
Civil servant	4(5.2)	33(31.6)	1.669	3	0.64
Self employed	2(2.4)	15(14.6)			
Unemployed	6(4.0)	24(103)			
Level of Income					
<4000	6(3.7)	20(22.3)			
40001 - 50000	11(13.3)	83(80.7)	2.167	1	0.14
Mean(SD)*		**43,2906Ugs(43, 8268Ugshs)**			
Timing of Complications					
Before admission	6(9.8)	63(59.2)			
Before arrival to hospital	**8(3.1)**	14(18.9)	10.961	2	**0.004***
During hospitalization	3(4.1)	26(24.9)			

Place of residence					
Urban	9(13.7)	88(83.3)			
Rural	8(3.3)	15(19.7)	9.945	1	**0.002***
Marital status					
Single	3(1.6)	8(9.4)			
Married	14(15.4)	95(93.6)	1.711	1	0.2

df=Degree of freedom, *significant = p-value < 0.05

Table 2 indicates that there was a statistically significant association (X2 = 3.91, p = 0.014) between the maternal age, (X^2=9.009, p=0.01), religion (X^2=7.025, p=0.03), timing of complications (X^2 =10.96, p=0.004), place of residence (X^2=9.945, p=0.002) and maternal near miss.

4.3 Maternal factors associated with maternal near miss

The second objective of this study was to determine the maternal factors associated with maternal near miss among mothers attending Kawempe National Referral Hospital. Data was collected using several items adapted from standardized guidelines and protocols. Below are the results;

Table 3: Association of maternal factors with maternal near misses

Variable	No	Yes	Chi-square	df	P-value
BMI					
<18.5	5(4.3)	0(0.7)			
18.5-24.9	40(43.7)	11(7.3)	4.591	3	0.20
25-29.9	29(28.3)	4(4.7)			
>30	28(25.7)	2(4.3)			
Smoking					
No	98(96.1)	14(15.9)			
Yes	5(6.9)	3(1.1)	3.838	1	**0.05***
Alcohol consumption					
No	42(44.6)	10(7.4)			
Occasionally	60(54.9)	4(9.1)	16.569	2	**<0.001***
Frequently	1(3.4)	3(0.6)			
Hypertension					
No	74(72.1)	10(11.9)			
Yes	29(30.9)	7(5.1)	1.178	1	0.28
Infection during pregnancy					
No	54(49.8)	4(8.2)			
Yes	49(53.2)	13(8.8)	4.880	1	**0.03***
Infections during pregnancy					
APH	42(38.6)	3(6.4)			
PPH	6(7.7)	3(1.3)			
Severe anemia	9(10.3)	3(1.7)	12.213	5	**0.03***
Severe Malaria	16(14.6)	1(2.4)			
Severe Pre-eclampsia	19(22.3)	7(3.7)			
ANC attendance					
Yes	102(100.4)	15(16.5)			
No	**1(2.6)**	2(0.4)	6.974	1	**0.01***
Number of ANC attendance					
<4 times	48(50.6)	10(7.4)			
4-8 times	50(47.9)	5(7.1)	2.287	2	0.32
>8 times	4(3.5)	0(0.5)			

DF=Degree of freedom, *significant = p-value < 0.05

Table 3 presented above demonstrates a statistically significant correlation between maternal-related factors and maternal near-misses. These factors encompass smoking (X2=3.838, p=0.05), alcohol consumption (X2=16.569, p<0.001), infections during pregnancy (X2=12.21, p=0.03), and antenatal attendance (X2=6.974, p=0.01), although the frequency of attendance showed no statistical significance. Conversely, no statistically significant association was

observed between BMI, hypertension, the frequency of ANC attendance, and maternal near-misses.

4.3 Health facility related factors to near miss

The third objective of this study was to determine the health facility related factors associated with maternal near miss among mothers attending Kawempe National Referral Hospital. Data was collected using several items adapted from standardized guidelines and protocols and peer reviewed published articles. Below are the results:

Table 4: Association of health facility factors with maternal near misses

Variable	No	Yes	Chi-square	df	P-value
Distance from health facility					
<5km	72(65.2)	4(10.8)			
6km and above	31(37.8)	13(6.2)	13.513	1	**<0.001***
Time to health facility					
<30 minutes	86(88.4)	17(14.6)			
30-60 minutes and above	17(14.6)	2.4(17)	3.269	1	0.07
Health facility waiting time					
30-60 minutes	79(75.5)	9(12.5)			
61 minutes and above	24(27.5)	8(4.5)	4.212	1	**0.04***
Mode of transport to health facility					
Foot	1(0.9)	0(0.1)			
Private	13(11.2)	0(1.8)			
Public	87(89.3)	17(14.7)	3.047	3	0.38
Others	2(1.7)	0(0.3)			
Access to health facility					
Very easy	58(53.2)	4(8.8)			
Hard	36(33.5)	3(5.5)	27.498	2	**<0.001***
Very hard	9(16.3)	10(2.7)			
Availability of MCH services					
No	**2(1.7)**	**0(0.3)**			
Availability of Health workers					0.56
No	28(26.6)	3(4.4)			
Yes	**75(76.4)**	14(12.6)	0.693	1	0.41
Attitude of health workers					
Very poor	4(3.4)	0(0.6)			
Poor	19(18)	2(3)	1.238	2	0.54
Good	80(81.5)	15(13.5)			

DF=Degree of freedom, *significant = p-value < 0.05

From the table above: A significant association was found between the distance from the health facility and the occurrence of maternal near-misses. Those living 6km and above from the facility had a significantly higher occurrence ($p<0.001$). There was also a significant association between waiting time at the health facility and maternal near-misses ($p=0.04$), with a higher occurrence noted for those waiting for 61 minutes and above. Finally, at bivariate analysis also revealed that a highly significant association between the ease of access to the health facility and maternal near-misses ($p<0.001$) exists. Maternal near-misses were significantly higher among those who found access very hard.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter provides a discussion of findings, conclusions, and suggests key recommendations based on the results from a study on the prevalence and factors associated with maternal near miss among mothers who attended Kawempe Women's Hospital during the study period (December 2023 to March 2024). Data was collected from 120 participants using a 33-item structured and semi-structured questionnaire derived from various peer-reviewed scholarly articles. The response rate achieved was 98%. Univariate and bivariate analyses were conducted using SPSS version 23 to generate percentages, frequencies, chi-square values, and p-values at a predetermined significance level of 0.05 or lower.

5.1 Socio-demographic characteristics of respondents

In this research, the average age of participants was approximately 31.71 years (standard deviation 6.9), with the majority (55.8%) falling within the 20-34 years age range. This demographic factor showed a significant correlation ($X2=9.009$, $p=0.01$) with maternal near miss (MNM). Previous studies, such as a national cross-sectional multicenter study conducted by Fernando et al. in 2014, have elucidated a notable association between increased maternal age and a 25% rise in MNM risk. This finding is further supported by results from the 2006 Brazilian Demographic Health Survey, Martinelli (2019), and Knight (2016), which all indicate a trend of elevated maternal near miss occurrences with advancing age.

On the contrary, religious affiliation has exhibited a notable link to maternal near miss incidents. The results of this study unveiled a significant correlation between religion, particularly Christianity, and maternal near miss occurrences. However, an alternate case-control study conducted by Mahesh et al. in 2019 presented contrasting findings, indicating a higher proportion of near-miss cases within the Muslim community compared to the control

group. This aspect warrants further investigation in a larger population with a larger sample size to mitigate potential biases.

The timing of complications and place of residence are significant factors associated with maternal near miss. In this study, bivariate analysis showed a significant association with maternal near miss. This finding aligns with studies conducted in Ethiopia, which found a high prevalence of maternal near miss associated with rural residence, referred women, and delays in reaching the hospital (Tolesa, 2021). Similarly, in rural Uttara hand, India, the state of residence was also found to be a significant factor (Bakshi, 2014). These findings highlight the importance of addressing these factors to reduce the incidence of maternal near miss.

5.1.1 Prevalence of maternal near miss at Kawempe Women's Hospital

In this study, the prevalence of self-reported maternal near miss among mothers attending Kawempe Women's Hospital was recorded at 14%. This rate is consistent with findings observed in various settings across Sub-Saharan Africa and the West. For instance, Tunçalp et al. (2012) reported a prevalence of 2.3% in their study, while Shrestha (2010) documented a ratio of 324 maternal deaths per 100,000 live births. Additionally, a more recent systematic review and meta-analysis conducted by Abdollahpour (2019) estimated a global prevalence of 18.67 per 1000 live births. Asaye (2020) found a proportion of 15.8% in their study conducted in Northwest Ethiopia. These findings collectively highlight the significance of addressing maternal near miss occurrences.

5.1.2 Maternal factors associated with maternal near miss

The second objective of this study was to determine the maternal factors associated with maternal near miss among mothers attending Kawempe National Referral Hospital.

Maternal near miss in this study was defined as a very ill pregnant woman or one who nearly died but survived a complication during pregnancy, childbirth, or within 42 days of termination of pregnancy (Fikadu et al, 2020).

In this study, a statistically significant association was found between maternal-related factors, such as a history of smoking (X2=3.838, p=0.05), alcohol consumption (X2=16.569, p<0.001), infections during pregnancy (X2=12.21, p=0.03), and antenatal attendance (X2=6.974, p=0.01), and maternal near-misses. These factors fall under a broader category of other maternal-related factors, such as underlying health conditions like hypertension or diabetes, previous obstetric complications, high parity, high maternal BMI, infections during pregnancy, and anemia during pregnancy, known to increase the likelihood of MNM.

This finding is strongly supported by previous studies indicating that maternal smoking and alcohol consumption are consistently linked to adverse pregnancy outcomes, including low birth weight, prematurity, and intrauterine growth retardation (Gibson, 2019; Underwood, 2014). However, health education talks from the interdisciplinary caring team to abstain from alcohol during pregnancy has been found to be protective against maternal smoking and drinking (Jones-Webb, 2012).

5.1.3 Health facility related factors to maternal near miss

In this study, a significant association was found between those living 6km and above from the facility and those with difficult access to the health facility and maternal near-misses (p<0.001). This is supported by previous studies from Madagascar that found that living further than 5.0 km from a health center was associated with increased neonatal and infant mortality (Kashima,

2012). Similarly, a study in Ethiopia identified rural residency as a factor associated with maternal near-miss, suggesting that distance from health facilities may be a contributing factor (Liyew, 2018).

Moreover, the extended waiting time experienced by participants at the health facility emerged as a significant contributor to maternal near-misses (p=0.04), particularly among those who waited for 61 minutes or more. This finding is consistent with previously conducted studies that have identified prolonged waiting times at health facilities as a crucial determinant of maternal near-misses (Kurugodiyavar, 2019; Asaye, 2020; Mbachu, 2017; Yunus, 2013). This delay may occur at various stages, including when seeking care, reaching a facility with comprehensive obstetric care, and receiving interventions once at the facility (Yunus, 2013).

5.2 Conclusions

4) Maternal factors such as age, religious affiliation, and lifestyle habits like smoking and alcohol consumption significantly influence the occurrence of maternal near miss (MNM) incidents.
5) Health facility-related factors, including distance from the facility and prolonged waiting times, are also associated with an increased risk of MNM.
6) The prevalence of self-reported maternal near miss at Kawempe National Referral Hospital stands at 14%, aligning with findings from various settings across Sub-Saharan Africa and the West.

5.3 Recommendations:

1) Implement targeted interventions to address maternal factors such as smoking, alcohol consumption, and infections during pregnancy through comprehensive health education programs and counseling sessions.
2) Enhance accessibility to healthcare facilities by improving transportation infrastructure and expanding the reach of maternal healthcare services, particularly in rural areas.
3) Streamline processes within healthcare facilities to minimize waiting times and ensure prompt access to obstetric care for pregnant women.
4) Strengthen collaboration between healthcare providers, community health workers, and policymakers to implement and monitor interventions aimed at reducing maternal near miss occurrences and improving maternal health outcomes.

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APPENDICES

APPENDIX I: CONSENT FORM

Dear respondent, I'm called **Editor Bonabana**, student from King Ceaser University pursuing a bachelor's degree in nursing science. As a requirement of the ward of the degree, I am carrying out a study entitled '**factors associated with maternal near miss increase among mothers attending Kawempe National Referral Hospital**'.

The results from this study will avail the mothers with the required information about the prevalence of maternal near miss and will enable them to prevent their occurrence. The findings of this study will enable the Kawempe hospital management to understand the maternal near miss situation at the hospital and it will aid them to evaluate the ongoing and completed projects in relation to maternal care. The findings of this study will also update the ministry of health about the maternal near miss which will lead to improvement of the quality of obstetric care in the study area and the country at large.

You have been selected as a resourceful person to take part in this study where questions on the above topic are asked. I'm requesting you to provide responses to this questionnaire and none of your name is required. The information you and other participants provide will be held with confidentiality and purposively only by the researcher.

Your participation in this study is voluntary and no risks are involved. You are free to with draw from the study at any time you wish and there will be no penalty for that. You are free to ask any question (s) at any time during the study and can contact the principal investigator, Editor on 0708294366. Thank you.

I certify to the best of my knowledge, I have read and understood the contents above and I willingly participate in the study.

Respondent's signature / thumbprint…….. Date…….....

Researcher's signature……..

Date…….……....

Bonabana Editor

APPENDIX II: QUESTIONNAIRE

Questionnaire on the factors associated with maternal near miss increase among mothers attending Kawempe National Referral Hospital.

Part A: Socio demographic information

1. What is your age?

……

2. What is your marital status?

A) Married ☐ B) Single ☐ C) Divorced ☐

D) Widowed ☐

3. What is your highest level of education?

A) Primary level ☐ B) Secondary level ☐

C) Tertiary / university level ☐ D) Never went to school at all ☐

4. What is your Religion?

A) Catholic ☐ B) Anglican ☐ C) Born again ☐

D) Muslim ☐ E) Others ……

5. What is your occupation?

A) Self-employed ☐ B) Business woman ☐ C) Unemployed ☐

D) Civil servant ☐ E) Any other state ……

6. What is your level of income?

A) Less than 50,000shs ☐ B) 50,000shs -100,000 shs ☐

C) 100,000shs-15,0000shs ☐ C) 150,000 and above ☐ D) None ☐

Part B: Maternal related factors

1. Did you smoke tobacco during your pregnancy?

A) Yes ☐ B) No ☐

2. Did you use alcohol during the pregnancy?

A) No ☐ B) Yes but occasionally ☐ C) Yes, I took frequently ☐

3. Did you have high blood pressure (hypertension) during pregnancy?

A) Yes ☐ B) No ☐

4. Did you have high blood sugar (diabetes) during pregnancy?

A) Yes ☐ B) No ☐

5. Have you ever suffered from any infection during your pregnancy?

A) Yes ☐ B) No ☐

6. If yes, state the infection…….

7. Have you attended antenatal care?

A) Yes ☐ B) No ☐

8. If yes, how many time did you attend?

……..

9. If no, state the reason why…….

10. Have you ever had history of a near miss or a condition which made you ill during pregnancy or during delivery or even after delivery?

A) Yes ☐ B) No ☐

11. If yes, state what was the condition……

12. How many times have you been pregnant before? .....

Part C: Health related factors

1. How far is the health facility from your home?

A) Less than 5km ☐ B) 5 to 10km ☐ C) More than 10km ☐

2. How long does it take you to get the health facility?

A) Less 30 minutes ☐ B) 30 minutes to 1 hour ☐ C) More than 1 hour ☐

3. How long do you wait at the health facility before receiving maternal health services?

A) Less 1 hour ☐ B) 1 hour to 3 hours ☐ C) More than 3 hours ☐

4. How do you move to the health facility to obtain care?

A) By foot ☐ B) public means ☐ C) Private means ☐

D) Other specify……

5. How easy is it to obtain transport to the health facility?

A) Very easy ☐ B) Hard ☐ C) Very hard ☐

6. Are the maternal health services always available at the health facility?

A) Yes ☐ B) No ☐

7. Are health workers always available to attend to you when you go to the health facility?

A) Yes ☐ B) No ☐

8. What is the health workers attitude at the health facility?

A) Health workers are rude ☐ B health workers are good ☐ C) other……..

9. Would you return to the mental health service provider or health facility?

A) Yes ☐ B) No ☐

10. What do you think can be done to reduce maternal near miss occurrence?

…….

Thank you so much for taking part in this study and for your valuable time

APPENDIX III: LETTERS OF APPROVAL

KING CEASOR UNIVERSITY

"Moral Rearmament, Wealth Multiplication"

P.O Box 88, Kampala, Plot 30/33 King Ceasor Road, Bunga Hill Main Campus,

Email: amoskalukusu@kcu.ac.ug

DIRECTORATE OF RESEARCH

The Executive Director,
Kawempe National Referral Hospital,
Uganda.

KAWEMPE NATIONAL REFERRAL HOSPITAL
29 SEP 2023
EXECUTIVE DIRECTOR

RE: RECOMMENDATION FOR RESEARCH DATA COLLECTION OF:

Ms. BONABANA Editor Tel: 0787-134775 / 0708-294366 (Index No. 2021AP/BNS/1130

I write to recommend the above named student who is pursuing a Bachelor of Nursing from King Ceasor University, in Uganda.

Ms. *BONABANA Editor* is now in her third year of study and now expected to write her research dissertation as part of the requirements for the award of her degree.

She is working on the topic given as follows:

"***Evaluation of factors associated with maternal near miss increase among mothers in Uganda; A case of Kawempe National Referral Hospital ".***

The purpose of this letter is to request that you allow her undertake data collection from your hospital facility which will assist her to fulfill the requirements of the university.

The results of her research can be shared with you upon the successful completion of her study.

In any correspondence, use the address given herein. Looking forward to hearing from you.

Sincerely,

08 SEP 2023

Amos Ronald Kalukusu (PhD Fellow, Public Health).
Assoc. Director for Research.
Email: amoskalukusu@kcu.ac.ug Tel: 0781457183

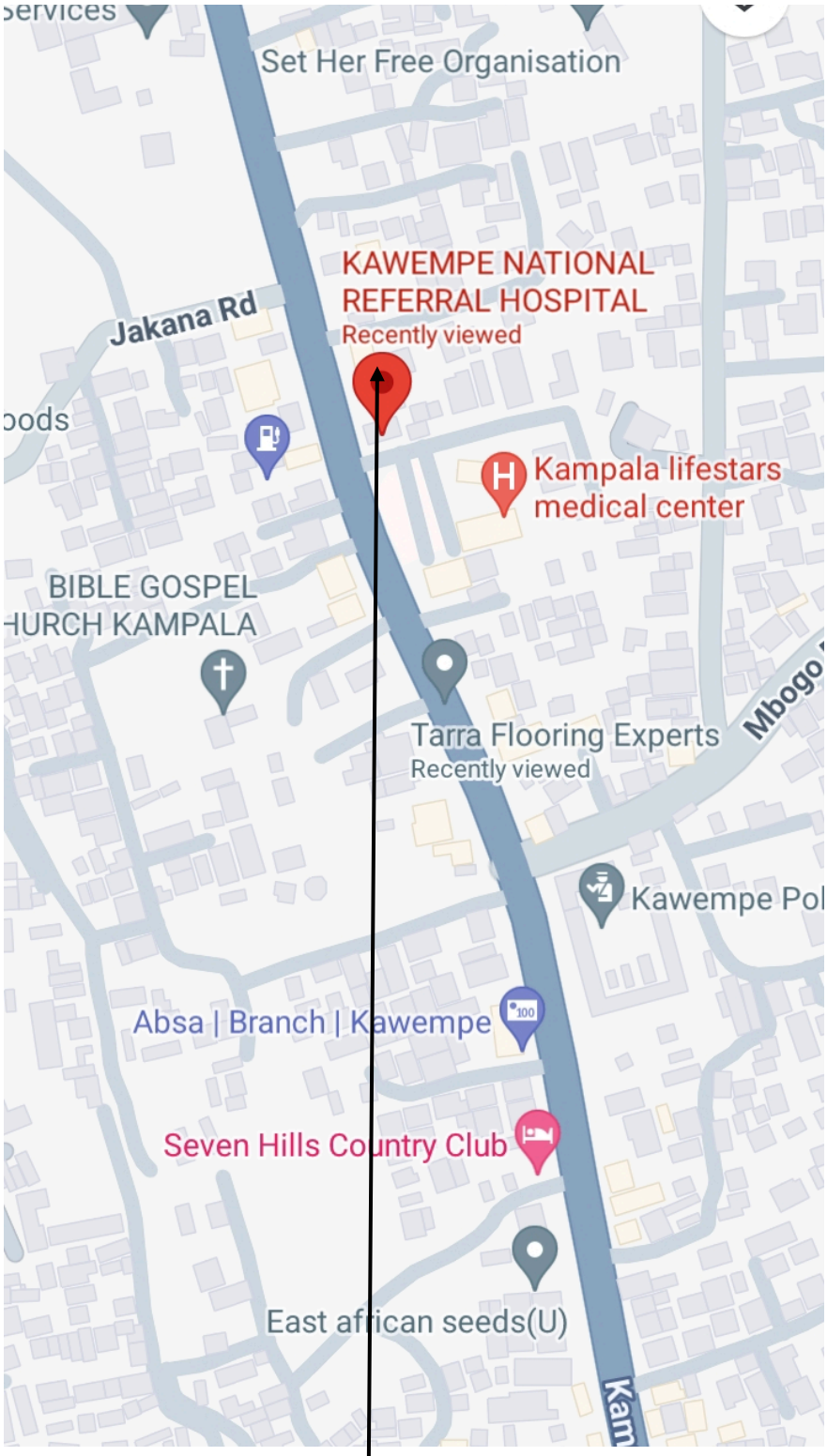
CC: DVC Academic Affairs; Cc: Academic Registrar; Cc: **Ms. *BONABANA Editor***

APPENDIX III: MAP OF UGANDA SHOWING KAMPALA DISTRCIT



Kampala district

APPENDIX III: A MAP SHOWING THE STUDY AREA



STUDY AREA