

**DETERMINANTS FOR CORRECT DIAGNOSIS OF PREECLAMPSIA AMONG  
WOMEN SEEKING ANTENATAL SERVICES AT MBAGATHI COUNTY REFERRAL  
HOSPITAL NAIROBI, KENYA**

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THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN NURSING  
(MIDWIFERY/OBSTETRIC NURSING) OF THE UNIVERSITY OF NAIROBI.**

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## DECLARATION

I hereby declare to the best of my knowledge that the work presented in this thesis has not been presented for any award in any institution and has never been published anywhere. All the work is original unless otherwise stated. I am therefore presenting it for the award of Degree of Master of Science in Nursing (Midwifery and Obstetric Nursing) of The University of Nairobi, Nairobi, Kenya

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## **DEDICATION**

This research is dedicated to my husband; Kenneth Njoroge, to my parents; Paul Dullo and Abisage Dullo and to my brothers; Amos Dullo and Stephen Dullo who have always believed in me and have been very supportive.

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## **ABBREVIATIONS AND ACRONYMS**

ANC- Antenatal Clinic

BP- Blood pressure

ERC- Ethics Review Committee

KHDS – Kenya Health and Demographic Survey

KAP – Knowledge, Attitude and Practice

KII – Key Informant Interviews

KNH – Kenyatta National Hospital

KNH-UoN ERC- Kenyatta National Hospital- University of Nairobi Ethics Review Committee

LMICs – Low and Middle Income Countries

MCH clinic – Maternal and Child Health clinic.

MgSO<sub>4</sub> – Magnesium Sulphate

MoH –Ministry of Health

MMR – Maternal Mortality Rate

NACOSTI – National Commission of Science and Technology and Innovation

NICE– National Institute for Clinical Excellence

PET – Preeclampsia

SPSS –Statistical Package for Social Sciences

UoN – The University of Nairobi

WHO – World Health Organization

## **OPERATIONAL TERMS AND DEFINITIONS**

Attitude – Refers to a health worker's feelings and perceptions towards preeclampsia diagnosis

Client – A woman who attends the MCH clinic for antenatal services

Determinants – These are variables that affect the correct diagnosis of preeclampsia

Eclampsia – Severe form of preeclampsia that presents with seizure and/ or coma

Health care provider – A person who is trained to offer antenatal care services

Health facility – Is the place where antenatal care is offered

Hypertension/ high blood pressure – Blood pressure of above or equal to 140/90 mmHg

Knowledge – The level of information and understanding that a woman or health care provider has regarding preeclampsia diagnosis

Practice – What is done by health care providers to diagnose preeclampsia

Preeclampsia – A pregnancy related condition that presents with hypertension and proteinuria

Proteinuria – High levels of protein in urine

Uristicks/ dipsticks – Is a test for proteinuria using a small chemically treated strip that is dipped in urine and changes color depending on the amount of protein in urine.

## **ABSTRACT**

**Background:** Preeclampsia is one of the five chief causes of maternal death. Early diagnosis greatly reduces maternal and neonatal morbidity and mortality. Guidelines have been developed in Kenya on the parameters and methods of diagnosis. However, maternal mortality and morbidity from preeclampsia in Kenya remains high.

**Study Objective:** To assess factors that determine correct diagnosis of preeclampsia at Mbagathi county referral hospital, Nairobi, Kenya

**Study Design:** A hospital based descriptive, cross sectional study was conducted. Both qualitative and quantitative approaches were used.

**Study population/ sample subjects/ procedures:** The sample size was 216 antenatal women and 3 health care providers. Ethical clearance was sought from UoN/KNH ethics review committee, Nairobi County, Mbagathi hospital and the ward in charge. Informed consent was sought from the respondents. The tools were pretested at Mama Lucy Kibaki Hospital.

**Study area:** The study was conducted in Mbagathi county referral hospital.

**Data collection:** The data was collected using questionnaires, Key Informant Interview (KII) guide and a checklist.

**Data analysis and interpretation:** Quantitative data was analyzed using SPSS 20.0. Qualitative data was processed through thematic analysis. It is presented through narratives.

**Findings:** Health workers have limited knowledge of preeclampsia diagnosis particularly in timing of preeclampsia, and diagnostic criteria for urinalysis/ dipstick test. Dipsticks and guidelines on PET diagnosis were unavailable in the antenatal clinic Client knowledge on PET diagnosis is low

**Conclusion:** Health workers have limited knowledge of diagnosis and need constant refresher courses. There is need for dipsticks and preeclampsia guidelines to be available in the antenatal clinic. Women need to be informed on Preeclampsia diagnosis

**Recommendations:** Diagnostic criteria for preeclampsia should be reviewed, proteinuria tests done for every woman at every antenatal visit. Awareness talks given to women on preeclampsia and constant refresher updates for health care providers.

## **CHAPTER 1: INTRODUCTION**

### **1.1 INTRODUCTION**

This chapter contains an introduction of this research and includes background information on preeclampsia, statement of the problem, justification of the study, objectives of the study and research questions.

### **1.2 BACKGROUND INFORMATION**

Stepping up the quality of obstetric care is a critical priority in low and middle income countries (LMICs) where 99% of maternal deaths occur (World Health Organization WHO, 2016). Preeclampsia (PET) is pregnancy related hypertension that is typified by high blood pressure and proteinuria after 20 weeks of pregnancy. If left untreated it progresses to eclampsia that leads to poor maternal and neonatal outcomes (Osungbade K and Ige O, 2011). It is one of the top five causes of maternal mortality worldwide

To augment the quality of care given it is essential that PET is diagnosed early and interventions are done. (Preeclampsia foundation, 2013).

The standards for diagnosis set in Kenya for PET are defined by the ministry of public health and Sanitation (2011), as hypertension of more than 140/90, proteinuria of more than 0.3g/l and edema of the face, hands and legs. This is the standard the Mbagathi County referral Hospital has adopted.

The state of preparedness for diagnosis of PET varies worldwide. With developed countries having the highest rates of diagnosis due to better healthcare where expectant women are usually followed up by a health care professional with regular prenatal assessments. (Preeclampsia foundation, 2013)

However in the poorer developing countries women are more liable to receive inadequate health care due to fewer numbers of skilled health workers and other factors such as lack of access to hospital facility, delay in seeking treatment, lack of health insurance, lack of equipment for diagnosis, culture and lack of knowledge about the disease (Osungbade and Ige, 2011).



In Kenya according to a thesis done by Muchiri (2015), it was found that at the major public maternity hospital in Kenya; Pumwani maternity hospital, clinical practice as regards preeclampsia diagnosis was not aligned to the prescribed national guidelines which led to poor assessment and diagnosis of patients with PET.

### **1.3 STATEMENT OF PROBLEM**

About 830 women a day in the world die from complications associated with pregnancy or childbirth. With 99% of deaths in developing countries and preeclampsia/ eclampsia being one of the five leading causes that account for 75% of these deaths (WHO, 2016).

Reducing maternal mortality rate (MMR) by 2030, to less than 70 per 100 000 live births is one of the sustainable development goals (SDGs). Hypertensive disorders are one of the leading causes of maternal mortality in LMICs (Duley, 2009 and Abalos et al, 2013) and in sub Saharan Africa hypertensive disorders of pregnancy (of which PET and eclampsia are the most deadly) are the second leading cause of death after hemorrhage (Say L., Chou D., Gemmil A., et al 2014) Kenya is currently ranked 19 out of 184 in the world in terms of the highest maternal mortality rates (Central Intelligence Agency, 2015).

The maternal mortality ratio in Kenya has remained high, with the last Kenya demographic and Health survey (KDHS) giving it at 362 per 100,000 live births ( Kenya National Bureau of Statistics et al, 2015) weighed against 12 per 100, 000 live births in developed countries (WHO, 2016). Deaths from PET can be prevented if it is detected early before commencement of convulsions (eclampsia) and other severe complications (WHO 2016)

In developed countries like the USA more than 95% of women are routinely screened for PET using blood pressure monitoring and urinalysis during antenatal visits (Henderson et al 2017) resulting in low morbidity and mortality due to PET/ eclampsia. However in Kenya, Kagema et al (2011) stated that differing from WHO guidelines, women in Kenya are not frequently screened for hypertension and proteinuria during antenatal visits. On average, screening for PET in Kenya during prenatal visits occurred only 29% of the time with only 20% of hospitals doing blood pressure checks together with urinalysis to classify pre-eclampsia. They also reported that various cadres of health care providers (doctors, nurses, midwives and community care

providers) have limited knowledge on the screening and management of PET. This has resulted in high maternal mortality and morbidity as a result of PET

The purpose of this study is to ascertain the factors that determine the correct diagnosis of preeclampsia at Mbagathi county referral Hospital among women seeking antenatal care services.

#### **1.4 JUSTIFICATION OF THE STUDY**

Mbagathi county referral hospital is an ideal study area as its subjects are an accurate depiction of a large part of the population. It is one of the few public referral hospitals in Nairobi serving a huge population of Kenya's capital city including Kibra slums (one of the largest slums in Africa) which falls within the hospital's catchment area.

There are few studies available that concentrate on the quality of care given in regards to adherence to guidelines set.

The study seeks to probe deeper into the factors that influence the correct diagnosis of preeclampsia in order to come up with useful results that can be used to form the baseline in improvement of the diagnosis process across the country.

#### **1.5 SIGNIFICANCE OF THE STUDY**

Conducting such a study in this population should generate valuable information in evaluating the level to which national guidelines on PET diagnosis are adhered to in relation to factors that affect correct diagnosis of PET and giving recommendations for improving care.

This will be beneficial for the women attending antenatal clinics as they will receive better quality of care. It will allow the health workers to evaluate their knowledge on PET diagnosis and improve their skills and knowledge. It also enables hospital managers to better plan for provision of care and acquisition of the equipment and various materials needed for PET diagnosis and also helps policy makers in improving the quality of care.

Results from this study will act as a basis for the improvement of the diagnosis process for preeclampsia across the country by identifying the gaps and areas that need to be improved.

It is important to conduct such a study as it will contribute to the national, regional and global knowledge bank and form a basis for improvement of quality of health care given to women attending antenatal clinics

## **1.5 OBJECTIVES OF THE STUDY**

### **1.5.1 BROAD OBJECTIVES**

The main aim of this study is to assess the factors that determine correct diagnosis of preeclampsia based on the prescribed MoH guidelines at Mbagathi county referral hospital in Nairobi, Kenya

### **1.5.2 SPECIFIC OBJECTIVES**

1. To determine the health care provider factors that affect preeclampsia diagnosis at Mbagathi county referral hospital
2. To determine the facility based factors that affect preeclampsia diagnosis at Mbagathi county referral hospital
3. To determine client knowledge of preeclampsia diagnosis at Mbagathi county referral hospital

## **1.6 RESEARCH QUESTIONS**

1. What health care provider factors affect preeclampsia diagnosis at Mbagathi county referral hospital?
2. What facility based factors affect preeclampsia diagnosis at Mbagathi county referral hospital?
3. What is the client knowledge that affects preeclampsia diagnosis at Mbagathi county referral hospital?

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 INTRODUCTION**

This chapter gives an appraisal on the factors that determine correct diagnosis of preeclampsia. It looks at similar and related studies in this area as relates to the study objectives and related outcomes as well as research and knowledge gaps. This chapter is prepared according to research questions. The following subjects are reviewed and discussed; Knowledge, attitude and practice of health care providers regarding preeclampsia diagnosis, Facility factors affecting diagnosis of preeclampsia, client related factors affecting diagnosis of preeclampsia, other factors that hinder successful diagnosis of PET and guidelines used in preeclampsia diagnosis. This chapter ends with a synopsis of research gaps identified in the review.

### **2.2 LITERATURE SEARCH STRATEGY**

The evidence used for this research (based on research questions) was obtained from journals and articles in online databases (Pubmed, Google scholar, Hinari among others), Government reports (Ministry of Health guidelines on PET/Eclampsia), online data from the World Health Organization, different theses written on the subject matter and different books on preeclampsia/eclampsia.

Key words used in the search included: *antenatal care services, Preeclampsia/ eclampsia, Preeclampsia diagnosis, hypertension in pregnancy, maternal health services in Kenya, preeclampsia/ eclampsia in Kenya* amongst others.

Books and theses related to the study focus were also used including guidelines on PET diagnosis.

### **2.3 HEALTH CARE PROVIDER FACTORS INFLUENCING PREECLAMPSIA DIAGNOSIS**

All over the world standards and procedures for the diagnosis of PET have been developed, agreed upon and disseminated.

Health care providers who handle women during prenatal visits are responsible for diagnosing PET and are assumed to have the necessary knowledge and skills.

However, studies from the developing world have found that different health care professionals (doctors, nurses, midwives, and community care providers) have inadequate knowledge about screening of pre-eclampsia (Thein et al, 2012 Bigdeli et al, 2013 and Aeserud et al, 2005)

In Pakistan, a study by Sheikh et al (2016) among health workers found that there were significant knowledge gaps concerning etiology, diagnosis and treatment of PET among health workers. It also revealed that even in the presence of national policy supporting preeclampsia programs; providers are deficient in confidence and ability as relates to treating women with preeclampsia.

Kagama et al (2011) found that health care providers in Kenya scored poorly on knowledge of PET/ eclampsia (25% overall) and during antenatal visits less than 40% of pregnant women were questioned particularly about danger signs of PET/ Eclampsia

Other studies have shown that different cadres have different levels of knowledge and the lower cadres who tend to be more involved with antenatal visits in developing countries do not have the necessary knowledge on the diagnosis of PET

#### **2.4 FACILITY FACTORS AFFECTING DIAGNOSIS OF PREECLAMPSIA**

According to the World Health Organization, the standards for diagnosis of PET is high blood pressure of over 140/90 with proteinuria after 20 weeks,

The availability of equipment for PET diagnosis in Kenya remains extremely low, regardless of their requirement for numerous conditions, not just PET. In hospitals in a study in Kenya and Zambia (a sample of 8 hospitals and 18 clinics in Kenya and 10 in Zambia), blood pressure machines could be found in only 78% of the hospitals and 85% of the clinics (Manasyan et al, 2013). Stethoscopes (necessary for manual blood pressure measurement) were available in only 70% of the hospitals and 88% of clinics. Having the equipment did not necessarily translate to their use as many hospitals in the above study had blood pressure cuffs and stethoscopes but did not use them. A different research established that blood pressure cuffs were either absent completely from the unit, or if present, were malfunctioning (Qureshi et al, 2010). In addition Lang'at and Mwanri (2015) found in their study that due to the introduction of government-

funded free maternity and the nature of funding a lot of hospitals were uncertain how to acquire medical supplies when they are out of stock (Lang'at and Mwanri, 2015).

## **2.5 CLIENT FACTORS AFFECTING DIAGNOSIS OF PREECLAMPSIA**

The main factor affecting diagnosis of preeclampsia among pregnant women is knowledge. Several studies on knowledge levels of PET among women have been done in various countries.

In the United States of America a study done by Whitney et al, 2012 found that women scored an average of 43% on 25 questions dealing with symptoms, prognosis and appropriate patient measures associated with PET. Top scores were associated with advanced education levels, no of children the woman had, having a had pre-eclampsia before, and having being given information from a health care provider or another source.

In Australia a postal survey (East et al, 2011) given to 68 women who had previous experience of PET established that 77% of them had no knowledge of PET prior to having the condition, and 51% did not initially realize how serious the condition could be.

In Brazil (Mosca et al, 2012) a study done using a social networking site involving 120 women, found that low knowledge levels was prevalent despite their access to the internet. 50% of the respondents had no knowledge at all on preeclampsia.

In India (Vidler et al, 2015), a study demonstrated that community participants view of preeclampsia have little relation with current scientific evidence such as anemia and exposure to fire were given by the respondents as predisposing factors to PET. An additional study in India (Jose et al, 2010) involving 108 women attending antenatal clinic found only 14% of the respondents had "good" levels of knowledge on PET and there was a correlation between level of knowledge and age, educational level, occupation, and level of income.

A study done in Nigeria by Adamu et al, (2014) dealing with 159 relatives of 56 eclamptic women at a referral hospital revealed that only 6 out of the 159 relatives linked hypertension with eclampsia. 75 out of 159 thought evil spirits caused eclampsia and 32 reported not knowing what causes eclampsia. Out of 56 patients; 40 had received traditional remedies prior to hospitalization.

A study done in Tanzania by Savage and Hoho (2016 ) found that there was low knowledge of preeclampsia among women with signs and symptoms of PET scoring the lowest. The more advanced the level of education and the greater the income; the better the level of knowledge.

The results of these different studies suggest that levels of knowledge PET are low generally.

## **2.6 OTHER FACTORS THAT HINDER SUCCESSFUL DIAGNOSIS OF PREECLAMPSIA**

Several other factors hinder the successful diagnosis of preeclampsia.

One is not following the guidelines for screening of preeclampsia especially when it comes to including urinalysis in routine screening. In a study conducted in Dar es Salaam it was found that in 55% of women who developed eclampsia; proteinuria was not assessed during the antenatal clinic visits (Kidanto et al, 2009) proteinuria tests were only done once in pregnancy, and were not used to monitor the development of PET.

Another factor is not being able to identify the danger signs for preeclampsia. In a study done in Eritrea being unable to recognize the danger signs of pregnancy complications led to 33% of maternal deaths (Rogo et al,2006) and in Kenya only 35% of doctors talked about warning signs of PET with pregnant women (Kagama et al, 2011) during antenatal visits.

## **2.7 GUIDELINES USED IN PREECLAMPSIA DIAGNOSIS**

The WHO has come up with guidelines for the diagnosis of preeclampsia from which Kenya has drawn from. As regards preeclampsia the WHO guidelines recommend screening for preeclampsia at all antenatal visits. This includes blood pressure screening, urinalysis and identification of danger signs of preeclampsia.(WHO, 2016)

### **2.7.1 MOH GUIDELINES FOR PREECLAMPSIA DIAGNOSIS**

The guidelines currently in use by the Ministry of Health in Kenya are the “National Guidelines for Quality Obstetrics and Perinatal care”. The guidelines lay emphasis on the identification and diagnosis of PET and eclampsia.

For the diagnosis of PET the guideline uses the following criteria to show essential parameters for diagnosis

**a) Hypertension:**

Hypertension is blood pressure (BP) of 140/90mmHg on two occasions six hours apart

OR

A diastolic blood pressure of 110mmHg or more on a single occasion

**b) Proteinuria:**

Is a protein concentration of 0.3g/l or more in at least two random urine specimens collected six hours apart

OR

Urine dipstick finding of 'trace', 1+, or more proteins

Normally protein is not supposed to be present in urine

**c) Edema:**

Gradual or sudden swelling of the face, hands and legs.

**2.8 RESEARCH GAPS IDENTIFIED**

Efforts to decrease maternal mortality have been mainly on increasing the quantity of services in LMICs but to a lesser extent on the quality of these services (Graham,2009). Hence few studies are available that concentrate on the quality of care given in regards to adherence to guidelines set.

The Ministry of Health in Kenya has developed guidelines for the purpose of standardizing and improving care of PET and eclampsia but the use and success of the guidelines has not been tested.

A study on pregnant women's knowledge of preeclampsia has not been done in Kenya. While few studies have been done on health facility preparedness for diagnosis and health worker knowledge on preeclampsia diagnosis



## 2.9 THEORETICAL FRAMEWORK

The theoretical foundation is based on the criterion based audit cycle (Jones and Cawthorn, 2012). Contained in the cycle are stages that follow the methodical cycle of; ascertaining best practice, evaluating care against criteria to improve care and monitoring to maintain improvement.

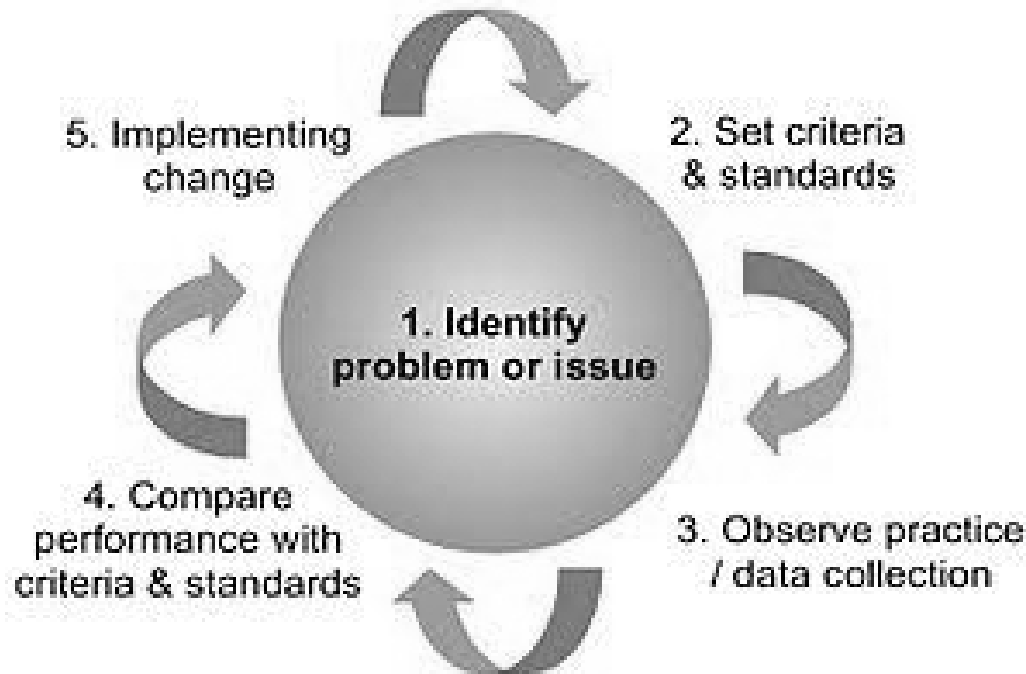


Figure 1 Theoretical framework- Criterion based audit Cycle

### **Stage 1: Preparing for the audit**

This includes selecting the topic, clarifying the intention of the audit, giving the needed structures, specifying the skills and manpower needed do the audit and educating staff and promoting their participation.

In this study the topic has been identified as preeclampsia diagnosis. The purpose is to found out how effectively guidelines are being followed. The people carrying out the audit are the researcher and research assistants and the staff involved would be those working at the antenatal clinic at Mbagathi county referral hospital

### **Stage 2: Selecting criteria and standards**

This involves clarifying the criteria and standards that will be used to evaluate adherence to guidelines given.

The criteria or standards to be used in this study will be the MoH guidelines on preeclampsia diagnosis.

### **Stage 3: Measuring performance**

In this stage one ensures that the data that has been collected is accurate and necessary. Sampling can be done using scientific methods for calculation of the sample size. A time frame can also be used to define the sample size. Or a consecutive sample of patients e.g. the last 100 referrals.

Data collected should be in line with the objectives set. Confidentiality of participants, patients and staff should be maintained.

Data will be collected according to the methodology section of this study that details the sampling method to be used, the sample size and the data sources.

### **Stage 4: Making improvements**

after the results have been disseminated and analysed; recommendations are formulated to promote change. An action plan is used to record recommendations which includes what is to be done, when it is to be done and by whom.

Recommendations will be made in this study after the data collection and analysis is done and will be given to the stakeholders. A special meeting will also be conducted with the staff at Mbagathi county referral Hospital antenatal clinic to give feedback and recommendations. The scope of the study will end here with the expectation that the administration of Mbagathi county referral hospital will continue with the next step and do regular audits having seen the benefits of this first one.

### **Stage 5: Sustaining improvements**

The audit should be done again after an agreed on period to see whether changes in the system and in how things are done have been effective. In the re audit the same methodology is used to

ensure that it is comparable with the original audit. Further adjustments may then be needed resulting in additional re-audits

The feedback of results is given to highlight achievements, while training and education can help to ascertain that the new practice is entrenched.

## 2.10 CONCEPTUAL FRAMEWORK

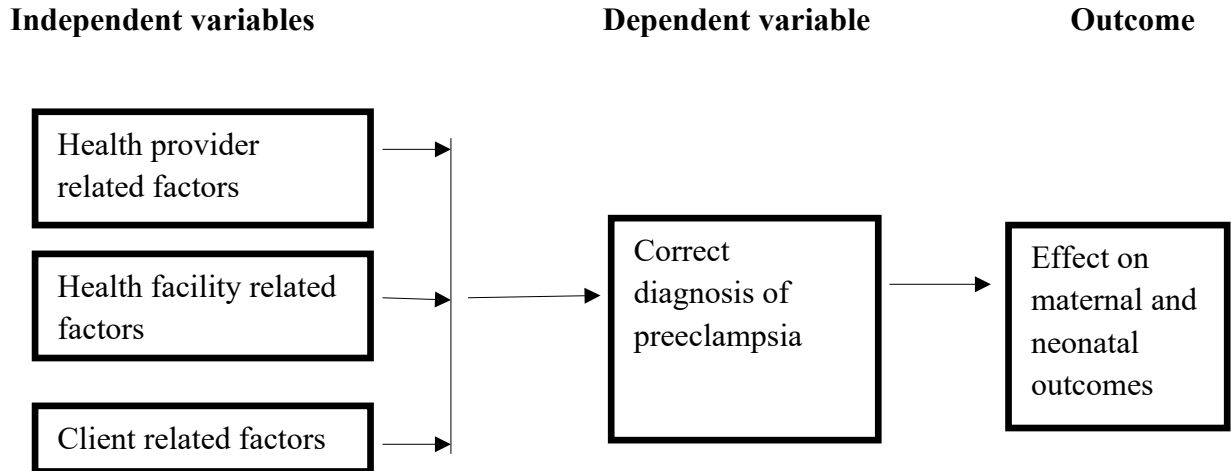


Figure 2 Conceptual framework

## 2.11 OPERATIONALIZATION OF VARIABLES

Based on the study objectives, the following variables have been identified:

### 2.11.1 INDEPENDENT VARIABLES

#### 2.11.1.1 HEALTH PROVIDER RELATED FACTORS

These are Knowledge of PET diagnosis, Attitude towards PET diagnosis, Practice of PET diagnosis

### **2.11.1.2 HEALTH FACILITY RELATED FACTORS**

These are accessibility to the health facility, staff to client ratio, availability of equipment and testing kits (blood pressure machine, dipsticks, and urinalysis) and availability and use of printed guidelines on PET diagnosis

### **2.11.1.3 CLIENT RELATED FACTORS**

These are knowledge of the risk factors, danger signs and severity of the disease.

### **2.11.2 DEPENDENT VARIABLE**

Correct diagnosis of preeclampsia

### **2.11.3 OUTCOME VARIABLES**

This is the effect on maternal and neonatal outcomes which are mortality and morbidity. The indicators include an increase or decrease in maternal and neonatal mortality and morbidity.

## **CHAPTER 3: METHODOLOGY**

### **3.1 INTRODUCTION**

This section seeks to give details of methods, materials and procedures that were used in conducting the research. It illustrates the study design, study area, study population, target population, sample size, sampling technique, data collection and data analysis. The ethical issues also highlighted.

### **3.2 STUDY DESIGN**

A hospital based descriptive, cross sectional study was conducted at Mbagathi county referral hospital. Both qualitative and quantitative approaches were used to gather information.

The study design focused on the objectives of the study which were to look into the health care provider factors, health facility factors and client factors that affect correct diagnosis of preeclampsia.

Quantitative approach was through the use of the client questionnaire and checklist of the equipment in the facility and qualitative approach was through key informant interviews of the nurses that work in the antenatal clinic.

### **3.3 STUDY AREA**

This study was done at Mbagathi county referral hospital. Located approximately 3 kilometers from the Nairobi Central Business District. It has an inpatient bed capacity of 250 and has outpatient services including Maternal and Child Health (MCH) clinic.

The hospital was selected because of it is one of the few public referral hospitals in Nairobi serving a huge population of Kenya's capital city (over five million people) including Kibra slums (one of the largest slums in Africa) which falls within the hospital's catchment area.

The hospital has also adapted the MoH guidelines which they use for PET diagnosis.

Therefore, this made it the ideal study area as its subjects were a true representation of most of the population.

The study was done at the Maternal Child Health (MCH) clinic located in Anderson Hall near the entrance of the hospital. The clinic offers antenatal, child growth monitoring, immunization, contraceptives and other reproductive health services. The clinic is operated between 8.00 a.m. to 5.00 p.m on Mondays through to Thursdays and on Fridays it is used as a gynecological clinic. The clinic receives an average of 30 antenatal clinic mothers in a day. Services at the clinic are provided by health care providers attached to this clinic, comprising five nurses, a nutritionist and a reproductive health clinical officer who comes in on Thursdays.

### **3.4 STUDY POPULATION**

Consisted of all expectant women attending the antenatal clinic. The hospital register showed that about 450 women were seen at the antenatal clinic at Mbagathi county referral hospital in the month of July 2018. There are also seven health care workers at the Mbagathi county referral Hospital antenatal clinic comprising five nurses, a nutritionist and a clinical officer. The nurses are part of the study population as they directly handle the clients

### **3.5 SELECTION AND RECRUITMENT**

#### **3.5.1 WOMEN ATTENDING THE ANTENATAL CLINIC**

##### **3.5.1.1 IDENTIFICATION**

In order to identify women to take part in the study the following inclusion and exclusion criteria was applied.

#### **Inclusion criteria**

All Pregnant women who attended Mbagathi county referral hospital between 28<sup>th</sup> August 2018 and 21<sup>st</sup> September 2018 for antenatal services and gave informed consent to be part of the study were included.

#### **Exclusion criteria**

Not included in the study were women who were not willing to be part of the study or were unable to give informed consent.

##### **3.5.1.2 SAMPLE SIZE**

Systematic random sampling was used to select study participants. The sample size was calculated using Fisher's formula as shown below; (Fisher, et al. 1991)

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

Where

n= The desired sample size (when population is more than 10,000)

Z= The standard normal deviate usually set at 1.96, which corresponds to the 95% confidence interval

P= The proportion of antenatal mothers, which is set at 50%. The proportion of antenatal women was set at 50% as there is no study done related to such a topic

d= The degree of accuracy desired (absolute precision), which is 5.0% (0.05)

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

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2}$$

=384 respondents.

Given that the total population during the study period is expected to be less than 10,000, sample adjusting is done using the following alternate formula

$$Nf = \frac{n}{1+n/N}$$

Where

Nf= the desired sample size when population is less than 10,000

N= total population (Number of prenatal women who attend the clinic during the study period) which is estimated to be 450 a month based on monthly attendance numbers.

n= the desired sample size when population is more than 10,000 = 384

$$Nf = \frac{384}{1+384/450} = 207$$

Hence 207 women were needed for the study.

This was the sample size for the women who filled the questionnaires.

### **3.5.1.3 SAMPLING METHOD**

The estimated 450 women in the period of the study were divided by the minimum adjusted sample size (207) to give the sampling interval of 2. Hence every second woman who in the queue at the antenatal clinic throughout the length of the study was recruited until desired sample size was attained. In addition at the beginning of data collection the first respondent was selected at random between the first nine women to attended the antenatal clinic by picking a number from a bag containing papers with the numbers 1 to 9. If a woman declined to be in the study for any reason the next woman in the queue (waiting to be served) was selected and after that the sampling interval of two was resumed.

### **3.5.1.4 CONSENTING PROCESS**

The consenting process involved the respondent going through the information and consent form (Appendix IV and V) which clearly outlines what the research is about and what the risks and the benefits of being involved in the research are. The form also plainly states that involvement in the study was voluntary and that the respondent could leave the study at any point without the need to give reasons or of being penalized.

After going through the information and consent form with the respondent they were allowed to accept or decline to be part of the study and if they agreed, they signed the consent form which was kept as proof of consent by the researchers.

### **3.5.1.5 DATA COLLECTION**

Data collection was done by the researcher being assisted by two trained research assistants. After sampling, the study aim, objectives and expectations was explained to the participants. The questionnaires were interviewer-administered. Each questionnaire had a unique identifier to allow for validation. The researcher and research assistants answered any questions the respondents had as they filled out the questionnaire and also made clarifications as needed.



### **3.5.2 HEALTH CARE PROVIDERS**

#### **3.5.2.1 IDENTIFICATION**

##### **Inclusion criteria**

All health care providers who work at Mbagathi county referral hospital providing antenatal services and who agreed to be part of the study were included.

##### **Exclusion criteria**

Not included were health care workers who were on leave during the period of the study, students rotating in the MCH clinic and health care providers who declined to give informed consent.

#### **3.5.2.2 SAMPLE SIZE**

There were a total of seven health care providers working at the antenatal clinic. Comprising of five nurses, a nutritionist and a clinical officer. One of the nurses was on leave during the period of the study and the nutritionist is not really concerned with giving antenatal care. Hence health workers available in the duration of the study for key informant interviews totaled five of the five, three were interviewed.

#### **3.5.2.3 SAMPLING METHOD**

For the health worker Key Informant interview (Appendix VIII) because they were few (5) census method was used where all the health workers who were available and agreed to be in the study were interviewed.

#### **3.5.2.4 CONSENTING PROCESS**

The consenting process involved the respondent going through the information and consent form (Appendix IV and V) which clearly outlined what the research was about and what the risks and the benefits of being involved in the research were. The form also plainly stated that involvement in the study was voluntary and that the respondent could leave the study at any point without the need to give reasons or being penalized.

After going through the information and consent form with the respondent they were allowed to agree or decline to be part of the study if they agreed they signed the consent form which was kept as proof of consent by the researcher.

### **3.5.3 FACILITY EQUIPMENT CHECKLIST**

The facility equipment checklist (Appendix VI) acted as an inventory of the equipment and supplies needed for the correct diagnosis of PET. It was used to assess for the facility preparedness for diagnosis of preeclampsia. This was used along with Key informant interviews to address the health facility factors affecting PET diagnosis and was filled by the researcher.

## **3.6 DATA COLLECTION TOOLS**

### **3.6.1 Questionnaires**

Pre tested semi structured researcher administered questionnaires collected quantitative data from women (Appendix VII) attending the antenatal clinic.

### **3.6.2 Key Informant interviews**

Qualitative data was collected using a Key Informant interview guide (Appendix VIII). The guide comprised questions on socio demographic, hospital related factors, health care provider related factors and client related factors that affect PET diagnosis. It also investigated the health care providers' experiences. All health care providers who were available and willing were interviewed

### **3.6.3 Checklist**

A checklist (Appendix VI) was used to assess facility preparedness for PET diagnosis as regards equipment and supplies.

## **3.7 QUALITY CONTROL MEASURES**

### **3.7.1 QUANTITATIVE DATA**

#### **3.7.1.1 VALIDITY**

To ensure research instruments were valid a well-designed questionnaire was used. A pre-test (refer to heading 3.8) was done to ascertain the accuracy of the questionnaire so that data

collected was true and accurate. The questionnaire was evaluated for internal consistency whereby test- retest was used.

### **3.7.1.2 RELIABILITY**

Reliability was ensured through selection and training of research assistants (refer to heading 3.9), they were involved in the pre-test study and were supervised as they collected data. Completed questionnaires were assessed daily and inaccuracies were rectified by the Principal Investigator.

### **3.7.2 QUALITATIVE**

The key informant interview guide was subjected to peer review and expert opinion for accuracy and validity. Member check was also employed whereby the researcher allowed the respondents to read the transcription of their interviews to ensure that these had been accurately recorded.

### **3.8 PRE-TESTING OF THE STUDY TOOLS**

The study questionnaire, checklist and key informant interview guide was pretested to enhance validity and reliability.

Pretesting was done at Mama Lucy Kibaki Hospital in Nairobi County which has almost similar infrastructure and population/demographic features. This was done two weeks before the commencement of data collection so as to test the reliability and validity of the research tools. It was also used to identify problems respondents face as they give data for the research.

A total of 21 women were selected randomly which is 10% of the study sample and the health worker key informant interview guide was pretested on one health worker.

The reason for pretesting was to assess for reliability and validity. To ensure the reliability and validity of the research tools during the pretest, internal reliability was tested using test-retest method. Validity was ascertained by allowing research experts and a statistician to do through the questionnaire and other tools and give feedback and also pretesting identified any ambiguous questions and they were subsequently corrected.

### **3.9 RECRUITMENT AND TRAINING OF RESEARCH ASSISTANTS**

Two research assistants who are diploma nurses with at least three years work experience and also had experience in field data collection were recruited. They were trained by the researcher on administration of the study questionnaires, filling of the checklist and key informant interview procedure. Training included explanation of study objectives, sampling methods, ethical considerations, data collection and interview skills. The training was thorough to ensure that data collected was as accurate as possible thus ensuring quality of data

### **3.10 DATA MANAGEMENT**

#### **3.10.1 QUANTITATIVE DATA**

After every field visit, raw data was cleaned by the principal Investigator whereby missing values, extreme values and/or inconsistencies were identified and corrected, verified for completeness, correctness and validity. The researcher conducted debriefing meetings with the research assistants every two days to discuss field progress and make adjustments where necessary.

All questionnaires and checklists were stored in a secure cupboard and accessed only by the principal investigator to ensure confidentiality and to avoid data loss. Following data collection, a double entry of data was done into Microsoft Excel to ensure accuracy. The data file was stored and could only be accessed using a password. After this data was exported to SPSS 20.0 for analysis. The data was then coded and verified for easy manipulation, analysis and presentation. Data presentation was done using descriptive statistics.

#### **3.10.2 QUALITATIVE DATA**

During every Key Informant interview, the conversation was recorded using a tape recorder. At the end of that day the recordings were transcribed into a word document and stored on a computer as a document that required a password to restrict access and maintain confidentiality.

### **3.10 DATA ANALYSIS PLAN**

#### **3.10.1 QUANTITATIVE**

#### **Client related and facility related factors that affect correct diagnosis of preeclampsia**

##### **1. Background**

- High maternal mortality rates with PET eclampsia being among the top five killers
- MoH Guidelines available for correct diagnosis of PET
- Facility related and client knowledge affects PET diagnosis

##### **2. Aim**

To identify the level of client knowledge among women receiving antenatal services at Mbagathi county referral hospital and the facility preparedness for preeclampsia diagnosis in terms of equipment and supplies

##### **3. Method**

3.1 Data source: Questionnaire given to women attending the antenatal clinic at Mbagathi county hospital and a checklist of the facility equipment and supplies that are used for PET diagnosis

##### 3.2 Study population

Definition: Women attending the antenatal clinic

Inclusion/ exclusion criteria: All women attending the antenatal clinic and who gave informed consent to participate in the study, excluding those who refuse to or are unable to consent.

##### 3.3 Study measures

Exposure variables: Client level of knowledge of preeclampsia, availability of equipment and supplies for PET diagnosis

Outcome variables : Correct PET diagnosis

Covariates / potential confounding variables: many including level of education, age, occupation, income, health provider factors

How missing data was dealt with: exclusion

##### 3.4 Planned analysis, including

Data analysis was done using Statistical Package for the Social Sciences (SPSS) version 20.

Table 1 Quantitative data analysis plan

Research objective	Variables	Descriptive	Inferential	Presentation of results
Client knowledge of Preeclampsia	knowledge of risk factors, symptoms of, signs, tests and prevention of PET	Percentages, measures of central tendency and dispersion	Chi square test of association whereby a p-value of 0.05 was considered statistically significant	Results were presented visually using frequency tables
Facility related factors	Availability and use of Bp machine, dip sticks, stethoscope, Laboratory urinalysis test and guidelines on preeclampsia diagnosis	Frequency		Results were presented visually using a table

### 3.10.2 QUALITATIVE

Audio responses recorded in the tape recorder were transcribed verbatim. The researcher engaged the services of a translator to translate the transcripts from Swahili to English. The translated version was then translated back to the original language used to ensure data accuracy. After this, information was analyzed using themes.

The preset categories for the themes was as follows

Table 2 Qualitative data analysis plan

	Question	Categories <i>Responses to questions was sorted into:</i>
1	<i>What are the socio demographic factors that determine a woman's knowledge preeclampsia and its diagnosis?(KII question 1)</i>	Level of education, age, occupation, having previous pregnancies, no of clinic visits
2	<i>What are the hospital/facility related factors that hinder the prompt diagnosis of preeclampsia?(KII question 2)</i>	Lack of equipment, inadequate number of trained personnel, lack of guidelines for diagnosis
3	<i>What are the health care provider related factors that hinder the prompt diagnosis of preeclampsia (KII question 3 and 5)</i>	Knowledge of PET diagnosis, attitude toward PET diagnosis, Practice of PET diagnosis
4	<i>What is the relationship between client's knowledge of preeclampsia and diagnosis?(KII question 4)</i>	Directly proportional, indirectly proportional, insignificant
5	<i>What can be done to improve diagnosis of preeclampsia?</i>	Other information not included in the above

Other emergent categories of themes were added if/ when they arose during data analysis. Key insights, patterns and relationships were drawn from the qualitative themes.

### 3.11 STUDY LIMITATIONS AND MITIGATION STRATEGIES

Even though the research was cautiously done there are some limitations

First, there was not enough literature from Kenya to form the literature review. Hence, literature from other countries with similar characteristics was used.

Secondly the population chosen was that of women attending antenatal clinic at Mbagathi County and referral hospital therefore limits generalization of the study to other situations

therefore the researcher recommends that in future the study be broadened to other hospitals and the community in future

Thirdly, the research is a cross sectional study looking at one point in time therefore does not clearly show the cause and effect relationship. To mitigate this, the researcher suggests a future study to be done using a longitudinal study design.

### **3.12 ETHICAL CONSIDERATIONS**

Clearance to conduct the study was gained from the University of Nairobi and Kenyatta National Hospital Ethics and Research Committee (UoN/KNH-ERC), The Nairobi City County , the Mbagathi County and referral hospital Ethics and Research Committee, the medical superintendent of Mbagathi county and referral Hospital, and the MCH Nursing officer in charge.

An informed consent was obtained from every respondent after giving a detailed explanation of the study. The respondents retained the freedom and right to decline to be part of the study or pull out from the study at any point without any negative consequences.

To assure confidentiality, no names were used in the questionnaires or key informant interviews.

### **3.13 DISSEMINATION PLAN**

The findings of the study will be presented to the antenatal clinic staff at Mbagathi county referral Hospital and to the Mbagathi county referral Hospital administration to inform relevant planning and programming. The results from the study will also be presented to the University of Nairobi, School of Nursing Sciences as well scientific conferences and workshops. Data will also be disseminated through publication in peer reviewed journals.



## **CHAPTER 4: RESULTS**

### **4.1 INTRODUCTION**

This chapter presents results on factors that determine correct diagnosis of preeclampsia based on the prescribed MoH guidelines at Mbagathi county referral hospital in Nairobi, Kenya. The results seek to meet the objectives of the research study which were; to determine the health care provider factors, the facility based factors and client knowledge that affect preeclampsia diagnosis at Mbagathi county referral hospital.

The chapter is organized according to the research objectives. Starting with data analysis process, health care provider factors, facility based factors and client knowledge that affect PET diagnosis at Mbagathi County Referral Hospital.

This study had 206 respondents from women who attended the antenatal clinic and 3 health workers who were part of the Key informant interviews.

### **4.2 DATA ANALYSIS PROCESS**

The data was collected between 28<sup>th</sup> August and 21<sup>st</sup> September 2018 and then the quantitative data was analyzed using SPSS version 20.0 and qualitative data analyzed using themes.

Data was managed as described in chapter 3.10 and confidentiality and accuracy was maintained as much as possible

#### **4.2.1 HEALTH CARE PROVIDER FACTORS THAT AFFECT DIAGNOSIS OF PET**

#### **4.2.2 KEY INFORMANTS' RESPONSE RATE**

Nurses in the antenatal clinic formed the key informants of the study. The health workers who directly handled the antenatal mothers were five nurses one of whom was on maternity leave and one clinical officer who came in only on Thursdays to review high risk clients. Three of the nurses were able to consent to and be part of the Key informant interview, these formed 60% of the key informants, therefore forming the basis for the analysis of key informants' opinions.

### 4.2.3 DEMOGRAPHIC DATA FROM KEY INFORMANTS

There were a total of three key informants. The majority 2 (67%) were female. This could be due to the fact that most women prefer to be handled by a female health care worker during antenatal visits. All of them had experience of over twenty years signifying that they had extensive experience in handling antenatal mothers. Highest level for the health workers was a higher diploma implying that health workers with higher academic acumen were not employed in the antenatal clinic. Most of them had not had training on preeclampsia in the last five years.

Table 3 Demographic characteristics of key informants

Variables		N	Percent
Gender	Male	1	33.3
	Female	2	66.7
Age in years	40-50	1	33.3
	51-60	2	66.7
Mean age	<b>51 years</b>		
Marital status	Married	3	100.0
Level of education	Diploma	2	66.7
	Higher diploma	1	33.3
Years of experience	20-25	1	33.3
	26-30	2	66.7
Income of key informants in shillings	40,000-50,000	2	66.7
	Over 50,000	1	33.3
Last training in preeclampsia	Last 5 years	1	33.3
	More than 5 years	2	33.3

### 4.2.4 KII ON HEALTH WORKER FACTORS

As regards key informant interviews on health worker factors four themes emerged as discussed below.

**Theme 1:** Lack of training updates hinders quality of knowledge the health workers have on PET diagnosis and negatively influences the correct diagnosis of PET.

*“We are not taken for latest updates. Because you find that there are latest updates on how preeclampsia should be managed. So if somebody has the training we had, the basic training, very many years ago when we get a mother with the high BP it becomes a problem on how to manage.” (KII Respondent No.3)*

*“Most of the staff just have the basic knowledge that they had. So we need guidelines, we need constant updates. We also need Continuous Medical Education on job so that we are able to know the current management and if there is anything that has changed.” (KII Respondent No.2)*

**Theme 2:** Attitude of health workers towards PET diagnosis is negatively affected by high workload, lack of equipment and dipsticks in the clinic

*“You might find a health worker just having a negative attitude. They have just seen a crowd of women in the queue and already feel tired. They might even not take the blood pressure and just palpate and let them go home “(KII Respondent No.3)*

*“Having an attitude due to overworking because of shortage of staff.” (KII Respondent No.1)*

*“It is not the attitude per say but if the equipments are availed I think they may not do it (PET diagnosis) maximally but they’ll be able to do it. If the equipments we need like let’s say the uristicks are there, I am sure the attitude will change because you will have no reason for not doing it...When they are not there it’s like it’s an excuse for not doing it because you will not leave your place to go and look for uristicks” (KII Respondent No.2)*

**Theme 3:** Routine proteinuria screening is not done except for the first antenatal visit. Whereas PET occurs after 20 weeks gestation usually after a woman has started her antenatal clinic visits hence this hinders correct diagnosis of PET

*“Practice: we just need to do routine blood pressure and routine urinalysis for all the mothers who come to us as antenatal mothers and during the entire period that they visit the antenatal clinics. However currently we only do urinalysis during the first visit” (KII Respondent No.1)*

**Theme 4:** Most nurses could identify the screening criteria for PET as high blood pressure, proteinuria and edema nevertheless, most of the nurses thought that PET was diagnosed after 28 weeks gestation rather than after 20 weeks and would use the criteria of proteinuria of 2+ and above rather than 1+ stated in the MoH guidelines.

*“In my facility now like antenatal we are able to notice the high blood pressure, we are able to send them for urinalysis.... And just looking at the client clinically. The signs and symptoms, maybe puffiness, edema is going to be there and sometimes when they come with a relative complaining of edema. ...I would say preeclampsia is diagnosed after 28 weeks and above” (KII Respondent No.2)*

*“There are mothers we have diagnosed with preeclampsia using the BP machine, and then with the lab results. When she is having protein 3+ and you’ll see the Bp is 150 over either 110. And then the other thing is this mother has massive edema of the face, hands and feet. Then you will definitely diagnose this one is preeclampsia and send this patient to the doctor. Like here we use the blood pressure and physical exam and urine. (KII Respondent No.3)*

*“For preeclampsia like proteinuria of 2+ or 3+ that one it shows and then you look at the BP and that shows that this mother is having the preeclampsia.” (KII Respondent No.1)*

### **4.3 FACILITY RELATED FACTORS AFFECTING PET DIAGNOSIS**

#### **4.3.1 AVAILABILITY OF EQUIPMENT, TESTS AND GUIDELINES**

During the duration of the study (4 weeks) a checklist was used to determine the availability of equipment, tests and the preeclampsia guidelines manual from the MoH as seen in Table 4

An electronic blood pressure (BP) machine was present during the entire duration of the study and was used daily for blood pressure measurement for all women who attended the antenatal clinic. Due to the use of an electronic Bp machine there was no need for a manual BP machine or a stethoscope which are used to take blood pressure manually.

Dipsticks were not available in the antenatal clinic and thus were not used. A woman needed to go to the lab to have urinalysis done which was available daily and was done for all first time antenatal visits. However routine dipstick tests were not done.

The MoH guidelines on preeclampsia diagnosis was available in the hospital but not in the antenatal clinic. A copy was available in the maternity ward which could be accessed by staff from the antenatal clinic but was rarely done

Table 4 Equipment checklist for duration of study

	Equipment	Presence (Yes/No)	If no, amount of time unavailable (never/no of weeks/ months/years)	Accessible (Yes/ No)	Frequency of use
1	Electronic BP Machine	Yes	N/A	YES	OFTEN
2	Manual BP machine	No	With use of electronic BP machine no need for manual	No	N/A
3	Stethoscope	No	No need for stethoscope with electronic BP machine	No	N/A
4	Dip sticks	No	Never	No	N/A
5	Laboratory urinalysis test	Yes	N/A	Yes	At first visit
6	Guidelines on preeclampsia diagnosis	No	Never but available in the maternity ward if needed	Yes	Rare

#### 4.3.2 KII ON FACILITY RELATED FACTORS IN PET DIAGNOSIS

In the key informant interviews of the health workers on facility related factors two themes emerged as discussed below.

**Theme 1:** Availability of equipment, tests and MoH PET guidelines affects correct PET diagnosis. When they are available diagnosis of PET is more accurate.

*“If you do not have the BP machine or the dipsticks as a nurse you can try and detect PET physically by looking for edema but it is hard you will want to confirm the BP and urinalysis” (KII Respondent No.3)*

**Theme 2:** Lack of dipsticks in the antenatal ward slows down PET diagnosis. If they were available then testing for proteinuria would be done more frequently not just on the first antenatal visit.

*“If we had the uristicks in MCH clinic we would be able to test for proteinuria ourselves and at every visit and this would improve preeclampsia diagnosis” (KII Respondent No.2)*

*“We lack uristicks to test proteins in urine in the MCH. The tests can be done in the laboratory but it takes so much time and as you know in government facilities it is common for supplies to be out of stock in such cases the mothers are sent to do the tests in neighboring facilities and most times they do not come back with the results” (KII Respondent No.3)*

**Theme 3:** Lack of trainings or updates on preeclampsia diagnosis organized by the health facility hinders correct preeclampsia diagnosis as the health care workers are not aware of updates in diagnostic criteria and their knowledge of PET and its diagnosis is not refreshed.

*“The last training I attended on preeclampsia was in 2010 which is eight years ago since then I am sure things have changed but I am not aware of the changes. I wish the hospital would have more trainings on preeclampsia. (KII Respondent No.1)*

**Theme 4:** High workload of health workers due to few staff in the antenatal clinic affects correct diagnosis of preeclampsia as the staffs are overworked and a case of preeclampsia can be easily overlooked

*“Like now you find that we are understaffed... there is a shortage of human resource. So you find that mothers come and they are having an issue with their blood pressure and because there is only one or two staff and there are many mothers she has to queue for long before being checked and it brings problems.” (KII Respondent No.3)*

*“Also sometimes the patients are many. You are focused on clearing the line you are not even looking at anything .You are not even noticing the high blood pressures.” (KII Respondent No.1)*

#### **4.4 CLIENT KNOWLEDGE OF PET DIAGNOSIS**

##### **4.4.1 SOCIO-DEMOGRAPHIC DATA OF CLIENTS**

According to Table 5; most of the women 195 (95%) were aged between 20-40 years of age which is when women are most fertile. Most 169 (82%) had gone to secondary school and above. Implying that many of the mothers who come to the antenatal clinic have the potential to grasp information regarding their health and conditions in pregnancy including preeclampsia. Many of the women 140 (68%) did not know what preeclampsia was. Implying that they had not received information regarding preeclampsia but of those who had information on preeclampsia; a majority 50 (66%) had received the information from a health facility. Implying that health facilities and health care workers are the most significant source of information on pregnancy conditions including preeclampsia.



Table 5: Socio- Demographic data of clients

Variables		N	Percent
Age in years	Below 20	8	4
	20-30	152	74
	31-40	43	21
	Above 40	3	1
Marital status	Married	160	77.7
	Single	46	22.3
Level of education	No education	1	0.5
	Class 1-8	36	17.5
	Form 1-4	92	44.7
	College	66	32.0
	University	11	5.3
Occupation	Housewives	80	38.8
	Self employed	76	36.9
	Formal employment	39	18.9
	Other form of employment	11	5.3
Income in dollars a day \$1=Ksh 103	Less than \$1	122	59.2
	More than \$1	46	22.3
	No response	38	18.5
Knowledge of meaning of preeclampsia	Yes	66	32.0
	No	140	68.0
Source of preeclampsia knowledge	Hospital	50	24.3
	Social media	4	1.9
	Friends/ school/personal experience	12	5.8

In terms of demographic data of women during the key informant interviews one major themes emerged as discussed below.

**Theme 1:** The level of education was shown to increase the incidence of preeclampsia diagnosis as the pregnant women will be more capable of recognizing changes in their bodies and the signs and symptoms of preeclampsia. They would also be able to follow through with their routine blood pressure readings so as to notify the nurse when there was a change in their blood pressure readings.

*“ The ones who are educated will be keener on noticing any slight difference in their blood pressure when it is being taken or even changes in their body” (KII respondent 1)*

*“A person who has got education will be eager to inquire so many things.” (KII respondent 3)*

#### **4.1.1 CLIENT KNOWLEDGE OF PREECLAMPSIA: QUESTIONNAIRE RESPONSES**

#### **4.1.2 RISK FACTORS OF PREECLAMPSIA**

As shown in figure 4.1.2 most of the respondents could correctly identify previous history of high blood pressure 136 (66%) and being overweight or obese 56.8 (57%) as risk factors of preeclampsia. This could be due to the fact that hypertension is one of the hallmarks of preeclampsia and obesity is linked to hypertension even when not pregnant. However most of them 164 (80%) wrongly identified high blood sugar levels as a risk factor of PET.

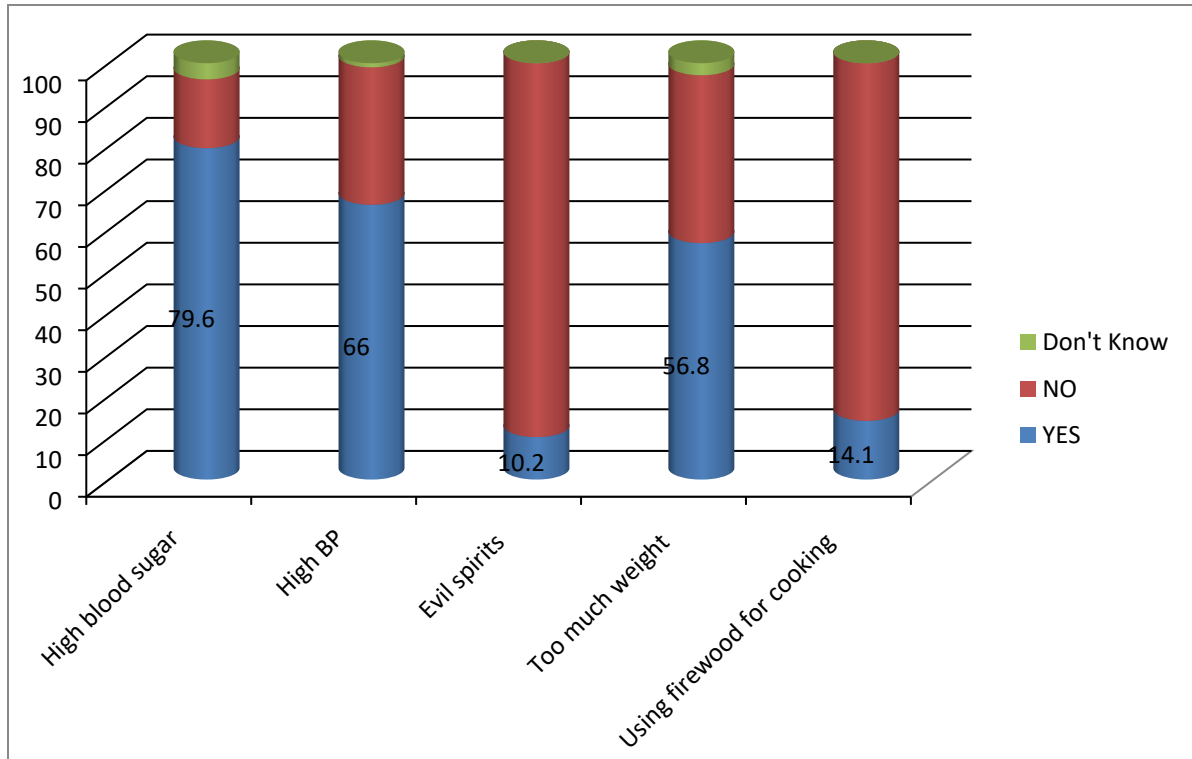


Figure 3: Risk factors for preeclampsia

#### 4.1.3 SYMPTOMS OF PREECLAMPSIA

Majority of the women were of the right opinion that frequent headaches 163 (79%) and swelling of the face, hands and feet 138(67%) are symptoms of PET according to table 6

Table 6: Symptoms of preeclampsia

	<b>Variables</b>		<b>N</b>	<b>Percent</b>
1	<b>Frequent headaches</b>	Yes	163	79.1
		No	43	20.9
		Don't know	0	0
2	<b>Stomach ache</b>	Yes	72	35.0
		No	129	62.6
		Don't know	5	2.4
3	<b>Frequency of visiting the toilet</b>	Yes	52	25.2
		No	154	74.8
		Don't know	0	0
4	<b>Back aches</b>	Yes	93	45.1
		No	107	51.9
		Don't know	6	2.9
5	<b>Swelling of the face, feet and hands</b>	Yes	138	67.0
		No	64	31.0
		Don't know	4	2.0

#### 4.1.4 SIGNS OF PREECLAMPSIA

According to figure 4.1.4 The majority 111 (54%) did not recognize proteinuria as a sign of preeclampsia and a majority were on the borderline (49% Yes and 59% No) on whether low blood pressure was a sign of PET.

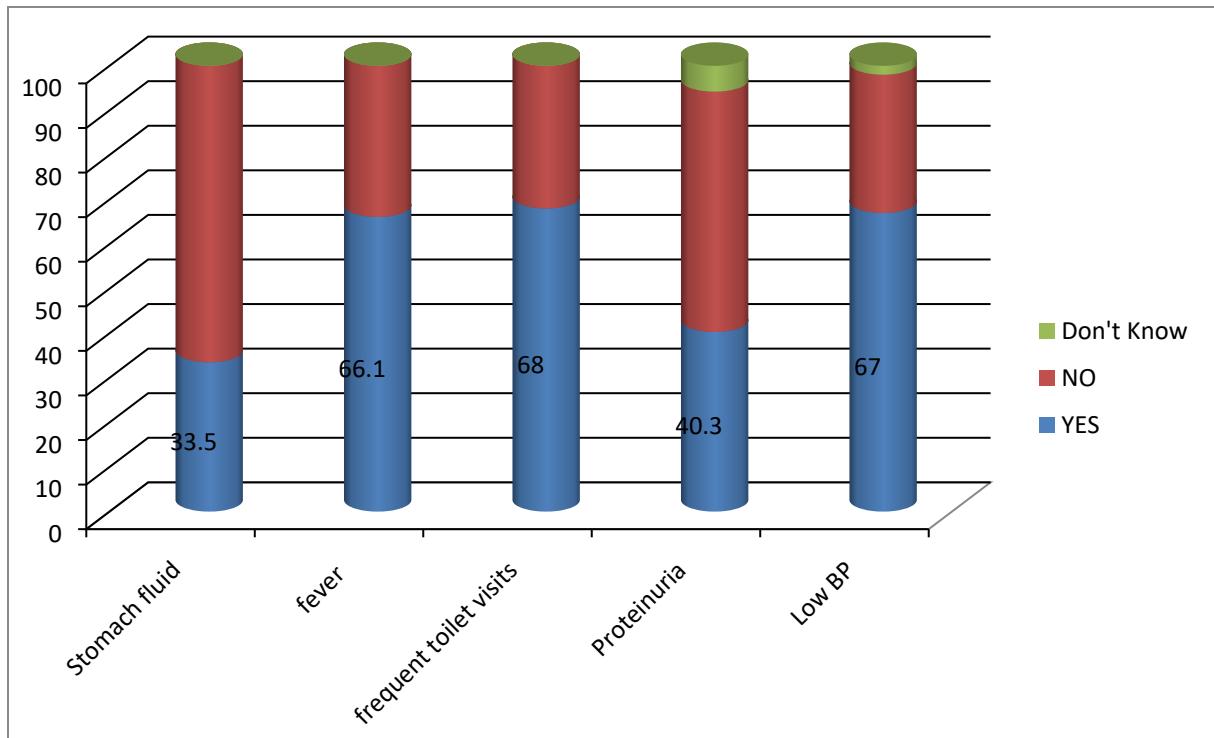


Figure 4: Signs of preeclampsia

#### 4.1.5 TESTS DONE TO DIAGNOSE PREECLAMPSIA

As shown in table 7; 167(81%) of the women were able to correctly identify blood pressure tests as one of the tests done in PET diagnosis. Nevertheless, the women were not able to correctly identify proteinuria test (54%) as a test used to diagnose PET. While a majority wrongly identified fetal movement 119 (58%), ultrasound scans 115 (56%) and blood tests 140 (68%) as tests for PET

Table 7: Tests done to diagnose preeclampsia

	<b>Variables</b>		<b>N</b>	<b>Percent</b>
1	<b>Proteins in urine</b>	Yes	93	45.1
		No	111	53.9
		Don't know	2	1
2	<b>Checking if the baby is moving</b>	Yes	119	57.8
		No	87	42.2
		Don't know	0	0
3	<b>Blood tests</b>	Yes	140	68.0
		No	66	32.0
		Don't know	0	0
4	<b>Ultrasound Scan</b>	Yes	115	55.8
		No	91	44.2
		Don't know	0	0
5	<b>Blood pressure tests</b>	Yes	167	81.1
		No	39	18.9
		Don't know	0	0

#### 4.1.6 PREECLAMPSIA PREVENTION

Most women could correctly identify that visiting witch doctors 167 (81%) and sleeping on the left side 122(59%) does not prevent PET. While going for antenatal clinic visits 161 (78%) and eating a lot of calcium rich foods 111(54%) can prevent PET. However, a majority 157 (76%) incorrectly categorized sleeping a lot as helping to prevent PET

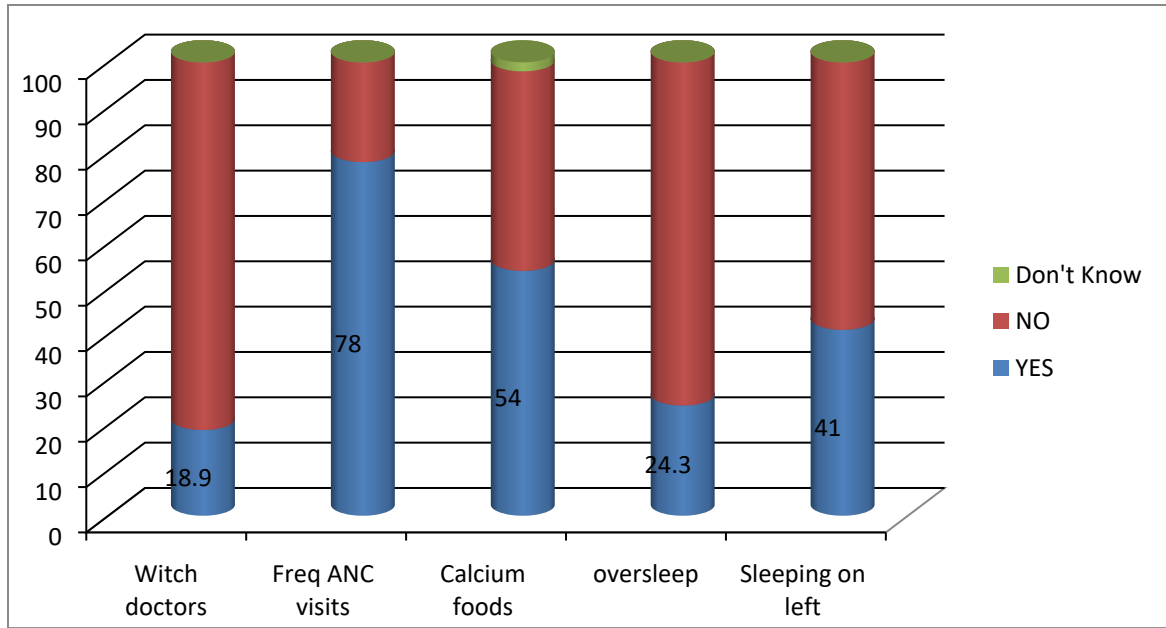


Figure 5: Preeclampsia prevention

## **CHAPTER 5: DISCUSSION**

### **5.1 INTRODUCTION**

This chapter presents discussions of the study findings, conclusions that can be drawn from these results and recommendations based on the results of this study.

### **5.2 HEALTH CARE PROVIDER FACTORS THAT AFFECT PET DIAGNOSIS**

The health worker related factors included knowledge, attitude and practice.

#### **5.2.1 KNOWLEDGE OF HEALTH CARE PROVIDERS**

Regarding knowledge most nurses thought that PET was diagnosed after 28 weeks gestation rather than after 20 weeks and would use the criteria of proteinuria of 2+ and above rather than 1+ as stated in the MoH guidelines. This finding agrees with that of a study done by Thein et al (2012), Kagema et al (2011), Bigdeli et al (2013) and Sheikh et al (2016) where it was found that most health workers have limited knowledge of PET diagnosis. This could be due to the fact that a majority of health workers had not had training in the last five years on preeclampsia despite all of them having more than twenty years experience. Hence, the knowledge they have on preeclampsia is inadequate and requires to be updated through refresher courses at the health facility. This finding correlates to a study done in Pakistan by Sheik et al (2016) and another study done in Mozambique by Boene et al (2016) that found lack of refresher trainings add to lower knowledge on preeclampsia by health workers.

#### **5.2.2 ATTITUDE OF HEALTH CARE PROVIDERS**

Attitude of health workers towards PET diagnosis is negatively affected by facility factors such as high workload, lack of equipment and dipsticks in the clinic. This corresponds to studies done by with a study done in South Africa by Haskins et al (2016) and Dias et al (2012) that showed that high workload and lack of equipment and supplies in the health facility affected the attitude of nurses in that they felt overwhelmed and frustrates and were unable to provide adequate care

This is due to the fact that in the prescence of limited resources the health worker gets discouraged that they are not able to give adequate care, leading to a lack of job satisfaction resulting in a negative attitude.



### **5.2.3 PRACTICE OF HEALTH CARE PROVIDERS**

As regards practice, the health workers would screen for hypertension at every antenatal clinic visit which agrees with the Kagema et al study (2011) done in Kenya where it was found that blood pressure screening rates were high 96%. This could have been aided by the availability and use of an electronic blood pressure machine in the antenatal clinic that is less cumbersome than using a manual BP machine with a stethoscope.

However, unlike the Kagema et al study (2011) study where checks for edema were rarely done health care providers in this study reported that they would usually check for edema in patient's face, hands and feet. This was easily done during physical assessment of the pregnant woman.

Proteinuria was only done at the first antenatal visit unless PET was suspected due to hypertension or edema. Although PET occurs after 20 weeks gestation usually after a woman has started her antenatal clinic visits hence this hinders correct diagnosis of PET. The reason for this was that dipsticks were not available in the antenatal clinic and the lab used served the whole hospital hence queues were very long and hence routine urinalysis using the lab would be burdensome for the pregnant women as they do not want to spend the whole day at the hospital each time they come for an antenatal visit.

### **5.3 FACILITY RELATED FACTORS AFFECTING PET DIAGNOSIS**

The facility related factors that affected PET diagnosis were identified to be availability of equipment, frequency of trainings, staffing.

#### **5.3.1 AVAILABILITY OF EQUIPMENT**

An electronic blood pressure (BP) machine was present and was used daily. This is in contrast to a previous study done by Manasyan et al (2013) where many hospitals in the study (Kenya and Zambia) were found to have blood pressure cuffs but did not use them and another study by Qureshi et al, (2010) that found that blood pressure cuffs were either missing entirely from the unit, or if present, were defective.

Dipsticks were not available in the antenatal clinic. This led to lack of routine proteinuria tests. Which negatively affects diagnosis of PET

### **5.3.2 FREQUENCY OF TRAININGS**

Lack of trainings or updates on preeclampsia diagnosis organized by the health facility hinders correct PET diagnosis as the health care workers are not aware of updates in diagnostic criteria and their knowledge of PET and its diagnosis is not refreshed. This agrees with a study by Sheik et al (2016) that found that regular trainings are needed by health care providers to improve preeclampsia diagnosis.

### **5.3.3 STAFFING**

High workload of health workers due to few staff in the antenatal clinic affects correct diagnosis of preeclampsia as the staffs are overworked and a case of preeclampsia can be easily overlooked. This concurs with studies done by Haskins et al (2016) and Dias et al (2012) that found that poor staffing reduces the effectiveness of health care providers.

## **5.4 CLIENT KNOWLEDGE OF PET DIAGNOSIS**

Majority of the clients had no knowledge of PET or its diagnosis. This concurs with studies done in the United States of America by Whitney et al (2012), in Brazil by Mosca et al (2012), in India by Jose et al (2010) and in Tanzania by Savage and Hoho (2016) which found that low knowledge levels on PET among women was prevalent. The reason for this could be the health workers are not giving the women information on this condition. The health workers themselves also have inadequate knowledge to pass on to the women thus further limiting the quality of information women have regarding PET.

The women in this study could also recognize that there is no relationship between evil spirits and witches in the risk factors and treatment of PET, this is in contrast to a study done in India (Vidler et al, 2015) and Nigeria (Adamu et al, 2014), that showed that community participants perception of preeclampsia have little relation with current scientific evidence stating that anemia, exposure to fire and evil spirits were predisposing factors of PET. This could be due to the fact that most women in this study had more than a primary school education hence were more knowledgeable and less superstitious. The fact that they had also attended an antenatal clinic showed that they had faith in conventional medicine and were less likely to go to witch doctors for treatment

## **CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS**

### **6.1 CONCLUSIONS**

In conclusion the study sought to determine what the health care provider factors, facility based factors and client knowledge that affect preeclampsia diagnosis at Mbagathi county referral hospital.

#### **6.1.1 HEALTH CARE PROVIDER FACTORS**

The findings showed that one of the biggest factors that affected health care providers was having poor knowledge of preeclampsia diagnosis. In that all of them had not had a recent refresher course on PET and so had not been updated on the guidelines of PET diagnosis..

The attitude of health care providers was negatively affected by facility factors that included poor staffing, lack of equipment and dipsticks in the antenatal clinic.

As regards practice; health care providers would screen for hypertension as per the guidelines. However, screening for proteinuria was inadequate as it was only done on the first visit due to lack of dipsticks in the antenatal clinic.

#### **6.1.2 FACILITY RELATED FACTORS**

The study found that in terms of facility based factors Mbagathi county and referral hospital had an electronic blood pressure machine that was working and being used according to the national guidelines. However dipsticks used to test for proteinuria and the national guidelines on PET diagnosis were unavailable in the antenatal clinic. Hence improvements in their availability would greatly improve the accuracy of preeclampsia diagnosis.

The lack of trainings at facility level on PET diagnosis and poor staffing also negatively affected accuracy of PET diagnosis.

### **6.1.3 CLIENT KNOWLEDGE**

Generally client knowledge on PET was poor. Most of the women attending the antenatal clinic did not know what preeclampsia was. They scored poorly in all five aspects of PET tested that included risk factors for PET, signs and symptoms of PET, tests for PET and prevention strategies for PET.

## **6.2 RECOMMENDATIONS**

### **6.2.1 RECOMMENDATION FOR POLICY**

1. The county government together with hospital administration should review diagnostic criteria for PET and in collaboration with relevant stakeholders including the health workers implement and scale up (where already implemented) the use of these guidelines to improve correct diagnosis of PET.
2. The use of dipstick urine tests for every woman at every antenatal clinic visit in health facilities across the country to improve the diagnosis of PET
3. The availability of dipsticks at antenatal clinics for use by nurses during assessment of clients rather than use of laboratory urinalysis to improve on proteinuria checks for PET
4. PET awareness talks to all mothers who attend antenatal clinics so as to improve their knowledge of PET and improve their recognition of danger signs or risk factors of PET for correct diagnosis
5. Constant refresher updates for health care providers on PET to improve and constantly update their level of knowledge
6. Allocate more staff to antenatal clinics to increase time health provider spends with each client so as to improve accuracy of diagnosis

### **6.2.2 RECOMMENDATIONS FOR FURTHER STUDY**

A longitudinal study among pregnant women to establish the determinants of correct diagnosis of PET and inclusion of more facilities to gain a more accurate picture.

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**APPENDIX I: TIME FRAME**

ACTIVITY/ PERIOD	Jan - Feb	March -April	May- July	August	Sep	October
Problem identification						
Proposal writing						
Seeking consent from ethical committee						
Pretesting of study tools						
Data collection						
Data cleaning and entry						
Report writing and presentation						
Dissemination and study findings						

Table 8: Timeframe

## APPENDIX II: STUDY BUDGET

Item	Quantity	Unit	Unit Cost (Ksh)	Total amount
Human resource				
Training of research assistants	2	3	500	3000
Research assistance stipends	2	50	500	50000
Transport (researcher)	1	50	100	5000
Materials and Resources				
Printing questionnaire	1	10	100	1000
Photocopy of questionnaires	100	10	2	2000
Biro pens (2 dozen)	2	1	200	400
Pencils (2 dozen)	2	1	200	400
Rubbers (6)	6	1	10	60
Folders (6)	6	1	100	600
Field books	50	1	100	5000
Flash disks	2	1	1000	2000
Proposal and Thesis				
Proposal printing (100 pages)	3	100	10	3000
Proposal photocopying (100 pages)	6	100	2	1200
Proposal paper binding (100 pages)	9	1	100	900
Ethics committee fee	1	1	2000	2000
Other ethics committees	2	1	2500	5000
Data analysis	1	1	40000	40000

Final thesis printing (200 pages)	3	200	10	6000
Final thesis binding	6	1	500	3000
Miscellaneous (10% of budget)				14000
Grand Total				144560

Table 9: Study Budget

### **APPENDIX III: MOH GUIDELINES FOR PREECLAMPSIA DIAGNOSIS**

The guidelines that address PET in Kenya and are currently in use by the Ministry of are included in the “National Guidelines for Quality Obstetrics and Perinatal care” (Ministry of Public Health and Sanitation and Ministry of Medical Service, 2011) page 87. The guidelines lay emphasis on the identification and diagnosis of PET and eclampsia.

For the diagnosis of PET the guideline uses the following criteria to show essential parameters for diagnosis

**a) Hypertension:**

Hypertension is blood pressure (BP) of 140/90mmHg on two occasions six hours apart

OR

A diastolic blood pressure of 110mmHg or more on a single occasion

**b) Proteinuria:**

Is a protein concentration of 0.3g/l or more in at least two random urine specimens collected six hours apart

OR

Urine dipstick finding of ‘**trace**’, **1+**, or more proteins

Normally protein is not supposed to be present in urine

**c) Edema:**

Gradual or sudden swelling of the face, hands and legs.

## APPENDIX IV: INFORMATION AND CONSENT FORM (ENGLISH)

### PARTICIPANT INFORMATION AND CONSENT FORM

**Title of Study:** Determinants for the correct diagnosis of preeclampsia among women seeking antenatal services: A descriptive, cross sectional study at the antenatal clinic Mbagathi County Referral hospital. Nairobi, Kenya.

#### **Introduction:**

#### **Dear Respondent,**

I am Yvonne Dullo, a post graduate student in the University of Nairobi, School of Nursing. I am carrying out a study on : *Determinants for the correct diagnosis of preeclampsia among women seeking antenatal services: A descriptive, cross sectional study at the antenatal clinic Mbagathi County Referral hospital. Nairobi, Kenya.*

The purpose of this consent form is to give you the information you will need to help you decide whether or not to be a participant in the study. Feel free to ask any questions about the purpose of the research, what happens if you participate in the study, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions to your satisfaction, you may decide to be in the study or not. This process is called 'informed consent'. Once you understand and agree to be in the study, I will request you to sign your name on this form. You should understand the general principles which apply to all participants in a medical research: i) Your decision to participate is entirely voluntary ii) You may withdraw from the study at any time without necessarily giving a reason for your withdrawal iii) Refusal to participate in the research will not affect the services you are entitled to in this health facility or other facilities. We will give you a copy of this form for your records.

May I continue? YES / NO

This study has approval by The Kenyatta National Hospital-University of Nairobi Ethics and Research Committee protocol No. P327/05/2018



### **WHAT IS THIS STUDY ABOUT?**

I will interview women who are pregnant. The purpose of this study is to evaluate the determinants for the correct diagnosis of preeclampsia among women seeking antenatal services: A descriptive, cross sectional study at the antenatal clinic Mbagathi County Referral hospital. Nairobi, Kenya. Participants in this study were asked about their knowledge of how preeclampsia is diagnosed and the current practice. There were approximately 217 participants in this study randomly chosen. We are asking for your consent to consider participating in this study.

### **WHAT WILL HAPPEN IF YOU DECIDE TO BE IN THIS RESEARCH STUDY?**

If you agree to participate in this study, the following things will happen:

You will fill a questionnaire which will take you approximately fifteen minutes. The questionnaire will cover topics such as knowledge of preeclampsia diagnosis and the current practice.

After the interview has finished, we will ask for a telephone number where we can contact you if necessary. If you agree to provide your contact information, it was used only by people working for this study and will never be shared with others. The reasons why we may need to contact you include clarifying or following up on information you have given.

### **ARE THERE ANY RISKS, HARMS DISCOMFORTS ASSOCIATED WITH THIS STUDY?**

Medical research has the potential to introduce psychological, social, emotional and physical risks. Effort should always be put in place to minimize the risks. One potential risk of being in the study is loss of privacy. We will keep everything you tell us as confidential as possible. We will use a code number to identify you in a password-protected computer database and will keep all of our paper records in a locked file cabinet. However, no system of protecting your confidentiality can be absolutely secure, so it is still possible that someone could find out you were in this study and could find out information about you.

Also, answering questions in the interview may be uncomfortable for you. If there are any questions you do not want to answer, you can skip them. You have the right to refuse the interview or any questions asked during the interview.

Furthermore, all study staff and interviewers are professionals with special training in these examinations/interviews.

### **ARE THERE ANY BENEFITS BEING IN THIS STUDY?**

You may benefit by receiving free information about preeclampsia diagnosis. We will refer you to a hospital for care and support where necessary. Also, the information you provide will help us better understand preeclampsia diagnosis. This information is a contribution to science and health care

### **WILL BEING IN THIS STUDY COST YOU ANYTHING?**

This study will cost you about fifteen minutes of your time.

### **WILL YOU GET REFUND FOR ANY MONEY SPENT AS PART OF THIS STUDY?**

This study will not cost you money.

### **WHAT IF YOU HAVE QUESTIONS IN FUTURE?**

If you have further questions or concerns about participating in this study, please call or send a text message to the principal investigator, the university supervisor and/ or the secretary of the research and ethics committee using the following contacts

#### **Principal Investigator**

Yvonne Akinyi Dullo

Tel:0700927595

Email: [yvonedullo@gmail.com](mailto:yvonedullo@gmail.com)

School of Nursing Sciences

College of Health Sciences

The University of Nairobi

P.O. Box 41693-00100, Nairobi, Kenya

**University Supervisor**

Dr. Jennifer Rabilo Oyieke

Telephone: (020) 2726300 Ext 44355

Email: jenniferoyieke@yahoo.com

Senior Lecturer, School of Nursing Sciences

College of Health Sciences

The University of Nairobi

P.O BOX 19673-00200, Nairobi, Kenya

Professor Mark L. Chindia

The Secretary

University of Nairobi- Kenyatta National Hospital Ethics and Research Committee

P.O Box 19676-00202

Tel: (254-020)- 2726300 Ext 44355

Email: [uonknh\\_erc@uonbi.ac.ke](mailto:uonknh_erc@uonbi.ac.ke)

**PARTICIPANT'S STATEMENT**

I have read this consent form or had the information read to me. I have had the chance to discuss this research study with the researcher. I have had my questions answered in a language that I understand. The risks and benefits have been explained to me. I understand that my participation in this study is voluntary and that I may choose to withdraw anytime. I freely agree to participate in this research study. I understand that all efforts will be made to keep information regarding my personal identity confidential. By signing this consent form, I have not given up any of the legal rights that I have as a participant in a research study.

I agree to participate in this research study: YES  NO

**Participant signature / Thumb Print** \_\_\_\_\_

**Date** \_\_\_\_\_

**RESEARCHER’S STATEMENT**

I, the undersigned, have fully explained the relevant details of this research study to the participant. The participant has understood and has freely given her consent.

**Researcher’s Name:** \_\_\_\_\_ **Signature** \_\_\_\_\_

**Date:** \_\_\_\_\_

**WITNESS’S STATEMENT**

I, the undersigned have witnessed the consenting process. The researcher has fully explained the relevant details of this research study to the participant. The participant has understood and has freely given her consent.

**Witness’s Name:** \_\_\_\_\_ **Signature** \_\_\_\_\_

**Date:** \_\_\_\_\_

## APPENDIX V: UTOAJI IDHINI

### KICHWA CHA UTAFITI:

Vipimo kwa ajili ya utambuzi sahihi wa preeclampsia kati ya wanawake wanaohudhuria kliniki ya uzazi katika hospitali ya rufaa ya kata ya Mbagathi

### Mhojiwa,

Jina langu ni Yvonne Dullo, mwanafunzi wa uzamili, chuo kikuu cha Nairobi, shule ya uuguzi. Nafanya utafiti kuhusu *Vipimo kwa ajili ya utambuzi sahihi wa preeclampsia kati ya wanawake wanaohudhuria kliniki ya uzazi katika hospitali ya rufaa ya kata ya Mbagathi*

Umuhimu wa mazungumzo haya ni kukufahamisha zaidi ili ufanye uamuzi wa busara kushiriki au kutoshiriki katika utafiti huu. Kuwa huru kuuliza maswali yoyote kuhusu kitakachofanyika utakapokubali kushiriki, madhara yanayoweza kutokea, manufaa ya utafiti huu, haki zako kama mshiriki na maswali yoyote kuhusu lolote ambalo hulielewi. Tutakapo jibu maswali yako yote, basi utaamua kushiriki au la. Utakapokubali, nitakuuliza tafadhali utie sahihi na jina lako kwa ukurasa hapa chini.

Unafaa uelewe kwa ujumla nguzo muhimu ambazo zinalinda washiriki katika utafiti wa sayansi ya afya: i) Kushiriki kwako ni kwa hiari; ii) Unaweza kujiondoa wakati wowote bila kushurutishwa kutoa maelezo ya kufanya hivyo; na iii) Kutoshiriki kwako katika utafiti huu hakutaathiri huduma unazopaswa kuzipata kwa hospitali hii. Tutakupa nakala yako ili ujiwekee kwa manufaa yako binafsi.

Utafiti huu umeidhinishwa na kitengo cha maadili na utafiti cha hospitali kuu ya Kenyatta na chuo kikuu cha Nairobi nambari: \_\_\_\_\_

### Utafiti huu unahusu nini?

Nitakao wahoji ni akina mama walio wajawazito na wafanyakazi wa afya. Utafiti huu unatafuta kuchunguza mambo ambayo huamua utambuzi sahihi wa preeclampsia. Washiriki wataulizwa maswali kuhusu ujuzi wao wa preeclampsia. Mahojiano haya yaweza pia nakiliwa kutumia

kinasa sauti. Kutakuwa na washiriki 217 ambao wamechaguliwa kwa njia ya kisayansi. Ninaomba idhini yako uwe mshiriki wa utafiti huu.

### **Nini kitakachofanyika ukikubali kushiriki?**

Yafuatayo yatafanyika: Utahojiwa na mtafiti aliyehitimu kwa sehemu ya tulivu na ya kisiri ambapo utakuwa huru kwa muda wa dakika kumi na tano hivi.

### **Utafiti huu una madhara yoyote?**

Ijapokuwa utafiti wa kiafya una madhara yake kama ya kisaikolojia, tutajitahidi kabisa kupunguza madhara yoyote kwako. Kwa mfano, dhara moja ni uwezekano wa kupoteza usiri wako. Hata hivyo, mambo yote utatueleza tutayaweka kwa siri. Tutakupa nambari ya siri kwa compyuta ambayo imelindwa. Stakabadhi zote zitawekwa kwenye kabati itakayofungwa kwa kufuli.

Kama kutakuwa na maswali ambayo hungetaka kuyajibu, utaruhusiwa kutoyajibu. Uko na haki ya kutojibu swali lolote katika mahojiano. Watafiti wetu wote wamehitimu kufanya mahojiano haya. Kama kutakuwa na kuumia, ugonjwa au shida zingine zozote kwa ajili ya utafiti huu, tafadhali wasiliana nasi kupitia nambari iliyo chini ya kurasa hizi. Ikiwa kutakuwa na adhari yeyote ya kisaikologia, tunaye mshauri atakaye zungumza nawe.

### **Utafiti huu una manufaa yoyote?**

Utataidika kwa kupata wosia mwafaka kuhusu preeclampsia. Pia, utafiti huu utatuwezesha kuelewa magonjwa haya zaidi and jinsi ya kukabiliano nayo. Pia, tutaongeza ufahamu zaidi kwa sayansi ya afya na binadamu.

### **Kuna gharama ya kushiriki?**

Utafiti huu utahitaji dakika kumi na tano za muda wako.

### **Utarejeshewa pesa zako?**

Utafiti huu hautakugharimu pesa.

## **Na kama utakuwa na maswali baadaye?**

Kama una maswali zaidi au lolote ambalo hulielewi kuhusu utafiti huu, tafadhali usisite kuwasiliana nasi kupitia nambari ambazo zimeandikwa hapa chini.

### **Mtafiti Mkuu**

Yvonne Akinyi Dullo

Simu:0700927595

Barua pepe: yvonedullo@gmail.com

Shule ya uuguzi

Chuo kikuu cha nairobi

Sanduku la posta: 41693-00100, Nairobi, Kenya

### **Msimamizi**

Daktari Jennifer Rabilo Oyieke

Simu: (020) 2726300 Ext 44355

Barua Pepe: jenniferoyieke@yahoo.com

Mhadhiri mkuu, shule ya uuguzi

Chuo kikuu cha Nairobi

Sanduku la posta: 19673-00200, Nairobi, Kenya

Profesa Mark L. Chindia

Katibu kitengo cha maadili na utafiti cha hospitali kuu ya Kenyatta na chuo kikuu cha Nairobi

Sanduku la posta: 19676-00202

Simu: (254-020)- 2726300 Ext 44355

Barua pepe: uonknh\_erc@uonbi.ac.ke

## **TAARIFA YA MSHIRIKI**

Nimesoma au nimesomewa nakala hii. Nimepata kuzungumza kuhusu utafiti huu na mtafiti mwenyewe. Maswali yangu yamejibiwa kwa lugha ninayoielewa vizuri. Madhara na manufaa yameelezwa wazi. Ninaelewa kushiriki kwangu ni kwa hiari na kwamba ninao uhuru wa

kutoshiriki wakati wowote. Ninakubali bila kushurutishwa kushiriki katika utafiti huu. Ninaelewa kwamba bidii itatiwa kuhakikisha habari zangu zimewekwa siri. Kwa kutia sahihi kwa daftari hili, sijapeana haki zangu za kisheria ambazo ninazo kama mshiriki katika utafiti huu.

**Nimekubali kushiriki katika utafiti huu: NDIO**  **LA**

**Sahihi / Kidole** \_\_\_\_\_

**Tarehe** \_\_\_\_\_

#### **TAARIFA YA MTAFITI**

Mimi, ninayetia sahihi hapo chini, nimeeleza maswala muhimu ya utafiti huu kwa mshiriki na ninaamini ya kwamba ameyaelewa vilivyo na kwamba ameamua bila kushurutishwa kukubali kushiriki.

**Jina la Mtafiti:** \_\_\_\_\_ **Sahihi** \_\_\_\_\_

**Tarehe:** \_\_\_\_\_

#### **TAARIFA YA SHAHIDI**

Mimi, ninayetia sahihi hapo chini, nimeshuhudia mazungumzo kati ya mtafiti na mhojiwa. Mhojiwa ameelezewa maswala muhimu ya utafiti huu, naamini ameyaelewa vilivyo kwamba ameamua kushurutishwa kukubali kushiriki.

**Jina la shahidi:** \_\_\_\_\_ **Sahihi** \_\_\_\_\_

**Tarehe:** \_\_\_\_\_



**APPENDIX VI: EQUIPMENT CHECKLIST FOR HEALTH FACILITY**

	Equipment	Presence (Yes/No)	If no, the amount of time unavailable (never/no of weeks/ months/years)	Accessible (Yes/ No)	Frequency of use (Rare/Moderate/often)
1	Bp Machine				
2	Stethoscope				
3	Dip sticks				
4	Laboratory urinalysis test				
5	Guidelines on preeclampsia diagnosis				

Table 10: Equipment checklist

## APPENDIX VII: CLIENT QUESTIONNAIRE

Questions used with respondent

Questionnaire on “Client knowledge of preeclampsia diagnosis among women receiving antenatal services at Mbagathi county referral Hospital”

Serial Number \_\_\_\_\_ Date of interview \_\_\_\_\_

### Instructions

Thank you for your willingness to respond to the following questions and participate in the study. The session will take about 10-15 minutes. You are kindly requested to fill out the questionnaire by selecting the best responses using a tick [✓]. You are encouraged to be as accurate in your responses as possible. All gathered information will be kept confidential and will only be used for the purpose of the study. Feel free to ask for any clarifications. Thank you.

### Section I – Demographic data

1. What is your age? \_\_\_\_\_
2. Marital status  
[ ] Married [ ] Single [ ] Separated [ ] Widowed [ ] Divorced
3. How many children do you have? \_\_\_\_\_
4. What is your occupation [ ] Self employed [ ] Formal employment [ ] housewife  
[ ] Other(Specify) \_\_\_\_\_
5. Level of education attained  
[ ] No school [ ] Class 1-8 [ ] Form 1-4 [ ] College [ ] University
6. How much are you paid? \_\_\_\_\_
7. How many times have you gone for antenatal clinic? \_\_\_\_\_
8. Do you know what preeclampsia is Yes [ ] No [ ]  
If yes where have you learnt about it? \_\_\_\_\_

### Section II: Knowledge of preeclampsia

Answer with yes or no responses. Feel free to clarify where you do not understand.

1. Which of the following can cause someone to have preeclampsia
  - a) High blood sugar level      **Yes [ ] No [ ] I don't know [ ]**
  - b) Evil spirits/ demons/witches      **Yes [ ] No [ ] I don't know [ ]**
  - c) Having had high blood pressure before **Yes [ ] No [ ] I don't know [ ]**
  - d) Having too much weight **Yes [ ] No [ ] I don't know [ ]**
  - e) Using firewood for cooking or bathing a lot **Yes [ ] No [ ] I don't know [ ]**
  
2. Which of the following symptoms may be experienced in preeclampsia
  - a) Headache **Yes [ ] No [ ] I don't know [ ]**
  - b) Going to the toilet many times **Yes [ ] No [ ] I don't know [ ]**
  - c) Stomach ache      **Yes [ ] No [ ] I don't know [ ]**
  - d) Back ache **Yes [ ] No [ ] I don't know [ ]**
  - e) Sudden swelling of the face, hands and feet **Yes [ ] No [ ] I don't know [ ]**
  
3. Which of the following if found by the nurse are common in preeclampsia
  - a) A lot of fluid in the stomach **Yes [ ] No [ ] I don't know [ ]**
  - b) A big baby **Yes [ ] No [ ] I don't know [ ]**
  - c) High temperature **Yes [ ] No [ ] I don't know [ ]**
  - d) Low blood pressure      **Yes [ ] No [ ] I don't know [ ]**
  - e) Presence of protein in urine **Yes [ ] No [ ] I don't know [ ]**
  
4. What are the tests done to diagnose preeclampsia
  - a) Protein in urine **Yes [ ] No [ ] I don't know [ ]**
  - b) Blood tests      **Yes [ ] No [ ] I don't know [ ]**
  - c) Checking if baby is moving **Yes [ ] No [ ] I don't know [ ]**
  - d) Blood pressure **Yes [ ] No [ ] I don't know [ ]**
  - e) Ultrasound **Yes [ ] No [ ] I don't know [ ]**
  
5. Which of the following may help prevent preeclampsia and its serious risks
  - a) Eating food with a lot of calcium such as milk  
     **Yes [ ] No [ ] I don't know [ ]**
  - b) Going to a witch doctor **Yes [ ] No [ ] I don't know [ ]**
  - c) Sleeping a lot **Yes [ ] No [ ] I don't know [ ]**
  - d) Going to the pregnancy clinic **Yes [ ] No [ ] I don't know [ ]**
  - e) Sleeping on the left side **Yes [ ] No [ ] I don't know [ ]**

## APPENDIX VIII: KEY INFORMANT INTERVIEW GUIDE

Dear participant,

Thank you for your willingness to be part of the Key informant interview for a study on “Determinants for the correct diagnosis of preeclampsia among women seeking antenatal services: A descriptive, cross sectional study at the antenatal clinic Mbagathi County Referral hospital. Nairobi, Kenya”

The details of the research are as per the information sheet for participants. Requirements for informed consent are as specified in the informed consent form which you will be expected to fill as proof of consent to participate. Be honest, free and active in your in responding to the questions. The interview will be guided by the Key Informant Interview guide. Recordings will also be made by use of digital tape recorders to store information as presented. All information gathered will be held under strict confidentiality and will only be used for the purposes of the research. You are encouraged to be as accurate in your responses as possible. Feel free to ask for any clarifications. Thank you.

Serial No \_\_\_\_\_ Date \_\_\_\_\_

### Section I: Demographic data

1. Sex Male  Female
2. What is your age? \_\_\_\_\_
3. Marital status  
 Married  Single  Separated  Widowed  Divorced
4. What is your occupation  Nurse  Midwife  Clinical officer  Doctor   
 Other(Specify) \_\_\_\_\_
5. Level of education attained  
 Certificate  Diploma  Higher Diploma  Degree  Masters  
 Other(Specify) \_\_\_\_\_
6. Number of years of experience \_\_\_\_\_
7. How much is your monthly income \_\_\_\_\_
8. Have you received training on preeclampsia Yes  No

9. If Yes when was the last training you received \_\_\_\_\_  
Where? \_\_\_\_\_

### **Questions**

1. In your opinion what are the socio demographic factors that determine a woman's knowledge of obstetric conditions like preeclampsia and their diagnosis?
2. In your own view what are the hospital/facility related factors that hinder the prompt diagnosis of preeclampsia? Which ones?
3. In your own view what are the health worker related factors that hinder the prompt diagnosis of preeclampsia? Which ones? (Knowledge? Attitude and Practice)
4. In your own view does a pregnant woman's knowledge of preeclampsia affect diagnosis of preeclampsia? How?
5. How has been your previous experience of preeclampsia diagnosis? What parameters did you use? What tests were done to confirm diagnosis?
6. What do you think can be done to improve diagnosis of preeclampsia?

**APPENDIX IX: LETTER SEEKING PERMISSION FROM MBAGATHI COUNTY REFERRAL HOSPITAL  
TO CONDUCT RESEARCH**

Yvonne Dullo  
Reg No: H56/87563/2016  
School of Nursing Sciences  
College of Health Sciences  
University of Nairobi  
Tel: 0700927595  
Email:  
[yvonedullo@gmail.com](mailto:yvonedullo@gmail.com)  
15<sup>th</sup> August 2018

The Medical Superintendent,  
Mbagathi county Referral Hospital,  
P.O. Box 20725-00200,  
Nairobi.

Dear Sir,

**RE: PERMISSION TO CONDUCT A RESEARCH IN THE ANTENATAL CLINIC**

I am a second year postgraduate student at School of Nursing Sciences, University of Nairobi. I am kindly requesting for permission to carry out a research study on “**Determinants for the correct diagnosis of preeclampsia among women seeking antenatal services: A descriptive, cross sectional study at the antenatal clinic Mbagathi County Referral hospital. Nairobi, Kenya**”.

Enclosed is a copy of my research proposal and copy of my student identification card. Your assistance will be highly appreciated. Thank you in Advance.

Yours sincerely,

Yvonne Dullo

**APPENDIX X: MAP OF MBAGATHI COUNTY REFERRAL HOSPITAL**



## APPENDIX XI: KNH-UON ERC APPROVAL OF RESEARCH PROPOSAL



UNIVERSITY OF NAIROBI  
COLLEGE OF HEALTH SCIENCES  
P O BOX 19676 Code 00202  
Telegrams: varsity  
Tel: (254-020) 2726300 Ext 44355

Ref: KNH-ERC/A/303

Yvonne Dullo  
Reg. No.H56/87563/2016  
School of Nursing Sciences  
College of Health Sciences  
University of Nairobi

Dear Yvonne

**RESEARCH PROPOSAL – DETERMINANTS FOR THE CORRECT DIAGNOSIS OF PREECLAMPSIA AMONG WOMEN SEEKING ANTENATAL SERVICES; A DESCRIPTIVE, CROSS SECTIONAL STUDY AT THE ANTENATAL CLINIC MBAGATHI COUNTY REFERRAL HOSPITAL, NAIROBI, KENYA (P327/05/2018)**

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 6<sup>th</sup> August 2018 – 5<sup>th</sup> August 2019.

This approval is subject to compliance with the following requirements:

- a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH-UoN ERC before implementation.
- c) Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
- d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
- e) Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
- f) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
- g) Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

Protect to discover



KENYATTA NATIONAL HOSPITAL  
P O BOX 20723 Code 00202  
Tel: 726300-9  
Fax: 725272  
Telegrams: MEDSUP, Nairobi

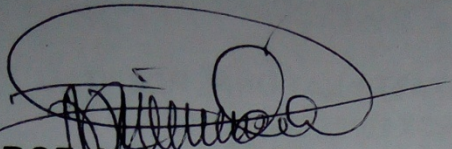
August 6, 2018





For more details consult the KNH- UoN ERC website <http://www.erc.uonbi.ac.ke>

Yours sincerely,



**PROF. M. L. CHINDIA**  
**SECRETARY, KNH-UoN ERC**

c.c.      The Principal, College of Health Sciences, UoN  
            The Director, CS, KNH  
            The Chairperson, KNH-UON ERC  
            The Assistant Director, Health Information, KNH  
            The Director, School of Nursing Sciences, UON  
            Supervisors: Dr. Jennifer R. Oyieke, Dr. Abednego Alibiri Ongeso

**APPENDIX XII: NAIROBI CITY COUNTY RESEARCH COMMITTEE APPROVAL TO CONDUCT RESEARCH**

**NAIROBI CITY COUNTY**

Tel: 2724712, 2725791, 0721 311 808  
Email: mbagathihosp@gmail.com



**Mbagathi Hospital**  
P.O. Box 20725- 00202  
Nairobi

**COUNTY HEALTH SERVICES**

Ref: MDH/RS/1/VOL.1

28<sup>th</sup> August 2018

Yvonne Dullo  
UON

**RE: RESEARCH COMMITTEE VERDICT**

This is in reference to your application for authority to carry out a research on **“Determinants for the correct diagnosis of preeclampsia among women seeking antenatal services in Mbagathi Hospital.”**

I am pleased to inform you that your request to undertake the research in the hospital has been granted, you however need to present your ethical approval before you embark on your data collection.

On completion of the research you are expected to submit one hard copy and one soft copy of the research report/thesis to this office.

  
**Philip Mibei**  
For: Chairman - Research Committee  
Mbagathi Hospital



**Start of Receipt**  
MBAGATHI HOSPITAL  
Service Receipt  
Receipt No: 3017/33317  
Date: 28/08/2018  
Mod: CASH  
Pno: 1929  
YVONNE DULLO  
Tel: 0721 311 808  
P.O. BOX 20725-00202 NAIROBI

RF	000.00
Total	8,000.00

Served By: MARCELLINA  
Official Stamp: \_\_\_\_\_ Signature: \_\_\_\_\_  
End of Receipt

