RISK FACTORS ASSOCIATED WITH PREECLAMPSIA AMONG MOTHERS ADMITTED AT KAMAPALA INTERNATIONAL UNIVERSITY TEACHING HOSPITAL

BY

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Declaration

I,MAITEYO ABDINOOR BMS/0139/91/DF, hereby declare that this research report is my original work and has not been submitted to any university or institution of higher for any academic award.

REG. NO:

SIGNATURE……..

DATE……..

Approval

This is to approve that this work has been prepared under my direct supervision and guidance and is therefore ready for submission to the faculty of clinical medicine and dentistry of Kampala International University

SUPERVISOR…Dr.SAIMA……

SIGNATURE……..

DATE……..

Dedication

I wish to acknowledge God for providing me an opportunity to study MBchB and for the spiritual growth He has granted me all this far.

I am grateful to my supervisor Dr. Saima, her guidance in this research.

I wish to express gratitude to my family the Abdinoors's for their tireless effort to always offer me the best in life and for their sincere love and encouragement. Thank you Dad, Mom and my siblings.

Thanks to my dear friends.

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List of acronyms

DM:	Diabetes Mellitus
HIV:	Human Immunodeficiency Virus
KIUTH:	Kampala International University Teaching Hospital
MoH:	Ministry of Health
WHO:	World Health Organization

Definition of operational terms

Preeclampsia refers to a syndrome characterized by the new onset of hypertension and proteinuria after 20 weeks of gestation in a previously normotensive woman. It is classified as mild or severe. The classification of severe preeclampsia serves to emphasize the more ominous features of the syndrome; patients with severe disease have some definitive findings. There is no category called moderate preeclampsia.

Eclampsia refers to the occurrence of one or more generalized convulsions and/or coma in the setting of preeclampsia and in the absence of other neurologic conditions. The clinical manifestations can appear anytime from the second trimester to the puerperium. In the past, eclampsia was thought to be the end result of preeclampsia (hence the nomenclature); however, it is now clear that seizures should be considered merely one of several clinical manifestations of severe preeclampsia.

In this study, eclamsia and preeclampsia are used interchangeably basing on the fact that their risk factors are the same.

Abstract

Preeclampsia is a syndrome characterized by the onset of hypertension and proteinuria after 20 weeks of gestation. Additional signs and symptoms that can occur including visual disturbances, headache, epigastric pain, thrombocytopenia, and abnormal liver function(Bulletins--Obstetrics, 2002).

There are a wide range of risk factors associated with preeclampsia in pregnancy, varying from the history of previous preeclampsia, parity, age and comorbidities according to the WHO A retrospective study was conducted among a sample of 43 mothers randomly selected from those admitted to maternity ward between October 2013 and September 2014

The study found out that 10 of the 43 mothers whose records were followed were admitted with preeclampsia, and that 3 of these mothers were aged between 38-47, and 3 of them were gravida 2 and 4. The most important comorbidity in this study was HIV with 3 out of the 10 mothers being HIV positive, and the presence of past preeclampsia.

The study concluded that the prevalence of preeclampsia is extremely high among the mothers admitted to the maternity ward in the year 2013 and the most common risk factors associated with the development of preeclampsia was maternal age, and the presence of HIV was the most significant associated comorbidity with preeclampsia

And recommended that the hospital should start conducting community outreach programs to small health units to improve the detection and treatment of preeclampsia in the region, the study recommended that another study with a wider scientific scope should be designed to determine the cause of preeclampsia in first pregnancy and the prevalence of comorbidity should be determined in another study using a large number of mothers

CHAPTER ONE

INTRODUCTIONS

1.1 Background

Preeclampsia is a syndrome characterized by the onset of hypertension and proteinuria after 20 weeks of gestation. Additional signs and symptoms that can occur including visual disturbances, headache, epigastric pain, thrombocytopenia, and abnormal liver function(Bulletins--Obstetrics, 2002).

These clinical manifestations result from mild to severe microangiopathy of target organs, including the brain, liver, kidney, and placenta(Lain KY, 2002). Potential maternal sequelae include pulmonary edema, cerebral hemorrhage, hepatic failure, renal failure, and death. The fetal/neonatal burden of disease results from placental hypo perfusion and the frequent need for preterm delivery.

There are four major hypertensive disorders related to pregnancy(Cunningham FG, 1992; Helewa ME, 1997):including, Preeclampsia/eclampsia — which can be classified as mild or severe. Eclampsia which refers to the development of grand mal seizures in a woman with gestational hypertension or preeclampsia. The seizures should not be attributable to another cause(NIH, 2000)

The degree of maternal hypertension, the amount of proteinuria, and the presence/absence of laboratory abnormalities in preeclampsia are highly variable (ranging from mild to severe), as is the gestational age at onset(Sibai, 2008). The manifestations of preeclampsia can develop at <34 weeks (early onset), at ≥34 weeks (late onset), during labor, or postpartum. Early and late onset preeclampsia may have different pathophysiologies as early onset disease is usually associated with fetal growth restriction and evidence of ischemic lesions on placental examination, whereas late onset disease is not (Moldenhauer JS, 2003). Maternal hemodynamics also may be different(Valensise H, 2008)

And the other hypertensive symptoms being Chronic hypertension (or preexisting hypertension) which is defined as systolic pressure ≥140 mmHg, diastolic pressure ≥90 mmHg, or both, that

antedates pregnancy, is present before the 20th week of pregnancy, or persists longer than 12 weeks postpartum. Preeclampsia superimposed upon chronic hypertension which is a superimposed preeclampsia, diagnosed when a woman with preexisting hypertension develops new onset proteinuria after 20 weeks of gestation. And gestational hypertension which refers to hypertension without proteinuria (or other signs of preeclampsia) developing in the latter part of pregnancy which get resolved by 12 weeks postpartum(Barton JR, 2001)

Features of preeclampsia

Hypertension in Preeclampsia: Pregnancy related hypertension is defined as a systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg in a woman who was normotensive prior to 20 weeks of gestation. The blood pressure should be taken with an appropriately sized cuff (ie, length 1.5 times the upper arm circumference or cuff bladder able to encircle 80 percent or more of the arm) placed on the right arm at the same level as the heart with the woman sitting for at least 10 minutes; the disappearance of the fifth Korotkoff sound indicates the diastolic pressure. The pressure should be recorded to the nearest 2 mmHg. Some experts recommend obtaining the blood pressure in each arm at the initial visit and, if there is a significant disparity in pressure, then only the arm with the higher pressure is used in subsequent visits

Hypertension is generally the earliest clinical finding of preeclampsia and is the most common clinical clue to the presence of the disease. The blood pressure (BP) may rise in the second trimester, but usually does not reach the hypertensive range (≥140/90 mmHg) until the third trimester, often after the 37th week of gestation. In some cases, however, preeclampsia develops suddenly in a previously normotensive woman or early in pregnancy.

The typical gradual rise in blood pressure has important implications for management during pregnancy. As an example, a reading of 130/85 mmHg in the second trimester is abnormal in a woman whose early pregnancy BP was 90/60 mmHg.

In the past, an elevation of systolic pressure by 30 mmHg or an increase in diastolic pressure by 15 mmHg from values recorded in early pregnancy, with or without associated proteinuria, was considered indicative of preeclampsia, even in the absence of hypertension. These blood pressure criteria have been rejected because of their low sensitivity and predictive values, about 30 percent for both, and lack of association with adverse pregnancy outcome.

Before making a diagnosis of hypertension, the possibility of "white coat hypertension" should be considered. In one study of 148 pregnant women with the new onset of hypertension in the third trimester, about 30 percent were diagnosed with white coat hypertension after 24-hour ambulatory blood pressure monitoring. These women had pregnancy outcomes similar to those in normotensive women, except for a significantly higher rate of cesarean delivery (45 versus 12 percent).

Proteinuria (ie, ≥0.3 g protein in a 24-hour urine specimen or persistent 1+ (30 mg/dL) on dipstick) must be present to make a diagnosis of preeclampsia. Urinary protein excretion increases gradually, may be a late finding, and is of variable magnitude in preeclampsia. Proteinuria is due, in part, to impaired integrity of the glomerular barrier and altered tubular handling of filtered proteins (hypofiltration) leading to increased protein excretion. Both size and charge selectivity of the glomerular barrier are affected.

The approach to women with hypertension but no proteinuria is uncertain, but close follow-up is prudent. This recommendation is supported by the observation that mild gestational hypertension that occurs remote from term may subsequently develop into preeclampsia, 20 percent of women who develop eclampsia have no proteinuria, and 10 percent of women with other clinical and/or histological manifestations of preeclampsia have no proteinuria.

The presence of ≥5 grams of protein in 24-hour urine collection upstages the diagnosis from mild to severe preeclampsia.

Edema and intravascular volume — most pregnant women have edema, whether or not they have preeclampsia. Therefore, the presence of edema is no longer part of the diagnostic criteria. However, sudden and rapid weight gain (e.g., >5 pounds/week) and facial edema may occur in women who develop preeclampsia, thus, these findings warrant evaluation for other clinical manifestations of preeclampsia. Intravascular volume is lower than in normotensive pregnancy, despite sometimes severe edema. There is no evidence that there is underfilling of the arterial circulation; rather, the reduced volume may be a consequence of vasoconstriction ("overfill" edema). Nevertheless, this issue has not been conclusively resolved, thus, diuretics should be avoided in the absence of pulmonary edema.

The major risk factors in preeclampsia

Null parity, Preeclampsia in a previous pregnancy, Age >40 years or <18 years, Family history of preeclampsia, Chronic hypertension, Chronic renal disease, Antiphospholipid antibody syndrome or inherited thrombophilia, Vascular or connective tissue disease, Diabetes mellitus (presentational and gestational), Multifetal gestation, High body mass index, Male partner whose mother or previous partner had preeclampsia, Hydrops fetalis, Unexplained fetal growth restriction, Woman herself was small for gestational age, Fetal growth restriction, abruptio placentae, or fetal demise in a previous pregnancy, Prolonged interpregnancy interval

The complication of Preeclampsia

Complications of preeclampsia can affect both the mother and the fetus. Acutely, preeclampsia can be complicated by eclampsia, the development of HELLP syndrome, hemorrhagic or ischemic stroke, liver damage and dysfunction, acute kidney injury, and acute respiratory distress syndrome (ARDS). Eclampsia is defined as seizures that cannot be attributable to other causes in a woman with preeclampsia. HELLP syndrome (hemolysis, elevated liver enzyme, low platelets) may complicate severe preeclampsia.

Preeclampsia is also associated with increased frequency of Caesarian section, preterm delivery, and placental abruption. Furthermore, an elevation in blood pressure can occur in some individuals in the first week postpartum attributable to volume expansion and fluid mobilization Fetal complications include fetal growth restriction and a potentially fetal or perinatal death.

Long-term, an individual with preeclampsia is at increased risk for recurrence of preeclampsia in subsequent pregnancies. There is also an increased risk for cardiovascular complications, including hypertension and ischemic heart disease, and kidney disease

Mild preeclampsia is defined as the presence of hypertension (BP ≥140/90 mm Hg) on 2 occasions, at least 6 hours apart, but without evidence of end-organ damage, in a woman who was normotensive before 20 weeks' gestation. In a patient with preexisting essential hypertension, preeclampsia is diagnosed if SBP has increased by 30 mm Hg or if DBP has increased by 15 mm Hg.

Severe preeclampsia is defined as the presence of 1 of the following symptoms or signs in the presence of preeclampsia: SBP of 160 mm Hg or higher or DBP of 110 mm Hg or higher on 2 occasions at least 6 hours apart, Proteinuria of more than 5 g in a 24-hour collection or more than 3+ on 2 random urine samples collected at least 4 hours apart, Pulmonary edema or cyanosis, Oliguria (< 400 mL in 24 hours), Persistent headaches, Epigastric pain and/or impaired liver function, Thrombocytopenia, Oligohydramnios, decreased fetal growth, or placental abruption

1.2 Problem Statement

Hypertensive disorders complicate 5 to 10 percent of pregnancies, depending on the study population. Preeclampsia occurs in 3 to 14 percent of all pregnancies worldwide, and about 5 to 8 percent of pregnancies in the United States (Bulletins--Obstetrics, 2002) The disease is mild in 75 percent of cases, and severe in 25 percent (Sibai, 2008). Ten percent of preeclampsia occurs in pregnancies less than 34 weeks of gestation. Preexisting hypertension complicates about 3 percent of pregnancies (Bulletins--Obstetrics, 2002).

Various risk factors account for this events including maternal infections such as UTI and fevers. However, their contributions are not clearly understood. In developed countries, the relative contributions of anatomic and metabolic disorders like diabetes have been wisely documented.

In Uganda, preeclampsia risk factors remain largely undocumented. In Mulago, one study showed that the risk factors were low plasma vitamin C (OR 3.19), low education level (OR 1.67), chronic hypertension (OR 2.29), family history of hypertension (OR 2.25) and primiparity (OR 2.76).

Because of this inadequate available information, this study therefore seeks to determine the risk factors that are contributing to maternal preeclampsia among mothers admitted to the KIUTH maternity ward between October 2013 and September 2014.

1.3 Study Justification

The risk factors for preeclampsia varies and many studies are required to provide indebt information related to the major risk factors in Uganda. From this study, additional information will become available, which will provide additional resources and reference for future researchers in the same areas of interest.

Besides, the study will provide information that shall lead to additional bearing on the prevention of maternal preeclampsia and promote the early identification of mothers at risk for interventions to be undertaken.

1.4 Study Objectives

1.4.1 Broad Objective: To determine the risk factors for preeclampsia among mothers admitted to KIUTH between October 2013 and September 2014

1.4.2 Specific Objective:

1. To determine the proportion of mothers experiencing the different grades of preeclampsia among mothers admitted to KIUTH between October 2013 and September 2014
2. To determine the socio-demographic characteristics of mothers who have been admitted with preeclampsia at KIUTH between October 2013 and September 2014.
3. The determine the risk of major medical comorbidities associated with preeclampsia among mothers admitted with preeclampsia at KIUTH between October 2013 and September 2014

1.5 Research Questions

1. What is the number of mothers admitted to KIUTH with preeclampsia in one year?
2. What are the socio demographic characteristics of mothers admitted with preeclampsia in KIUTH for one year?
3. What are common comorbidities associated with preeclampsia among mother admitted to KIUTH within one year?

1.6 Scope of study

The study was conducted between September 2014 and October 2014. The study conducted at KIUTH maternity ward. KIUTH is located within ishaka town 5 kms away from Bushenyi on Mbarara- kasese highway. The study will determine the risk factors but particularly look at the proportion of mothers admitted with preeclampsia, socio-demographic characteristics, and medical comorbidities associated with preeclampsia among mothers admitted with preeclampsia to KIUTH.

CHAPTER TWO

LITERATURE REVIEW

2.1 previous Literature

The role of other risk factors is unclear. A systematic review of controlled studies found a consistent, small but statistically significant, association between urinary tract infection during pregnancy and development of preeclampsia (Conde-Agudelo A, 2008)

Past obstetrical history of preeclampsia is a strong risk factor for preeclampsia in a future pregnancy. A systematic review of controlled studies reported that the relative risk of preeclampsia in women with a history of the disorder compared to women with no such history was 7.19 (95% CI 5.85-8.83)(Duckitt K, 2005; van Rijn BB, 2006)

Women with early, severe preeclampsia (approximately 2 percent of cases in nulliparous) are at greatest risk of recurrence, rates of 25 to 65 percent have been reported(Sibai, 2008). In women who had mild preeclampsia during the first pregnancy, the incidence of preeclampsia in a second pregnancy is 5 to 7 percent, compared to less than 1 percent in women who had a normotensive first pregnancy (does not apply to abortions)(Campbell DM, 1985; Xiong X, 2002).

Studies shows that first pregnancy (null parity) increases the risk for developing preeclampsia according to Duckit, (RR 2.91, 95% CI 1.28-6.61)(Duckitt K, 2005). It is unclear why the primigravid state is such an important predisposing factor.

A family history of preeclampsia in a first degree relative is associated with an increase in risk (Duckitt K, 2005; Nilsson E, 2004), suggesting a heritable mechanism in some cases(Dawson LM, 2002). The father of the baby may contribute to the increased risk, as the paternal contribution to fetal genes may have a role in defective placentation and subsequent preeclampsia.

The focus on immunologic factors as a possible contributor to abnormal placental development was based, in part, upon the observation that prior exposure to paternal/fetal antigens appears to

protect against preeclampsia(Robillard PY, 1994). Nulliparous women and women who change partners between pregnancies, have long interpregnancy intervals, use barrier contraception, and conceive via intracytoplasmic sperm injection have less exposure to paternal antigens and higher risks of developing preeclampsia.

Immunologic abnormalities, similar to those observed in organ rejection graft versus host disease, have been observed in preeclampsia women(Gleicher, 2007).

Hypo perfusion is also a result of abnormal placental development. hypo perfusion becomes more pronounced as pregnancy progresses since the abnormal uterine vasculature is unable to accommodate the normal rise in blood flow to the fetus/placenta with increasing gestational age(Robertson WB, 1967).

Late placental changes consistent with ischemia include atherosis (lipid-laden cells in the wall of the arteriole), fibrinoid necrosis, thrombosis, sclerotic narrowing of arterioles, and placental infarction(Gerretsen G, 1981). Although all of these lesions are not uniformly found in patients with preeclampsia, there appears to be a correlation between the severity of the disease and the extent of the lesions(Salafia CM, 1998)

Pre-gestational diabetes also increases risk of preeclampsia (RR 3.56, 95% CI 2.54-4.99)(Duckitt K, 2005), an effect that is probably related to a variety of factors such as underlying renal or vascular disease, high plasma insulin levels/insulin resistance, and abnormal lipid metabolism(Dekker GA, 1998).

The prevalence of hypertension and preeclampsia is increased in pregnant women with diabetes and is related to both pre-gestational hypertension and vascular disease. In one review, as an example, the prevalence of preeclampsia in diabetics with and without vascular disease was 17 and 8 percent, respectively, compared to a rate of 5 to 8 percent in non-diabetic pregnancies(Acker, 1995).

In another series of 462 pre-gestational diabetics, the rate of preeclampsia in women with White classification B, C, D, and F/R was 11, 22, 21, and 36 percent, respectively(Sibai BM, 2000). Insulin resistance appears to increase the risk of preeclampsia, even in the absence of overt diabetes(Innes KE, 2001). Impaired endothelium-dependent vasodilation appears to be related to the duration of diabetes (Savvidou MD, 2002).

There is also some evidence that poor glycemic control increases the risk of developing preeclampsia(Leguizamón GF, 2006). If confirmed as an independent risk factor, this would be one of the few modifiable risk factors for preeclampsia and yet another reason for women to achieve and maintain good glycemic control

Multiple gestation increases the risk of preeclampsia; for twin pregnancies the relative risk is 2.93, 95% 2.04-4.21(Duckitt K, 2005). The risk rises with the number of fetuses. (See individual topic reviews on twins, triplets, and high order multiple gestations).

Obesity has been consistently reported to increase the risk of preeclampsia. Preexisting hypertension, renal disease, and collagen vascular disease are well-described risk factors. In particular, maternal weight and BMI are independent risk factors for preeclampsia, as well as other hypertensive disorders(Usha Kiran TS, 2005)

A review of 13 cohort studies comprising nearly 1.4 million women found that the risk of preeclampsia doubled with each 5 to 7 kg/m2 increase in pre pregnancy BMI(O'Brien TE, 2003).

This relation persisted in studies that excluded women with chronic hypertension, diabetes mellitus, or multiple gestations, or after adjustment for other confounders. Cohort studies of women who underwent bariatric surgery suggest that weight loss significantly reduces the risk of preeclampsia(Maggard MA, 2008).

The mechanism whereby obesity imparts an increased risk for preeclampsia is not known. Current hypotheses suggest that the pathophysiologic changes associated with obesity-related cardiovascular risk, such as insulin resistance, hyperlipidemia, and subclinical inflammation, are also responsible for the increased incidence of preeclampsia in obese gravidas(Wolf M, 2001)

It is not clear whether low dose aspirin therapy is effective in reducing the likelihood of developing preeclampsia. Although not recommended for low risk women, many primatologists suggest use of low dose aspirin in women at moderate to high risk of developing preeclampsia related to medical risk factors such as insulin dependent diabetes, chronic hypertension, and chronic renal disease. However, because the potential efficacy of aspirin therapy in the reduction of obesity-related preeclampsia risk has not been established, we do not recommend routine low-dose aspirin therapy in this population in the absence of other risk factors(Francis SN, 2012)

Anti-phospholipid syndrome has been associated with multiple pregnancy complications including preeclampsia, fetal loss, and maternal thrombosis(Stella CL, 1996). There is conflicting evidence regarding an association between hereditary thrombophilia and preeclampsia, but the weight of evidence suggests no association.

Advanced maternal age is an independent risk factor for preeclampsia (maternal age ≥40 RR 1.96, 95% CI 1.34-2.87 for multiparous women)(Duckitt K, 2005). Older women tend to have additional risk factors, such as diabetes mellitus and chronic hypertension. Whether adolescents are at higher risk of preeclampsia is more controversial(Saftlas AF, 1990); a systematic review did not find an association(Saftlas AF, 1990)

A prolonged interval between pregnancies appears to increase the risk of developing preeclampsia. Limited recent exposure to paternal antigens appears to be a risk factor based on the increased risk of preeclampsia in nulliparous women and women who change partners between pregnancies, have long interpregnancy intervals, use barrier contraception, and conceive via intracytoplasmic sperm injection(Tubbergen P, 1999)

CHAPTER THREE

STUDY METHODOLOGY

3.0 Introductions

This chapter describes the method and procedure that were used in the course of this research. It includes; the study design, area of study population, sample size determination, sampling procedure, data collection procedure, management and analysis, instruments, inclusion criteria, ethical considerations, limitations to the study and dissemination of results.

3.1 Study Design

The study was a cross sectional, descriptive and quantitative in nature to establish the to determine the major risk factors responsible for preeclampsia among mother admitted to the maternity in the past one year. This study design was preferably selected because it involves a systematic collection of numerical information often under conditions of considerable control and the analysis of that information using statistical procedures and requires a low number of samples.

3.2 Study Site

The study was conducted in Kampala International University Teaching Hospital, located at Ishaka Bushenyi in western Uganda. Kampala International University Teaching hospital is a 10 year old institution offering trainings at diploma, undergraduate and postgraduate courses in Human Medicine, Dentistry, Pharmacy and Nursing. The hospital departments comprise of the OPD, Maternity, Surgery, Medicine and Pediatrics with special clinics attached. The department of obstetrics and gynecology runs the maternity ward, Antenatal clinic, and Gyn OPD. The department sees about 400 patients on a weekly basis and of which about 100 mothers are from the antenatal department

3.3 Study Population

The study included all mothers admitted to the maternity ward between October 2013 and September 2014 with complain of or history of preeclampsia.

3.3.1 Sampling Size Determination

The sample size was determined using Leslie's formula (1962)

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

Equation 1: Leslies Formula

Where n = sample size required

P = proportion of patients admitted with preeclampsia

d = is the precision required

Where p= 0.5. q=0.5, d= 15(0.15),

$$n = \frac{1.96^2\ 0.5(1-0.5)}{0.15^2}$$

$$n = 43$$

3.3.2 Sampling Procedure

A sample of 43 records was selected from the records of all the mothers admitted to KIUTH maternity between October 2013 and September 2014. All the records were assigned numbers from 1 to the last patient and excel will be used to randomly generate 43 number that were specifically followed by the researcher.

3.4 Inclusion and Exclusion Criteria

3.4.1 Inclusion Criteria

All the records captured between 2013 October and 2014 September with eclampsia or pre eclampsia and have complete records including the risk factors were selected

3.4.2 Exclusion Criteria

All the mothers who were admitted with different pathologies but developed eclampsia / pre eclampsia in the ward were excluded. Also mothers whose records are incomplete were excluded from the study

3.4 Data Collection Methods

A simple data collection tool was developed to capture data on the socio-demographic characteristics of the mothers, disease related risk factors and the outcomes at the time of .The researcher adopted both quantitative methods of data collection and so that relevant data was captured.

3.5 Data Analysis Plan

Data was electronically analyzed by use of Epi Info 7 and SPSS version 21. The data was entered into epiinfo and exported for analysis in SPSS after cleaning and filtering for outliners that may affect the outcomes. Quantitiave variables were analyzed using descriptive techniques that yield the frequencies.

3.6 Data Presentation Plan

Data presentation was done in the form of tables, graphs and simple statistical out puts. Tables were used to present summary statics, odd rations and descriptive variables.

3.7 Ethical Consideration

Permission to conduct the study was sought from the dean of faculty clinical medicine and dentistry, after submitting the report and later to the hospital director and head of department. The researcher then introduced herself to the in-charge and other staffs of the unit. The staffs were informed that the participation will be voluntary and that any one has a choice to obtain withdraw from participation, and each participant who were willing to be part of the study then signed informed consent form.

3.8 Study Limitation

The researcher believed that there may be limited information available that are adequate and comprehensive enough to reveal all the risk factors that mothers might have been experiencing before they were admitted to the wards.

Some information were not readily available to the researcher especially on the socio demographic risk factors. This was catered for by researcher by making an inquiry from the senior staff in the ward and clarification basing on their observations.

CHAPTER FOUR

STUDY FINDINGS

4.1 The prevalence of pre-eclampsia

Figure 1 below shows that 23.26% of the mothers whose blood pressure were check had pre eclampsia. While 76.74 % of the mothers did not have pre eclampsia.

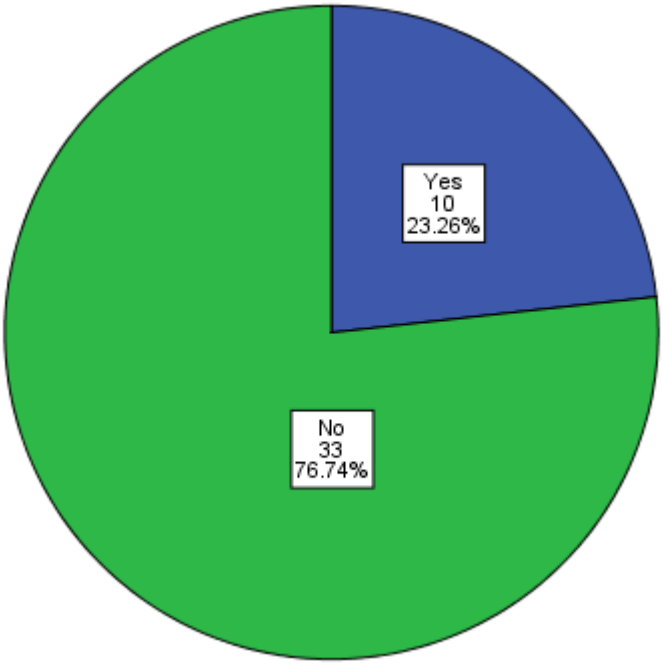

Figure 1: The Prevalence of Pre eclampsia

4.2 Sociodemographic characteristic of mothers with Preeclampsia

In table 1 below, the majority of mothers who had pre eclampsia were between the ages 38-47, followed by those who were 18-37 years old.

				Total
		18-37	38-47	
preeclampsia	Yes	4	6	10
Total		4	6	10

Table 1: Age of mothers with pre eclampsia

Table 2 showed that pre eclampsia was common among mothers of parity 2 and 4, 3 mothers in each group had pre eclampsia. While mothers of 1 parity and 4 parities had the lowest number of preeclampsia reported in this study as shown by table 2 below.

		Maternal parity				Total
		1	2	4	Above 4	
preeclampsia	Yes	2	3	3	2	10
Total		2	3	3	2	10

Table 2: Parity of Mothers with Pre eclampsia

In table 3, most of the mothers who had pre eclampsia were shown to have moderate levels of proteinuria. 5 mothers of the 10 mothers with preeclampsia were having moderate levels of proteinuria while 4 mothers had mild proteinuria and 1 had a severe level of proteinuria.

		protein level			Total
		Mild	Moderate	Severe	
preeclampsia	Yes	4	5	1	10
Total		4	5	1	10

Table 3: Level of Proteinuria

Table 4 showed that most of the mothers admitted with preeclampsia were within the WOA of 30 weeks. Those within 20-23 had 2 cases of preeclampsia each and 36 cases had 2 cases. 1 mother admitted with preeclampsia was 37 weeks old pregnant

		Weeks of Amenorrhea					Total
		20	23	30	36	37	
preeclampsia	Yes	2	2	3	2	1	10
Total		2	2	3	2	1	10

Table 4: WOA of mothers with preeclampsia

Table 1 below showed that most of the mothers admitted with preeclampsia were having single pregnancies 8, while 2 mothers who had multiple pregnancies were diagnosed with preeclampsia

		gestational classifications		Total
		Single	multiple Pregnancy	
preeclampsia	Yes	8	2	10
Total		8	2	10

Table 5: Gestational classification of mothers with preeclampsia

4.3 Comorbidities associated with Preeclampsia

		maternal diabetes		Total
		Present	Absent	
preeclampsia	Yes	0	10	10
		maternal HIV		Total
		HIV +ve	HIV –ve	
preeclampsia	Yes	2	8	10
		Previous History of preeclampsia		Total
		Previous preeclampsia	No Preeclampsia in the past	
preeclampsia	Yes	3	7	10

Table 6: Comorbidities associated with Preeclampsia

Table 6 above showed that there were more cases of preeclampsia among mothers with previous history of preeclampsia, 3 out of 10 and 7 mothers who developed preeclampsia did not have preeclampsia in the past.

2 mothers with preeclampsia were HIV positive and 8 were HIV negative, and also that there was no mother with preeclampsia who was having diabetes.

3 of the mothers had past history of preeclampsia and 7 did not have any past history of preeclampsia as shown in the above table

Table below showed that all the mothers with preeclampsia improved, there were no death case reported due to preeclampsia and no referral made because of preeclampsia.

		Outcomes			Total
		Improved	Referred	Died	
preeclampsia	Yes	10	0	0	10
Total		10	0	0	10

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussions

This study showed that the prevalence of preeclampsia was 26% of the mothers among who were admitted to the maternity unit between January 2013 and December 2013. While 76.74 % of the mothers did not have pre eclampsia.

This finding shows that the prevalence of preeclampsia was very high among mothers admitted to KIUTH in the past one year.

The main reason for this occurrence would be that this was because KIUTH act as adefacto referral center where complicated cases are referred from other units to this Hospital. So it's believed most of the mothers who had developed preeclampsia from other Hospitals and HC IVs were referred in for further management of the preeclampsia at KIUTH.

Another reason for this could be that preeclampsia is very common in this region, as a results of a variety if modifiable risk factors. Though this study did not mention a specific general risk factor, other studies had shown similar findings. For example, it was shown that Ethnicity may also be a major risk factor (compared to white women, the risk of preeclampsia appears to be higher in African women and lower in Asian and Hispanic women) according to Caugeney in 2011. He however noted that most risk factors are not modifiable and depends on the environment.

Majority of mothers who had pre eclampsia were between the age 38-47(6), followed by those who were 18-37 (4) years old and the least were mothers who were

Pre eclampsia was common among mothers of parity 2 and 4, 3 mothers in each group had pre eclampsia. While mothers of 1 parity and 4 parities had the lowest number of preeclampsia reported in this study as shown by table 2 above.

The findings shows that the prime gravity did not contribute to the high prevalence of preeclampsia in this study.

Though not clear to the researcher why mothers of parity 2 and parity 3 had the highest number of preeclampsia, the researcher believes that this could be the reason the risk factors for preeclampsia in this study were multiple and gravity did not play an independent role in this study. It also could be due to the fact that compared with other studies, the sampling techniques and methods used in this study were unique and also due to the nature of the population studied.

As no comparative study has documented the risk factors for preeclampsia among different ethnic groups in Uganda, it would be important that such a study be conducted out to determine the prevalence of preeclampsia in Uganda.

However, the study findings differ from those of Duckitt et la who showed that first pregnancy (null parity) increases the risk for developing preeclampsia according to Duckit, (RR 2.91, 95% CI 1.28-6.61)(Duckitt K, 2005). Duckitt did not also explain any details why this could be happening so. This implies that there is need for another scientifically based study looking at the biochemical changes in pregnancy that could be responsible for this occurring.

This study showed that most of the mothers admitted with preeclampsia were within the WOA of 30 weeks. Those within 20-23 had 2 cases of preeclampsia each and 36 cases had 2 cases. 1 mother admitted with preeclampsia was 37 weeks old pregnant.

This finding showed that high blood pressure changes were higher among mothers within lower age groups of 20-23 which were within the second trimester and third trimester.

This means that most of the mothers diagnosed with preeclampsia might be experiencing rise in blood pressure which is not due to preeclampsia, as noted blood pressure (BP) usually rise in the second trimester, but usually does not reach the hypertensive range (≥140/90 mmHg) until the third trimester, often after the 37th week of gestation according to one of the study. There is therefore need for another study to define clearly the basis of the diagnosis of preeclampsia basing on the sugar and protein levels seen among mothers.

This study showed that there were more cases of preeclampsia among mothers with previous history of preeclampsia, 3 out of 10 and 7 mothers who developed preeclampsia did not have preeclampsia in the past.

This shows that HIV contributed highly as a significant factor in the development of preeclampsia among mothers admitted to KIUTH in the past one year.

2 mothers with preeclampsia were HIV positive and 8 were HIV negative, and also that there was no mother with preeclampsia who was having diabetes.

The major reason for this finding could be that HIV which increases the risk of hypertension. HIV which complicates systemic functioning has the implication of increasing the blood pressure of patents. HIV impacts renal functioning, increases pill dosage and mostly increase the blood pressure of an individual.

The prescription of NSAIDS to HIV patients for pain management is associated with increased blood pressure. Norman in 2011 studies a group of patients on ARVS and NSAIDs and showed that the prevalence of hypertension was extremely high. Recently another study showed that all NSAIDS may raise blood pressure and diminish the antihypertensive efficacy of all classes of antihypertensive drugs, except calcium channel blockers.

Those findings are significant in this study since mothers with HIV might even be experiencing high blood pressure outside the case of systemic preeclampsia but as a complication of HIV and the drugs used in its management.

The study did not describe any role played by the presence of diabetes in this study. This is because there were simply no mothers with diabetes among the samples involved in this study. There is therefore need for another study with a larger number of mothers to determine the role played by diabetes mellitus in this population.

3 of the mothers had past history of preeclampsia and 7 did not have any past history of preeclampsia. This study results shows that past history of preeclampsia in very significant in this study. Pervious study had shown that Past obstetrical history of preeclampsia is a strong risk factor for preeclampsia in a future pregnancy.

A systematic review of controlled studies reported that the relative risk of preeclampsia in women with a history of the disorder compared to women with no such history was 7.19 (95% CI 5.85-8.83)(Duckitt K, 2005).

5.2 Conclusion

The study concluded that the prevalence of preeclampsia is extremely high among the mothers admitted to the maternity ward in the year 2013 and the most common risk factors associated with the development of preeclampsia was maternal age, and the presence of HIV was the most significant associated comorbidity with preeclampsia

5.3 Recommendations

1. The hospital should start conducting community outreach programs to small health units to improve the detection and treatment of preeclampsia in the region
2. The study recommended that another study with a wider scientific scope should be designed to determine the cause of preeclampsia in first pregnancy
1. The prevalence of comorbidity should be determined in another study using a large number of mothers

Appendices

Appendix I: Data Collection Tool

Pt. Number: ……..

Date of Admission:……

Maternal Age:……..

Maternal Parity:……..

BP at admission:

Systolic …….……

Diastolic ……..

Urine Protein

a) Absent

b) Present

Urine Protein Levels:

a) Mild (≥30mg/dl)

b) Moderate (≥100mg/dl)

c) Severe (≥300mg/dl)

Classification of preeclampsia

a) Mild

b) Moderate

c) Severe Preeclampsia

WOA:…….

Inter pregnancy intervals…….

Gestational classification

a) Single pregnancy

b) Multiple Pregnancy

Maternal diabetes

a) Absent

b) Present

HIV status

a) Negative

b) Positive

c) No Results

Others associated comorbidities……

Onset of preeclampsia

Less than 20 weeks

a) 20 weeks

b) 21-34 weeks

c) Above 34 weeks

History of previous preeclampsia

a) Absent

b) Present

Outcomes of treatment

a) Improved

b) Died

c) Referred

d) Others(specify)…..

Appendix II: Work Schedule

Activity	Responsible person	September 2014	Week 1 and 2 of October 2014	Week 3 and 4 of October 2014
Proposal Development ▪ Preparation of first draft ▪ Consultation with supervisor ▪ Preparation of second draft ▪ Consultation with supervisor ▪ Writing of final proposal	Researcher and Supervisor			
Field work/data collection ▪ Obtaining approval letter ▪ Data collection/interviews ▪ Data entry	Researcher,			
Writing of Report ▪ Data analysis ▪ Writing of report ▪ Submission of Report	Researcher and supervisor			

Appendix III: Research Budget

BUDGET			
S/N	**ACTIVITY**	**AMOUNT**	**BRIEF DESCRIPTION**
1	Services	**200,000ugx**	This amount will be required for transport for data collection and Photocopying and binding of research report(3 copies), flash disk and file folders.
2	Non-Reusable	**43,000ugx**	This will be used to purchase one realm of typing sheets, 2 realms of photocopying sheets, 5 pens, 2 pencils
3	Others	**50,000ugx**	Lunch for research team for 5 days during data collection and provision for depreciation
	TOTAL	**293,000UGX**	Five million three hundred and eighty-three thousand shillings.

Appendix IV: Letter of Introduction

KAMPALA INTERNATIONAL UNIVERSITY

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OFFICE OF THE DEAN,
FACULTY OF CLINICAL MEDICINE & DENTISTRY

7/11/2014

TO WHOM IT MAY CONCERN

RE: MAITEYO ABDINOOR (BMS/0139/91/DF)

The above named is a student of fifth year at Kampala International University pursuing a Bachelor of Medicine, Bachelor of Surgery (MBChB) programme.

She wishes to conduct her research project in your Hospital.

Topic: Risk factors associated with preeclampsia in pregnant women at Kampala International University – Teaching Hospital Ishaka.

Any assistance given will be appreciated.

S-O Akib

Dr. Akib Surat
Asso. Dean, FCM &D

FACULTY OF CLINICAL MEDICINE & DENTISTRY
05 NOV 2014

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