**ADDIS ABABA UNIVERSITY**

**COLLEG OF HEALTH SCIENCES**

**SCHOOL OF NURSING AND MIDWIFERY**

**DEPARTEMENT OF NURSING AND MIDWIFERY**

**POST GRADUATE PROGRAM**

# ASSESSMENT OF MATERNAL OUTCOME AMONG PREECLAMPTIC WOMEN AT DILLA UNIVERISTY REFERRAL HOSPITAL, ETHIOPIA, 2019

**PRINCIPAL INVESTGATOR: ZERIHUN FIGA (BSc)**
**MAJOR ADVISOR: ROZA TESHOME (BSc, MSc, Assist Prof)**
**CO-ADVISOR: BAZEI MEKONEN (BSc, MSc)**

**A THESIS SUBMETTED TO ADDIS ABABA UNIVERISTY COLLEG OF HEALTH SCIENCES SCHOOL OF NURSING AND MIDWIFERY DEPARTEMENT OF NURING AND MIDWIFERY IN PARTIAL FULFILLMENT OF REQUIRENMENT FOR THE DEGREE OF MASTERS OF MATERNITY AND REPRODUCTIVE HEALTH NURSING**

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# APPROVAL SHEET

# ADDS ABABA UNIVERSITY

# COLLEGE OF HEALTH SCIENCE

# SCHOOL OF NURSING AND MIDWIFERY

I, the undersigned MSc student, declare that I have submitted my original work on a title ‘’assessment of maternal outcome among preeclamptic women at Dilla university referral hospital’’ for the examination.

**Submitted by:**

_____ _____ _____

Name of student Signature Date

This thesis work has been submitted for examination with my approval as an advisor.

Approved by:

1. _____ _____ _____

Name of Major Advisor Signature Date

2. _____ _____ _____

Name of Co-Advisor Signature Date

## APPROVAL BY THE BOARD OF EXAMINATION

This thesis by Zerihun Figa is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in Maternity and reproductive health nursing.

**INTERNAL EXAMINER:**

| _____ | _____ | _____ | _____ |
|---|---|---|---|
| NAME | RANK | SIGNITURE | DATE |

**EXTERNAL EXAMINER:**

| _____ | _____ | _____ | _____ |
|---|---|---|---|
| NAME | RANK | SIGNITURE | DATE |

**RESEARCHADVISORS:**

| _____ | _____ | _____ | _____ |
|---|---|---|---|
| NAME | RANK | SIGNITURE | DATE |
| _____ | _____ | _____ | _____ |
| NAME | RANK | SIGNITURE | DATE |

**DEPARTMENT HEAD**

| _____ | _____ | _____ | _____ |
|---|---|---|---|
| NAME | RANK | SIGNITURE | DATE |

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## LIST OF ACRONYMS

| | |
|---|---|
| DURH | Dilla university referral hospital |
| GYN | Gynecology |
| GHP | Gestational hypertension |
| HELLP | Hemolysis elevated liver enzymes and low platelet |
| HMIS | Health management information system |
| HDP | Hypertensive disorder during pregnancy |
| ICU | Intensive care unit |
| Mgso4 | Magnesium sulphte |
| OBS | Obstetrics |
| PPH | Post-partum hemorrhage |
| SNNPR | Southern, nation, nationality and people region |
| SPE | Severe preeclampsia |

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## Abstract

**Background:** Pre-eclampsia is hypertension in pregnancy after 20weeks of gestation characterized blood pressure greater than 140/90 mm Hg, using the Korotkoff phase V sound for the diastolic value, on two occasions 4 hours apart. It is one of a spectrum of pregnancy disorders which result in different complications and maternal death.
**Objective:** Assessment of maternal outcome among preeclamptic women at Dilla university referral hospital, Ethiopia, 2019

**Method:** Retrospective cross-sectional study design was employed. A total of 295 samples were recruited. A systematic sampling technique was used to select study subjects who were admitted with preeclampsia from January1, 2016 and December 31, 2018 at Dilla University Referral Hospital. Medical records review was done using pretested data abstraction tool. Data was entered in EpiData version 4.4.2.1 and exported into statistical package for social science (SPSS) version 25.0 for analysis. Binary and multiple logistic regressions were used to identify association between variables. Adjusted odds ratio along with 95% confidence interval was estimated to assess the strength of the association, and a p-value $\leq 0.05$ was used to declare the level of statistical significance.

**Result:** In this study 295 medical charts of preeclamptic women were reviewed. The most 210(72.2%) of the participants were between the age of 20-34years. Severe type of preeclampsia was 174(58.0%). HELLP syndrome was most common complication of severe preeclampsia 81(66.6%) followed by DIC, renal failure and liver failure, 25((20.5%), 9(7.4%) and 1(0.8%) respectively. Maternal deaths due to preeclampsia were 6 this gives case fatality of 2%. In multivariable logistic regression, rural residence, severe preeclampsias, non-treatment with antihypertensive and early onset of preeclampsia were significantly associated with unfavorable maternal outcome.

**Conclusion and recommendation:** The finding of this study showed that the most common maternal complications due to preeclampsia were HELLP syndrome, DIC and renal failure. Health care professionals specially who work at PHC center should take appropriate trainings on immediate management and counseling a women coming for ANC and prompt referral for preeclampsia women with severity sign.



**Key words:** Preeclampsia; Maternal outcome; Ethiopia

# 1. INTRODUCTION

## 1.1. Background

Pre-eclampsia is HDP usually diagnosed in the presence of hypertension associated with proteinuria after 20wks of gestation. Is diagnosed as mild preeclampsia when blood pressure measured at least 140 mm Hg (systolic) or at least 90 mm Hg (diastolic) on at least two occasions and at least 4–6 h apart and a proteinuria of 300 mg in a 24-hour urine after the 20th week of gestation in women known to be normotensive before and preeclampsia is regarded as severe if there are sustained rises in blood pressure to at least 160 mm Hg (systolic), at least 110 mm Hg (diastolic) and Proteinuria (≥5 g/24 hours or ≥3+ on two random samples 4 hours apart) with manifestations of end-organ disease: oliguria (< 500 mL in 24 hours), cerebral or visual disturbances, pulmonary edema, cyanosis, epigastric or right-upper quadrant pain, impaired liver function, thrombocytopenia (1).

There are a two-stage theoretical model for development of pre-eclampsia, stage one involves reduced placental perfusion and the second stage may be produced through the mechanism of oxidative stress, generated in the placenta, in response to the impaired placentation(2).

Nearly 73% of all maternal deaths between 2003 and 2009 were due to direct obstetric causes whereas deaths due to indirect causes accounted for 25.5% of all deaths from known causes. Hypertension was the second most common direct cause worldwide after hemorrhage by 14% of maternal death. And the global distribution of maternal death was affected by the two regions, sub-Saharan Africa and southern Asia that accounted for 83.8% of all maternal deaths(3).

The majority of the approximately 600,000 annual maternal deaths take place in developing countries, whereas Western Europe and the United States probably have preventable cases(4).Compared with their Western European counterparts, women from Latin America and the Caribbean and Sub-Saharan Africa had higher odds of preeclampsia 1.52 and1.52 , respectively,(5). More than 90% of maternal deaths worldwide occur in sub-Saharan Africa

(SSA) and south Asia. Women from Sub-Saharan Africa had a higher risk of preeclampsia and PIHS in all countries, the only exception being Australia(5).

Severe morbidity associated with eclampsia and preeclampsia includes renal failure, stroke, cardiac arrest, adult respiratory distress syndrome, coagulopathy, and liver failure. In low- and middle-income countries, where access to such facilities is often limited, particularly in public hospitals, case fatality for eclampsia is 3%-5%. In high-income countries the case fatality is lower, at 1%, or less (8).

### 1.2. Statement of problem

Worldwide, the incidence of preeclampsia ranges between 2% and 10% of pregnancies the estimated incidence of preeclampsia was seven times higher in developing countries 2.8% of live births than in developed countries 0.4%. World health organization multicounty survey on maternal and newborn health reviles when grouped by income, the highest incidences of pre-eclampsia were found in upper middle income countries, whereas eclampsia appeared to be more frequent in lower middle income countries and the prevalence of adverse maternal outcomes among preeclamptic cases in worldwide are ranged from 1.1% to 34.2% according to recent systematic review(3, 6).

In Latin America cesarean section rates are high at33% of all births, pre-eclampsia and eclampsia are the indication for 1 in 10 cesarean births. In developing countries, eclampsia is more common, with the incidence estimated as 16-69 cases per 10,000 births. Although rare, eclampsia accounts for more than 50,000 maternal deaths each year. Overall, 10%- 15% of direct cause of maternal deaths are associated with preeclampsia and eclampsia in low- and middle-income countries. As maternal mortality falls, a higher proportion of deaths are associated with pre-eclampsia(7).

Women with age group older than 35 years in the pre-eclamptic group was approximately double that found in the group without pre-eclampsia and they suffer more from complication and death from preeclampsia. Similarly an adolescents of <17 years were three times more frequent in the group of women with eclampsia and susceptible to complication from it(8).

Pregnancies complicated by preeclampsia had an increased risk for hypertension 3.7%, ischemic heart disease 2.16%, stroke 1.8%, and venous thromboembolism 1.19%. The risk of death from cardiovascular and other causes is also increased in these women. Women with early-onset severe preeclampsia appear to be at highest risk(4). Severe morbidity associated with eclampsia and preeclampsia includes renal failure, stroke, cardiac arrest, adult respiratory distress syndrome, coagulopathy, and liver failure. In low- and middle-income countries, where access to such facilities is often limited, particularly in public hospitals, case fatality for eclampsia is 3%-5%. In high-income countries the case fatality is lower, at 1%, or less(7).

Women who had preeclampsia were more than twice as likely to develop future ischemic heart disease these risks appear to be mediated through an even stronger future risk of chronic hypertension after preeclampsia [RR 3.70; 95%CI, 2.70-5.05] and early onset of preeclampsia before 37wks of gestation, severe preeclampsia, and recurrent preeclampsia are risk factors for cardiovascular disease. Early onset preeclampsia leads to risk ratio of death from future cardiovascular disease (RR, 7.71; 95% CI, 4.40- 13.52), compared with women who had a normotensive pregnancy. Recurrent preeclampsia is associated with chronic renovascular disease in the mother, also is associated with a particularly high risk of future hypertension and kidney disease in later life(9)

Study conducted in Mettu Karl hospital, west Ethiopia showed sever preeclampsia is the most common hypertensive disorder during pregnancy accounting 35.5%, followed by eclampsia 19%, mild preeclampsia 14.9%, HELLP syndrome 12.4%, gestational HTN 13.2%, and chronic HTN 4.1%(10). Seminar on maternal mortality shows when hospitalizations compared with and without any hypertensive disorders, the risk of severe obstetric complications was 3.3- 34.8 times for hospitalizations with eclampsia/severe preeclampsia and 1.4-2.2 times for gestational hypertension(4).

The only interventions that clearly reduce the risk of preeclampsia are antiplatelet agents, primarily low-dose aspirin, and calcium supplementation. Antiplatelet agents are associated with a moderate (10%) reduction in pre-eclampsia and preterm birth. Antihypertensive drugs are therefore mandatory for very high blood pressure, the aim being to bring about a smooth

reduction in blood pressure to levels that are safe for both mother and fetus, avoiding sudden drops(7).

The data of research conducted on maternal outcome in preeclampsia Ethiopia and other Africa countries are limited this make abridged attention on prevention and management hence, the maternal mortality and morbidity still remain high in Africa and other developing countries. That was the reason why I am interested to do research to reveal the magnitude of maternal complications from peeclampsia and to add more resource in understanding and prevention and management of problem both in community and health care centers. Therefore, so main aim of this research is intended to assess maternal outcome and factors associated with it among preeclamptic cases.

### 1.3. Significance of study

Improving maternal health was part of sustainable development goal. The gaps in utilization of antenatal care was still present because of perception of severity of disease, cultural lore and the trends of immediate detection and providing care for high risk pregnancy by health care professionals are questionable.

The finding of this study will provide a better insight about maternal outcome and factors associated with it among preeclamptic women:

- ✓ For all pregnant mothers and community provide information about effect of preeclampsia on mother's health so that encourage ANC follow up and hospital delivery.
- ✓ For health professional it helps to know significance of problem and alarm them to develop or improve skill in counseling and provision of care in preeclamptic cases.
- ✓ For government authority helps to understand the gravity of problem and focus on tackling the problem through working in preventive activities, training health care workers, filling man power and preparing necessary laboratory equipment and ambulances services for emergency cases.
- ✓ For non-governmental organization and different stake holders use to plane in their activity and interventions according to figure of the problem.
- ✓ The result of this study will be baseline data for further researchers.

# 2. LITERATURE REVIEW

Pre-eclampsia is hypertension in pregnancy characterized blood pressure greater than 140/90 mm Hg, using the Korotkoff phase V sound for the diastolic value, on two occasions 4 hours apart. Significant proteinuria is defined as more than 300 mg of proteinuria in a 24-hour collection of urine. The reduced oxygen delivery, from the compromised placental circulation, increases the release of cytokines and other factors into the general circulation, thus causing the systemic features of the disease(2). Preeclampsia is one of a spectrum of pregnancy disorders result in different complications like, abruptio placenta, post-partum hemorrhage, HEELP syndrome, renal failure, kidney failure and stroke (11).

National survey in Ethiopia demonstrated that 11% of all maternal deaths and 16% of direct maternal deaths occurred due to hypertensive disorder during pregnancy and the cause-specific case fatality rate was 3.6%. The proportion of maternal death ascribed to the different causes varies from year to the proportion of deaths due to preeclampsia is on the increase year to year. The death due to eclampsia/preeclampsia accounting for 35.7% of the maternal deaths at two public hospital in Addis Ababa and also case fatality of preeclampsia is 0.5 in gynecologic hospital, Addis hospital Ababa (12-14).

The treatment for PE includes delivery as definitive management because the disease relieve following termination of pregnancy and oral antihypertensive like methyldopa and labetalol, calcium antagonists such as nifedipine and intravenous administration like hydralazine. Fast acting antihypertensive treatment should be commenced when a blood pressure ≥160/110 mmHg because it is a medical emergency due to the risk of stroke. As anti-convulsant, magnesium sulfate (MgSO4) is the drug of choice for prevention of eclampsia(15).

## 2.1. Maternal outcome

Preeclampsia is associated with substantial maternal complications, both acute and long-term. Severe preeclampsia is associated with increased risk of maternal mortality 0.2% and increased rates of maternal morbidities 5%, such as convulsions, pulmonary edema, acute renal or liver failure, liver hemorrhage, disseminated intravascular coagulopathy, and stroke. These complications are usually seen in women who develop preeclampsia before 32 weeks' gestation

and in those with preexisting medical conditions(4). The deaths that occurred secondary to preeclampsia mainly result from its complicated from which is eclampsia, uncontrolled hypertension, or systemic inflammation and after a pregnancy complicated by preeclampsia, women had an increased risk for hypertension 3.7%, ischemic heart disease 2.16%, stroke 1.8%, and venous thromboembolism 1.19% which result in long term morbidity and mortality from preeclampsia(4).

The risk of maternal death from preeclampsia were four times higher than non preeclamptic women according to systematic review study conducted and being survivor of life threatening condition( maternal near-mess condition)was eight times higher and also chronic hypertension robustly associated with preeclampsia [ AOR=8.32, 95%CL 7.3-9.72](16). According to study a prospective cohort study conducted in South Africa, mean and standard deviation of gestational age of delivery where 33.4±4.7 and maternal death of preeclamptic women were 1%(17).

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Secondary review done in USA shows that induction rate was high in hypertensive pregnancies at 35 weeks 53.6%, 36 weeks 66.7% and at 37 weeks 67.4% of gestation. A greater proportion of hypertensive pregnancies were delivered at 37 weeks of gestation by cesarean section 25.6%. Cesarean section for non-reassuring fetal heart tones was the next most common indication in all groups ranging from 18.64% in the superimposed preeclamptic group to 28.87%. The risk of hospitalization from preeclampsia was 3.3- 34.8 times because burden of its complication (4, 18, 19). Also study conducted in Washington showed the rate of maternal morbidity with early onset of preeclampsia were 12.2 per 100 deliveries and 5.5 pre 100 in women with late onset of preeclampsia(20).

Cross sectional study carried out in India on sever preeclampsia and its outcome showed rate of C/S delivery was 65.6%. Most of the maternal complications associated with severe preeclampsia were coagulopathy 10.6% and placental abruption 7.74%(21). Cesarean section

was required for PE, SPE and eclampsia in 46%, 51% and 61% of patients respectively and maternal obstetric complication was PPH which is 4.2% and followed by placental abruption in 1.6% and pulmonary edema in 1.4%(22). According to study conducted in Mpilo, Zimbabwe maternal complications from severe preeclampsia were HELLP syndrome 9.1% Abruptio placenta 2.5% and DIC 0.8% and also 15.7% of cases were early onset of preeclampsia <34week and late onset of preeclampsia(LOP) ≥34 42.1% weeks of gestation platelet count was significantly associate with maternal complications 0-40x$10^9$/l [OR 46, 95%CI 17.77-121.53](23). Another study conducted at Hidar 11 hospital, magnesium sulphate toxicity, low urine output and depressed deep tendon reflex 6.6% and 2.8% respectively and maternal complication was HELLP syndrome, eclampsia, abruptio placenta, and renal failure 13.8%, 10.4% 4.4% and 2.5% respectively(24).

The study conducted in Netherland showed women with preeclampsia more often had elective caesarean section, induction and/or augmentation of labor shorter expulsive phase and less often delivered spontaneously. In this study about 4.3% of the women suffered from PPH but women with preeclampsia suffer from PPH are 7.4%, and distinguishing the severity of PE showed women with mild PE and sever PE have a 1.67 and 1.32 time higher increased risk for PPH respectively (25).

Descriptive cross sectional study conducted in Cameroon showed primiparous women were the most represented with PE by 43.92% of all hypertensive disorder during pregnancy. However, a history of PE was found in 14.95% of patients with SPE and a history of chronic hypertension in 10.89% of women. Severe proteinuria 100%, high blood pressure 92% and neurological symptoms such as severe headache 62%, and visual disturbances 51% were the most frequent of women. The cesarean section rate in the study population was 42.6% and 75% of women had delivered within 24 hours following the diagnosis of severe preeclampsia; C/S rate was 75%. Eclampsia 12.14%; abruptio placenta (11.21%)and hypertensive retinopathy (7.47%) were the most frequent maternal complications in preeclamptic women(26). Another retrospective study conducted in Mettu west Ethiopia showed concerning the mode of delivery rate of induction of labour, cesarean delivery and forceps/vacuum was 47.9%,17.4%, and 7.4% respectively(10).

Retrospective cohort study in Tanzania showed severe pre-eclampsia was the commonest morbidity (incidence ratio (IR) 7.0 %, case-fatality rate (CFR) 2.3 %), followed by postpartum haemorrhage (IR 6.7 %, CFR 7.2 %) and uterine rupture (IR 5.5 %) caused the highest CFR (17.9 %), followed by eclampsia (IR 0.4 %, CFR 17.8 %)(27).

According to case control study conducted in Abakalik, south Nigeria mean gestational age at delivery of preeclamptic women were 34 weeks, and case fatality of preeclampsia in this study population were 12.1% and cause of maternal mortality among preeclamptic women were aspiration pneumonia 5.8%, abruption placenta 0.5% acute renal failure 2.4% and DIC 2.4%(28).

### 2.2. Factors associated with maternal outcome

.The maternal factors that were significantly associated with severe preeclampsia included: age ≥ 40 years; presence of proteinuria; referral versus non-referral (prenatal care) status; and whether or not there were associated medical diseases such as HELLP syndrome(29). Clinically the maternal syndrome is probably more than one disease with major differences between near-term preeclampsia without demonstrable fetal involvement and pre-eclampsia that is associated with low birth weight and preterm delivery. Additionally, the pathophysiology of this disorder leads to onset of disease before 34 weeks' gestation could differ to that developing at term, during labor, or postpartum which means early onset of preeclampsia was associated with maternal complication than late onset of preeclampsia (1).

Retrospective study conducted in India showed maternal complications from sever preeclampsia are deferent with age group women were factor affecting maternal outcome 6.3% of women in age group between 18-35years and most 77.3 % of women between age gestational age of 28-37 week were in the age group of 18–35 years suffered from eclamptic seizers (30). Onset of preeclampsia before 33 weeks of gestational age has higher risk of maternal complication Afar, Hidar hospital 6.8 times [AOR=6.8, 95%CI 3.45-9.67](24), Nepal 4.09 times [AOR=4.09, 95%CI 1.99-7.08](31) ,and USA Washington 1.2 times [AOR=1.2, 95%CI 1.001-3.12] (20, 32). Mothers with gestational age less than 34 weeks were 6.8 times more likely to develop complication [AOR=6.8, 95%CI 3.23-10.2] and primi gravidia 4 times more likely to develop complication than multi gravidia and also having medical illness was 2.4 times more associated

with maternal complication [AOR=2.4, 95%CI 1.44-4.8]. Antepartum onset of preeclampsia was 6.6 times more likely to develop eclampsia than intra-partum preeclampsia [AOR=6.6, 95%CI 3.8-11.09] (24)

Study conducted in Australia showed eclampsia rate in women with preeclampsia was 2.6%.The relative risk of eclampsia in women with preeclampsia in 2008 was 1.9 times when compared with the year 2000 [RR=1.9, 95%CI 1.2-3.45] . 73% of seizures occurred in primiparous women and thus primi parity is factor for severity of preeclampsia and its complications, when compared with mulity parious women primiparous women experience seizure from eclampsia 4.5 times [RR=4.5, 95%CI 1.19-8.35] and 3.12 times higher risk of maternal complication from preeclampsia[RR=3.12, 95%CI 2.01-5.23](33).

According to study conducted in South Africa rural residence has 4.99 times higher risk of maternal complication than women from urban area [AOR=4.99, 95%CI 2.98-7.092] and also according to study conducted in Hawassa, Ethiopia the risk of maternal complication from preeclampsia in women from rural residence were 5.33 times than women from urban residence [AOR=5.33,95%CI 3.9-9.72] (34) (17). Similar study in Addis Ababa regarding to medical history related risk factors women who had previous history of preeclampsia had the higher odds of developing pre-eclampsia were 4 times (AOR: 4.28, 95% CI: 1.61, 11.43) and complications from preeclampsia. According to this study primigravida women had higher risk of developing preeclampsia 2.68 (AOR: 2.68 95% CI: 1.38, 5.22)(35).

Similar study conducted in Addis Ababa on maternal outcome in preeclampsia showed 82.5% and 17.5% diagnosed with SPE and MPE, respectively and 98.5% had no previous history of hypertension. The time of occurrence of preeclampsia was 86% during antepartum period. Most of the referral 72% was from primary health care centers. The main reasons for caesarean section were non-reassuring fetal heart rate pattern NRFHRP 33.6%, severe pre-eclampsia 19.5% and NRBPP 15%. A case fatality rate of preeclampsia is 0.5% and 35.5% of the women developed complications. 41% of the women had a prolong hospital stay(14).

According to research conducted India the risk of maternal complication from lack of ANC follow up were 9.09 times [AOR=9.09, 95%CI, 4.32-12.91], and Nigeria 11.2 times risk of maternal complication than women who had ANC follow up [AOR=11.2, 95%CI 6.23-

23.12](28, 36). Study conducted at Desei showes chronic hypertension HTN, history of DM had signficant association with preclampsia and its complications AOR 4.3 [95%CI 1.33-13.9] and AOR 2.4[95%CI 1.09-5.6](37). Retrospective cohort study in Ethiopia shown risk of maternal death in HDP was increase with grand multiparity (Crude Hazard ratio = 3.6), lack of ANC (CHR=3.5), eclampsia (CHR=11.3, intrapartum(CHR=2.6) and postpartum (CHR=3.5) onset of HDP, systolic blood pressure (BP)<140 mmHg (CHR=2.8), and diastolic BP<90 mmHg in the current illness (CHR=4.3) and grand multiparous women had 2.8 times increased risk of mortality as compared with multiparous and primigravid women(38).

Systematic review conducted on effect of mgso4 on preeclamptic women shows, women receiving magnesium sulphate had an approximately 50% increased risk of respiratory depression (RR 1.41; 95% CI 1.07 to 1.86) more than 2 times the risk of drowsiness/ confusion (RR 2.46; 95% CI 1.83 to 3.29) headache (RR 2.21; 95% CI 1.27 to 3.86), dizziness (RR 2.62; 95% CI 1.63 to 4.21, mouth dryness or thirst (RR 2.38; 95% CI 1.59 to 3.56, and blurred vision (RR 2.34; 95% CI 1.32 to 4.14, more than five times the risk of nausea and/or vomiting (RR 5.50; 95% CI 2.29 to 13.22, nearly seven times the risk of flushing and warmth (RR 6.94; 95% CI 4.19 to 11.49 and sweating (RR 6.37; 95% CI 1.96 to 20.65, nearly 15 times the risk of itching and tingling (RR 14.98; 95% CI 1.98 to 113.38) and more than 15 times the risk of muscle weakness (RR 15.81; 95% CI 7.36 to 33.96)(39). Another study conducted at Hidar 11 hospital, magnesium sulphate toxicity, low urine output and depressed deep tendon reflex 6.6% and 2.8% respectively and maternal complication was HELLP syndrome, eclampsia, abruptio placenta, and renal failure 13.8%, 10.4% 4.4% and 2.5% respectively(24)

**Conceptual framework**

Below are the abstract frameworks of the study which shows the interaction of different variables with outcome variables that contains socio-demographic and background characteristics, diagnoses and management associated with maternal outcome and their relationship developed by principal investigator after a thorough reviews of related articles(25, 38, 40).

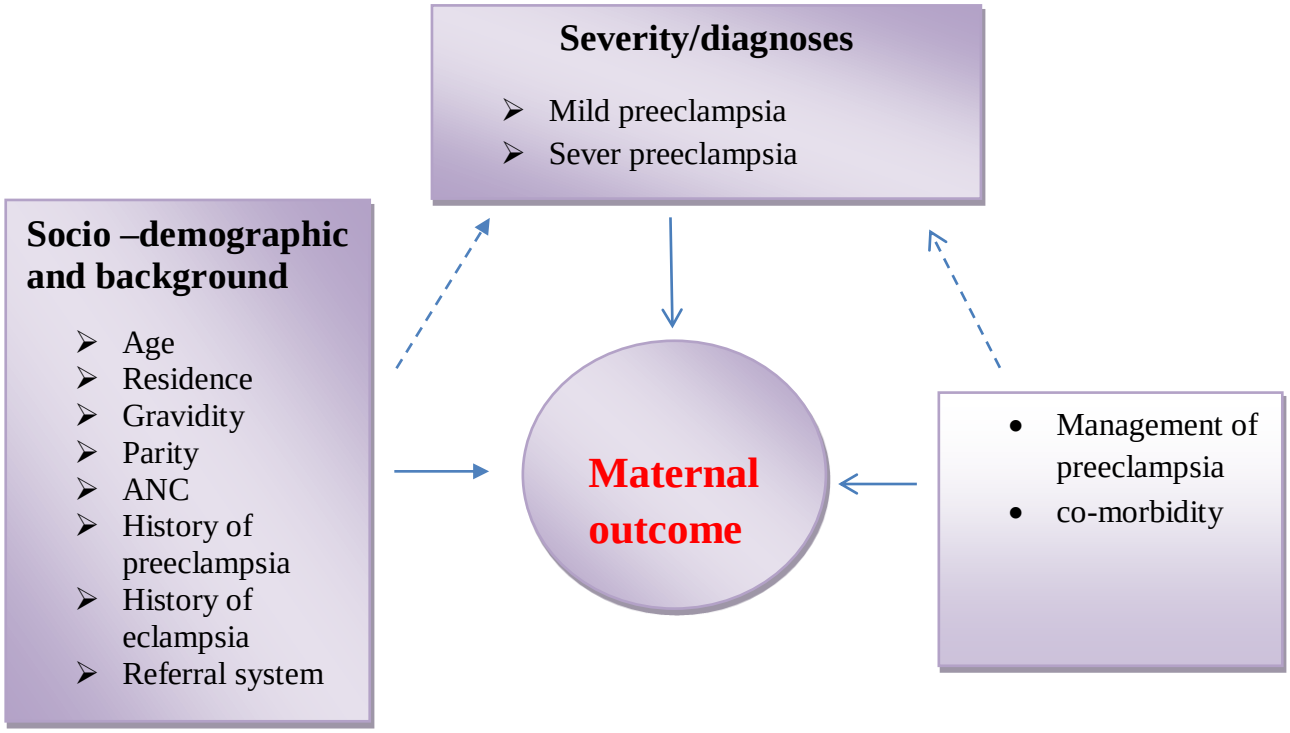



Figure 1: Conceptual framework on maternal outcome in preeclampsia women in relation to socio-demographic factors, diagnoses, management and co-morbidity.

# 3. OBJECTIVES

## 3.1. General objective

- To assess maternal outcome among preeclamptic women at Dilla university referral hospital, Ethiopia, 2019.

## 3.2. Specific objectives

- To assess maternal outcome among preeclamptic women at Dilla university referral hospital.
- To determine factors associated with maternal outcome in preeclampsia women at Dilla university referral hospital.
- To determine a case fatality rate among women with preeclampsia at Dilla university referral hospital.

# 4. METHODOLOGY

## 4.1. Study area

This study was conducted at Dilla University referral hospital (DURH). DURH was one of the university referral hospitals in country which found in SNNPR, Gedeo Zone Dilla town. Dilla town was capital of Gedeo zone and found 89km away from regional capital Hawassa and 365km from capital Addis Ababa it was located at an altitude of 1300-3000m above sea level and the climate favor desert conditions has one federal hospital and two health center under city administration with population size of 79,892(41). This hospital was providing referral and emergency service for 24hrs/7days and has OBS/GYN, medical, surgical, dental clinic, pathologic and dermatology units, and man power of 18 specialists, 44 GPs, 24 midwifery, 130 nurses and others. Total catchment area of this hospital hosts around 3-5 million population.

## 4.2. Study period

- Study was conducted in Dilla University Referral Hospital (DURH) February 25 to April 15, 2019.

## 4.3. Study design

- Retrospective cross-sectional study design was employed.

## 4.6. Sample size determination

- Single population proportion formula was used to calculate the sample size n required to estimate a population proportion with a given level of precision d was

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

- Z=1.96 reflects the confidence level
- N=total population size
- P= Population proportion 0.225 from maternal outcome which was $mgso_4$ toxicity (14)
- d=degree of accuracy expressed as proportion(0.05)

$$n = \frac{(1.96)^2 0.225 (1-0.225)}{(0.05)^2} = 268$$

Then by adding 10% of incomplete documentation 268+27 =295

Table 1: Table shows the prevalence of preeclampsia, and maternal outcome with their articles citation

| | Proportion | Sample size with 10% |
|---|---|---|
| Prevalence of preeclampsia(37) | 8.4% | 118 |
| Maternal outcome (Mgso4 toxicity) (14) | 22.5% | 295 |

### 4.7. Sampling procedure

The study participants were selected by using systematic random sampling technique after identifying preeclamptic cases from delivery registration and incomplete documentations were excluded. Total number of preeclamptic women admitted and gave birth at DURH in last three years were 825. So number of study subjects was selected after dividing five years cases to sample size at $k^{th}$ value

n=825/295 = 2.79≈3

Hence, study subjects were included every $3^{rd}$ units after selecting the first participant by randomly out of three.

### 4.5. Source population

- All preeclamptic women who admitted at Dilla university referral hospital.

### 4.8. Study population

- All medical records of mothers diagnosed with preeclampsia at DURH between January 1, 2016-December 31, 2018.

### 4.9. Sample population

- Medical records of women who admitted at DURH between January 1, 2016-December 31, 2018 and which fulfill inclusion criteria

### 4.10. Inclusion and exclusion criteria

#### 4.10.1. Inclusive criteria

- All medical records with preeclampsia

#### 4.10.2. Exclusive criteria

- Incomplete documentations

### 4.11. Research variables

#### 4.11.1. Dependent variables

- Maternal outcome

#### 4.11.2. Independent variables

- Socio-demographic and background characteristics
  - Age
  - Residence
  - Gravidity
  - Parity
  - Previous history of preeclampsia and eclampsia
- Severity
  - Mild preeclampsia
  - Severe preeclampsia
- Management of preeclampsia
- Co-morbidity

### 4.12. Data collection instrument and procedure

The data was collected using pre-tested data abstraction tool the questions for variables were adopted(14) and modified based on the review of different literatures by principal investigator.
The tool consists of maternal details (age, GA, gravidity, parity, educational status, previous history of preeclampsia and hypertension), ANC follow up, type of diagnosis, time of occurrence of preeclampsia, admission status of the mother to the intensive care unit blood transfusion, duration of hospital stay, major maternal complications (Liver failure, renal failure, HELLP syndrome, aspiration pneumonia, DIC, eclampsia and oligouria) and vital sign and investigation result.

After ethical clearance letter given to DURH medical director and hospital HMIS and confirmed the legal staging of letter the medical registration number of cases were identified and retrieved from delivery registration, then three card log workers were recruited to withdraw desired records of cases. Four diploma midwives and one BSc midwifery professional were recruited as data collectors and supervisor respectively and two days training were given on objective of the study, the method of data collection and discuss thoroughly on the tools prepared for data collection by the principal investigator.
All documents from January 1, 2016 – December 31, 2018 include and incomplete documentations were excluded from the study.

### 4.13. Data quality

To keep the quality of data: Two days training was given to the data collectors and supervisors on the data collection tool and the data collection procedure, then the questionnaire was pretested on 10% of the sample size out of the study area (Hawasa Univeristy Specialized Hospital) prior to two weeks before actual data collection takes place to ensure its validity.

Data collectors were supervised closely by the supervisors and the principal investigator. Completeness of each data abstruction checklists were checked by the principal investigator and the supervisors on daily basis. And double data entry was done by two data clerks and consistency of the entered data was cross checked by comparing the two separately entered data

on EpiData. Finally, multivariate analysis was run in the binary logistic regression model to control the confounding factors.

### 4.14. Data processing and analysis

The collected data was manually checked for completeness and for any inconsistency then coded and entered into EpiData 4.4.2.1 and exported into SPSS version 25.0 for data processing and analysis. Descriptive statistics such as simple frequencies,precentage, measures of central tendency and measures of variability was used to describe the characteristics of participants such as Socio- demographic like age, residence, parity, gestetional age.

Binary logistic regression was fitted to assess the factors associated with maternal outcome in preeclampsia. Variables with p-value $\leq 0.25$ in the binary logistic regression were considered in the multiple logistic regressions to control the confounding factors. Adjusted odds ratio (AOR) along with 95% confidence interval was estimated to assess the strength of the association, and a p-value $\leq 0.05$ were used to declare the level of statistical significance. Finally, the data were presented in text, tables, and graphs.

### 4.15. Operational definition

**Maternal outcome:** was defined as condition of mother after diagnosed by preeclampsia with favorable or unfavorable outcome

**Favorable outcome:** patient with preeclampsia whose managed expectantly and improved

**Unfavorable outcome:** were defined as women admitted with preeclampsia and managed expectantly and has at least one complication from cerebral complications like (seizures, cerebral hemorrhage, cerebral infarction, severe headache and blurred vision), and liver capsular rapture, renal failure, hemolysis, elevated liver enzymes and low platelets (HEELP syndrome) and death.

**Expectant management:** Glucocorticoid administration followed by delivery for specific maternal and fetal indication.

**Maternal improvement:** was defined as women admitted with preeclampsia and finally improved at discharge

**Maternal death:** was defined as women admitted with preeclampsia in hospital and finally died at discharge.

**Mild preeclampsia:** Blood pressure of ≥90/140mmHg in 4-6 hours apart measurement and with protein urea ≥300 mg in 24hrs urine collection.

**Sever preeclampsia:** Blood pressure of ≥100/160mmHg in four hours apart measurement with protein urea ≥5mg urine collection and multi-organ injury

**Eclampsia:** was defined as preeclampsia with convulsion

**Case fatality:** was defined as the percent of maternal death after admitted to hospital with diagnosis of preeclampsia

**Comorbidities:** was defined as having history of medical diseases along with pregnancy like (Diabetes, renal disease, heart disease) which shows liver damage and platelet is less than platelet.

**Low urine output:** was defined as collection of less than 30ml of urine per one hour in urine bag in preeclamptic women received mgso4 administration.

**Depressed tendon reflex:** was defined as absent tendon reflex in preeclamptic women after admiration of Mgso4

**Low respiratory rate:** was defined as less than 16 breath per minute in preeclamptic women after administration of Mgso4

**Early onset of preeclampsia:** was defined as a pregnant women diagnosed with preeclampsia before 34 weeks of gestation

**Late onset of preeclampsia:** was defined as a pregnant women diagnosed with preeclampsia after 33 weeks of gestation

### 4.16. Ethical consideration

An official letter on ethical clearance for proposed research was obtained from institutional review board (IRB) of Addis Ababa University College of health science and School of nursing and midwifery, and Department of Maternity ad reproductive research publication committee. After ethical clearance received the permission to conduct study was also obtained from DURH medical director and obstetric and gynecological departments.

To keep confidentiality after retreiving medical record all records were transported by principal investigatir to privet room for data collection. All collected data was coded and locked in a separate room before entered in to the computer. After entered to the computer the data was locked-up by password, and should not be disclose to any person other than principal investigator. All information collected from mothers medical records were kept strictly confidential and names of patients or mothers were not include in the data abstruction checklist.

# 5. RESULT

## 5.1. Socio demographic characteristics

A total of 10,324 mothers were admitted to Dilla university referral hospital obstetric and gynecological units for delivery service from January 1, 2016 to December 1, 2018 among these 825 mothers were admitted with preeclampsia from those 295 charts were selected.

The mean and media of age participants were 25.48, and 25.0 respectively. Majority 210(72.2%) of women were between the age group of 20 and 34 years followed by ≤19 years 62(21.0%) and ≥35years 23 (7.8%). Most of preeclamptic women were 215(72.9%) from rural area. Prim-gravidia and multi-gravidia were 114 (38.3%) and 119(40.3%) respectively. Majority of the study subjects were null-para 125(42.4%) followed by multi-para and prim-para 96(32.5%) and 74(25.1%) respectively. In this study women with pervious history of preeclampsia and eclampsia were 46(15.6%) and 11(3.7%) respectively.

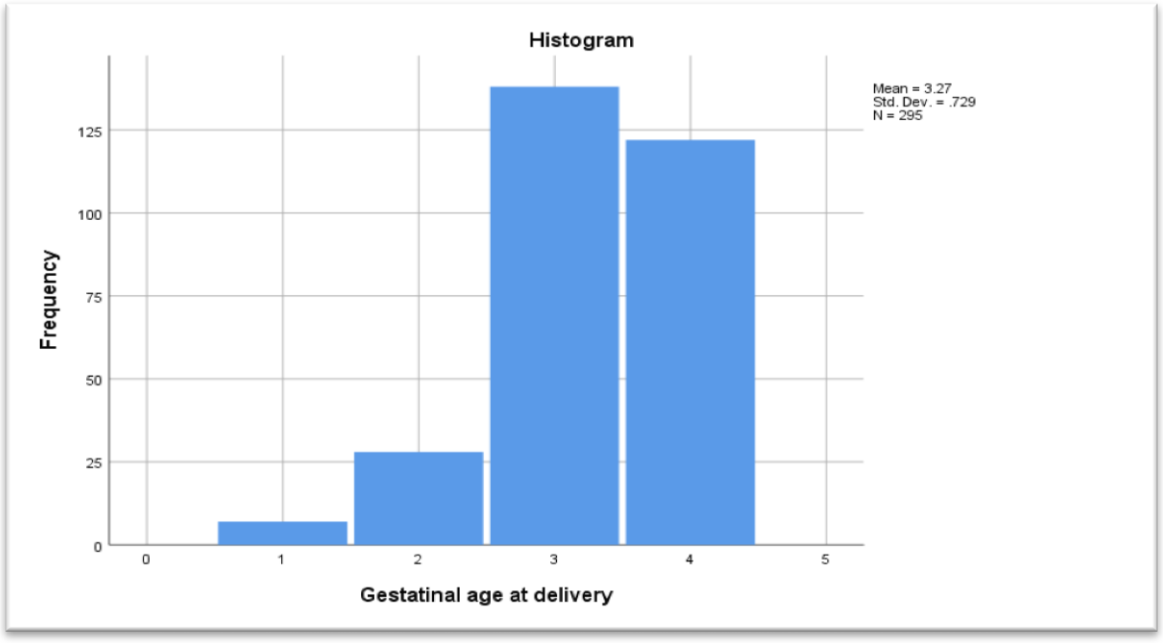
Table 2: Socio-demographic characteristics of preeclamptic women who admitted to OBS/GYN unit of Dilla university referral hospital

| Variable | | Frequency | Percentage |
|---|---|---|---|
| Age | ≤19 | 62 | 21.0% |
| | 20-34 | 210 | 72.2% |
| | ≥35 | 23 | 7.8% |
| Residence | Rural | 215 | 72.9% |
| | Urban | 80 | 27.1% |
| Gravidity | Prim gravidia | 115 | 39.0% |
| | Multi gravidia | 118 | 40.0% |
| | Grand multi gravidia | 62 | 21.0% |
| Parity | Null para | 125 | 42.4% |
| | Primi para | 74 | 25.1% |
| | Multi para | 96 | 32.5% |
| History of peeclampsia | Yes | 46 | 15.6% |
| | No | 249 | 84.4% |
| History of eclampsia | Yes | 8 | 2.7% |
| | No | 287 | 97.3% |

### 5.2. Obstetrics characteristics and medical history

Regarding ANC follow up and severity of disease at admission, 206(69.8%) of women had frequent ANC follow-up and 89(30.2%) didn't have frequent ANC follow up. Majority 171(58%) of the women were diagnosed with severe preeclampsia and the rest 124(42%) of the women were diagnosed with mild preeclampsia at admission.

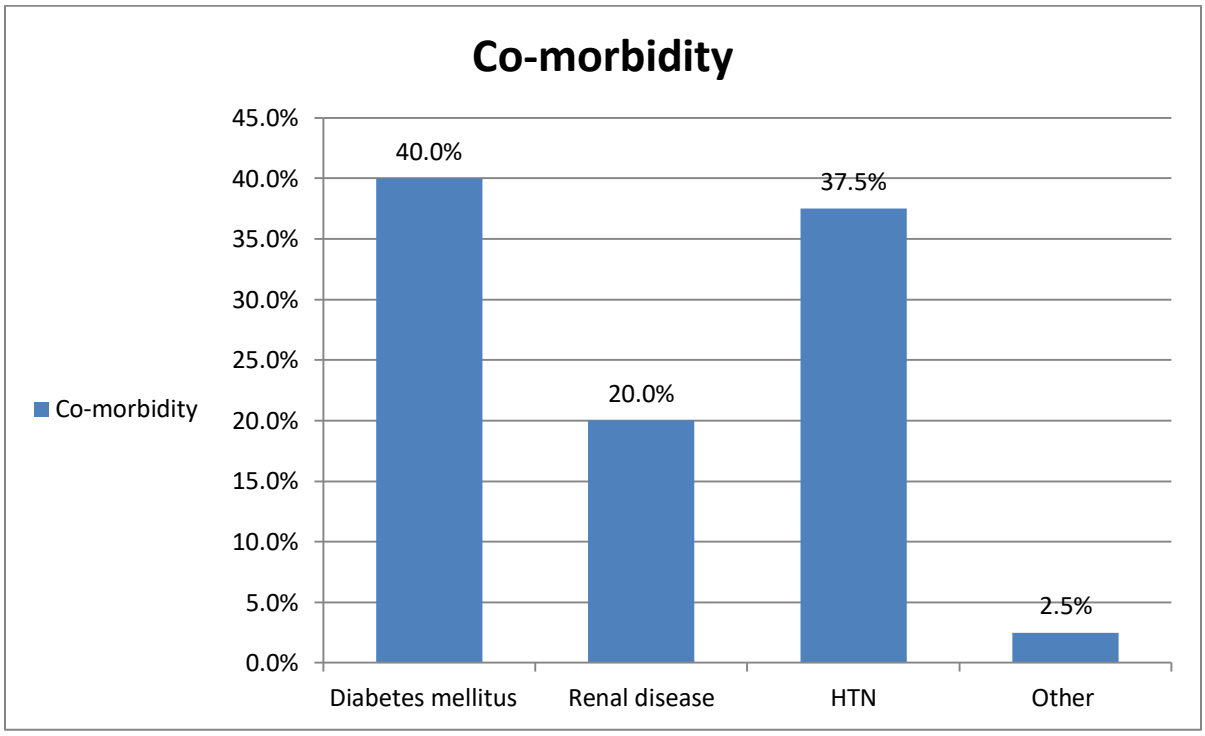
The mean and media of gestational age at onset of preeclampsia were 34.4 and 35.0 respectively whereas mean and media of gestational age at delivery were 35.5, and 36.0 respectively. The majority 166(56.3%) of women with preeclampsia were admitted to hospital with early onset of preeclampsia before gestational age of 34weeks, and 129(43.7%) of women admitted with late onset of preeclampsia starting from 34weeks of gestation. Concerning gestational age at delivery as shown on figure 2 below, majority of preeclamptic women delivered between gestational age group 33-36weeks 138(46.85%) followed by term or ≥37weeks 122(41.4%), 29-32weeks 28(9.5%) and abortion <28weeks.




1=<28weeks, 2=28-32weeks, 3=33-36weeks 4= ≥37weeks

Figure 2: The representation of gestational age of delivery of among preeclamptic women gave birth at Dilla university referral hospital.

Regarding institutions where preelamptic women referred to DURH majority of them 103(34.9%) were referred form health centers and the rest 88(29.8%), 57(19.3), and 47(15.9%), were referred from, Hospital, self-referral and private clinic respectively. As shown on figure 3 below, 49(16.6%) of preeclamptic women has at least one past history of co-morbidity/past medical history and the majority of them 246(83.4%) doesn't have history of medical disease. Out from women who has history of medical illness 16(40.0%), 8(20.0%), and 15(37.5%) were Diabetes mellitus, renal disease and previous history of hypertension respectively. (Figure 3)




HTN-hypertension other- thyroid disorder, cardiac disease

Figure 3: The distribution of co-morbidities among preeclamptic women who admitted to Dilla university referral hospital, Dilla Ethiopia.

Finding of this research showed women with previous history of preeclampsia were 46(15.6) % and with previous history of eclampsia were 8(2.7%). As depicted on figure 4 below, among a women admitted with preeclampsia 128(43.4%) of them developed severity sign of disease 129(43.7%) of the women were presented with severity sign of preeclampsia. From this majority of the women were presented with sever head ache by 67(52.3%) followed by blurring of vision, and epigastric pain 34(26.6), and 20(15.6%) respectively. (Figure 4)

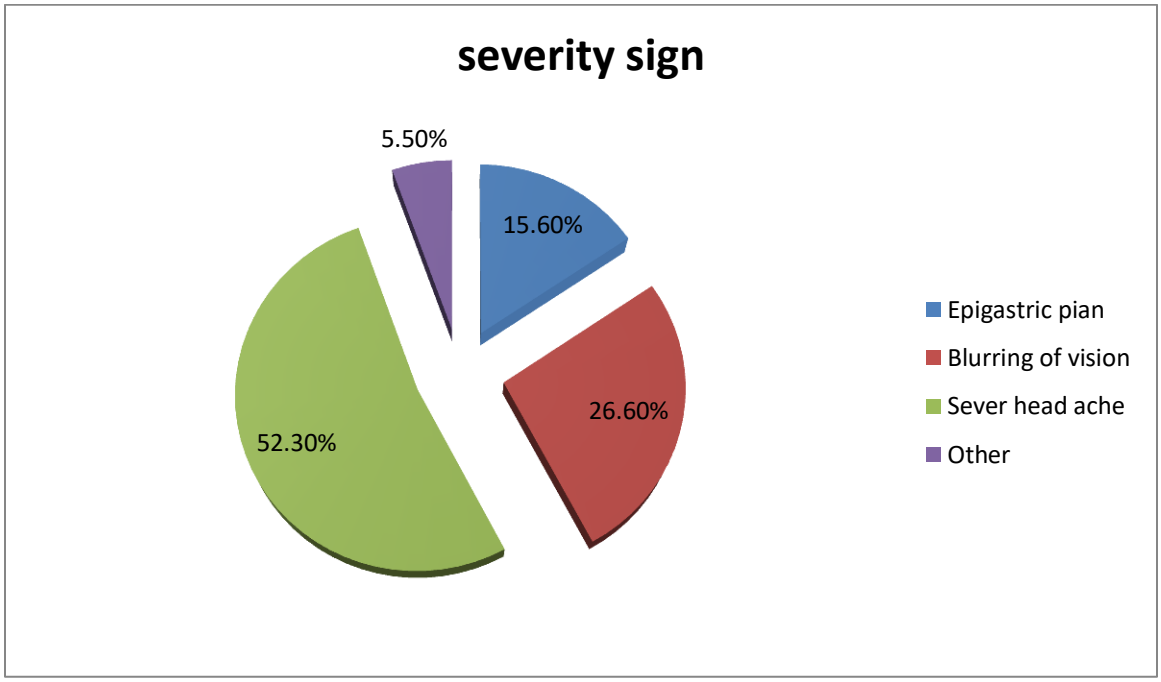



Figure 4: The distribution of severity sign of preeclampsia among women admitted to Dilla university referral hospital OBS/GYN department

### 5.3. Management and mode of delivery of preeclamptic women

Out of women admitted with preeclampsia 269(91.2%) of women received anti-hypertensive treatment the most common reason for no treatment with hypertensive medication for rest of women were non severity of disease or diagnosis with mild preeclampsia specially at term.

Regarding the mode of onset of labor, 115(39.0%) and 180(61.0%) of labor were initiated spontaneously and induced respectively. The mode of delivery for preeclamptic women, vaginal delivery 113(38.3%) were higher than both instrumental(vacuum/forceps) delivery 82(27,8) and cesarean section delivery 100(33.9%) the most common indication for cesarean section were uncontrolled blood pressure 24.6%, failed induction 19.3%, non-reassuring fetal heart rate pattern 31.6% and non-reassuring biophysical profile 12.5.

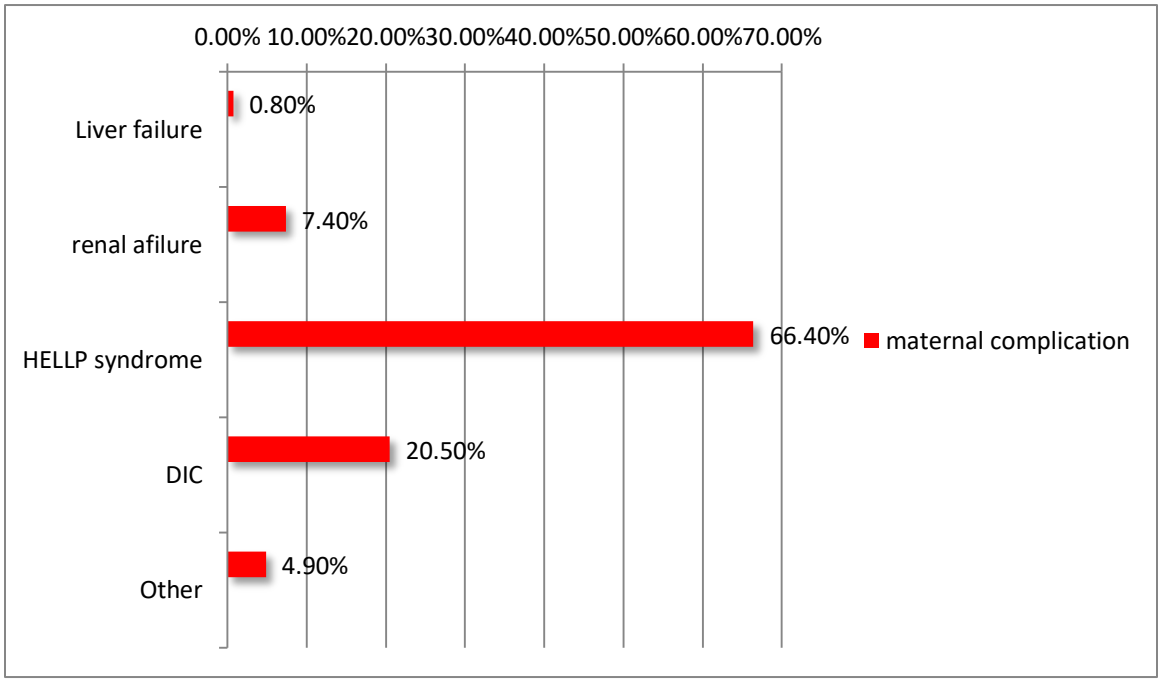
### 5.4. Maternal outcome of women admitted with preeclampsia

Finding of present study indicated that there were six maternal deaths from preeclampsia which accounting for a case fatality rate of 2.0%. As indicated on table 3 below, 122(41.4%) mothers were complicated from preeclampsia. From the all women with preeclampsia complications 81(27.5%) of them developed HELLP syndrome followed by DIC 25(8.5%), 9(3.1%) and 1(0.8%) acute renal failure, and acute liver failure respectively.

From 181(61.3%) women who took $magso_4$ treatment 52(28.7%) of them were complicated with $mgso_4$ toxicity. Out of those with $mgso_4$ toxicity, low urine output were the most 30(57.7%) followed by low respiratory rate 16(30.8%) and depressed tendon reflex which were 5(9.6%). Maternal morbidity from intensive care unit admission and blood transfusion were 16(5.4%) and 63(21.4%) respectively. (Table 4)

Table 3: Maternal outcome among preeclamptic women who admitted to Dilla university referral hospital (n=295), Dilla Ethiopia

| Variables | Frequency | Percentage |
|---|---|---|
| **Maternal outcome** | | |
| Favorable | 122 | 414% |
| Unfavorable | 173 | 58.6% |
| **Mgso4 toxicity** | | |
| Low urine output | 30 | 50.7% |
| Depressed tendon reflex | 5 | 9.8% |
| Low respiratory rate | 16 | 30.0% |
| Other | 1 | 1.9% |




Other= Eclampsia, abruption placenta, stroke

Figure 5: The distribution of maternal complications among preeclamptic women at Dilla university referral hospital.

### 5.5. Factors associated with maternal outcome

Six variables found to be significant in binary logistic regression which was candidates for the final analysis, therefore multivariable approach applied to determine which factors best explained and predict maternal outcome. As described on table 4 below, in bivariate logistic regression age ≥35 rural residence, diagnosis with sever preeclampsia, comorbidity early gestational age at onset of preeclampsia, and no antihypertensive treatment were associated with unfavorable maternal outcome.

In multivariable logistic regression four variables were significantly associated with unfavorable maternal outcome include rural residence, severe preeclampsia and early onset of preeclampsia and non-treatment with anti-hypertensive medication. Therefore, rural residence has 5.038 times more risk of unfavorable maternal outcome than women from urban [AOR=5.038, 95%CI 1.971-12.879], gestational age ≤33 has 3.67 times higher risk of unfavorable maternal than women with gestational age ≥34 [AOR= 3.6795%CI 1.829-7.364] and admission with diagnosis of sever preeclampsia has 6.42 times higher risk of unfavorable maternal outcome than admission with mild preeclampsia [AOR=6.4295%CI 2.017-21.103]

Table 4: Association of selected variables with maternal outcome among peeclamptic women admitted to Dilla university referral hospital

| Variable | | Maternal outcome | | COR (CI95%) | AOR (CI95%) | P value |
|---|---|---|---|---|---|---|
| | | Favorable | Unfavorable | | | |
| Age groups | ≤19 | 21 | 16 | 1.04(0.362-2.298) | 0.49(0.13-2.661 | 0.490 |
| | 20-34 | 88 | 147 | 1.00 | 1.00 | |
| | ≥35 | 13 | 10 | 2.14(1.904-5.10) | 0.58(0.22-2.951) | 0.646 |
| Residence | Rural | 61 | 154 | 8.10(4.156-18.39) | 5.03(1.97-12.8) | 0.001 |
| | Urban | 61 | 19 | 1.00 | 1.00 | |
| Diagnosis at admission | Mild preeclampsia | 102 | 22 | 1.00 | 1.00 | |
| | Sever preeclampsia | 56 | 115 | 9.522(4.60-38.40) | 6.4(2.01-21.10) | 0.000 |
| GAO | ≤33 | 73 | 93 | 4.393(2.626-7.35) | 3.67(1.82-7.36) | 0.000 |
| | ≥34 | 100 | 29 | 1.00 | 1.00 | |
| Co-morbidity | Yes | 15 | 34 | 4.04(2.10-0.7.8) | 1.69(0.68-4.161 | 0.273 |
| | No | 158 | 88 | 1.00 | 1.00 | |
| Anti-hypertensive | Yes | 120 | 129 | 1.00 | 1.00 | |
| | No | 2 | 24 | 9.6(2.239-41.714) | 5.7(1.96-36.42) | 0.006 |

GAO- gestational age at onset COR= crude odd ratio AOR=adjusted odd ratio 1=reference category

# 6. DISCUSION

According to this study 69.8% of women had ANC follow up this result was less when compared with study conducted at Gandhi gynecologic hospital 95.5%, Afar Hidar hospital 95.3%, Nigeria 76.6% and Yekatiti 12 hospital 78.2% (14, 24, 32, 42), this may be because of accessibility of health care centers, and better understanding of pregnant women on ANC follow up benefits. However, study conducted at Jimma Specialized hospital showed ANC follow up among preeclamptic women were 41.25% (43) this may be due to methodological difference since they used both interview and chart review as data collection method.

According to the result of this study among 58.0% of women diagnosed with sever preeclampsia 28.7% of them gave birth by cesarean section whereas 13.85% of the women delivered by instrumental delivery. When this finding is compared with study conducted in India 65.6% cesarean delivery, Pakistan 33.3% cesarean section, Nigeria, 58.1% cesarean section, Cameroon 45.8% cesarean section and another study in Abakaliki Nigeria51.7% cesarean section (22, 26, 28, 32, 44) it was lowest, this may be because of on time referral of before severity of disease and better maternity care setting as cesarean section was definitive management of preeclampsia in those countries. Contrary this finding was higher than retrospective study conducted in Mettu Karl hospital which state cesarean section delivery were 17.2% and Afar Hidar hospital 7.9% (10), this may be due to better operation related setting as DURH is teaching and federal hospital and Mettu Karl hospital were private hospital which don't has direct referral system from primary health care centers.

In this study from all women admitted to Obs/Gyn units of the hospital 41.4% of women were complicated from sever preeclampsia. It is slightly lower when compared with the study conducted in Parel, Mumbai 57.0%, Yaounde, Cameroon 51.0% and Nigeria 42.3% of complication from preeclampsia(30, 32, 45). This finding where again greater than study conducted in Addis Ababa Gandhi hospital 35.5%, South Africa 13.3%, Nepal 6.02% and India 23.52% (17, 31, 35, 46), this may be because majority of study participant in this study were admitted after complication from severe preeclampsia.

From this study 59(67.01%) of the preeclamptic women were complicated from early onset of preeclampsia before 33 weeks of gestation and 63(30.7%) developed maternal complication with

late onset of preeclampsia after 34 weeks of gestation. This finding was contrary with study conducted in USA, Washington city, 12.2% and Nigeria 5.5% of women developed maternal complication from early onset of preeclampsia(20, 32), this is most probably because quality of care, technological difference and early detection and treatment of disease.

The present study result showed case fatality of preeclampsia were 2.0%, this finding were lowest of study conducted in Tanzania, India and Nigeria 17.9%, 6.23.8% and 12.1% respectively(22, 26, 28). This may be because of under reporting of maternal death in this study area. However, case fatality of preeclampsia according to study conducted in Addis Ababa, Hidar hospital and Cameroon were 0.5%, 0.6% and 1.85% respectively (14, 24, 26) and this could be almost all of the mothers were from urban residence which don't delay in seeking health care, better quality of care and have access to health care.

According to the result of present study rural residency has 5.038 times higher risk of unfavorable maternal outcome or maternal complication than women from urban, this is in line with study conducted in Hawassa, 5.33(34) and South Africa 4. 99(17) time higher risk of unfavorable maternal outcome, this consistency could be because of the geographical and catchment area similarity with Hawassa and methodological similarity with study conducted in South Africa.

Early onset of preeclampsia increase the risk of unfavorable maternal outcome 3.67 times higher than late onset of preeclampsia, this is supported by the study conducted in Afar, Hidar hospital 6.8 times (24) and Nepal 4.09 times (31) risk of unfavorable maternal outcome with early onset of preeclampsia. This similarity may be almost similar access of health facilities. According to study in USA Washington and Nigeria the risk of unfavorable maternal outcome were 1.2 and 2.94 respectively(20, 32), this result is lower than present study, this may be due to better quality in maternity service and awareness of community about the disease in USA and Nigeria.

This study showed that the risk of developing unfavorable maternal outcome with severe preeclampsia were 6.42 times higher than mild preeclampsia. There were differences in the risk across countries and continents. According to research conducted India the risk were 9.09 times, Nigeria 11.2 times, Iran 14.34 times higher for unfavorable maternal outcome this were higher

than result of this study (22, 28, 36), this is because of the fact that sever preeclampsia causes more maternal complications that can lead even to death.

LIMITATION OF STUDY

- ✓ Since the study was conducted retrospectively, there were variables that were not registered that might influence the causes of maternal outcome from preeclampsia
- ✓ Due to poor chart documentation of patients information in the study area, it was difficult to increase the scope of study.
- ✓ Since the study was conducted in only Dilla university referral hospital it may be difficult to generalize the finding to general population.

STRENGTH OF STUDY

- ✓ Data collectors in this study were well experienced this allow consistent retrieval of information from document
- ✓ New variables were studied which were not included in another study conducted in Ethiopia

# 7. CONCLUSION AND RECOMMENDATION

The finding of this study showed that maternal complications were common among preeclamptic women who admitted to Dilla university referral hospital. Especially the maternal morbidity was common with previous history of preeclampsia, co-morbidity or previous history of medical condition early onset of preeclampsia and severity sign of preeclampsia. Among women with complication from preeclampsia Hemolysis elevated liver enzyme and low platelet (HELLP) syndrome was the most complication followed by disseminated intravascular coagulation (DIC) and renal failure. Rural residence, early onset of preeclampsia, severity at admission, and non-treatment with anti-hypertensive medication were factors which were associated with unfavorable maternal outcome.

Based on this finding the following points are recommended:

- ✓ Reproductive health education should be provided to increase awareness and provision of quality ANC services.
- ✓ Health care professionals specially who work at PHC center should take appropriate trainings on immediate management and counseling a women coming for ANC and prompt referral for preeclampsia women with severity sign.
- ✓ Concerning government body should work to avail ambulance services 24/7 to prevent delay to reach higher health care center.
- ✓ The Dilla university referral hospitals should fulfill necessary laboratory equipment, and medications which aid for better management of preeclampric women
- ✓ Researchers can study the condition by other study design at wider scope.

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## 9. ANNEXS

**Data abstraction format**

1. Card number _____

2. Date of admission_____ discharge _____

| Question number | Questions | Possible answer | Skip pattern |
|---|---|---|---|
| **Section 1: Woman's details and previous pregnancies** | | | |
| 101 | Age | | |
| 102 | Residence | 1. Rural<br>2. Urban | |
| 103 | Gravidity | | |
| 104 | Parity | | |
| 105 | Previous history of preeclampsia | 1. Yes<br>2. No | |
| 106 | Previous history of eclampsia | 1. Yes<br>2. No | |
| **Section 2: History of pregnancy** | | | |
| 201 | Was the mother on regular ANC follow-up? | 1. Yes<br>2. No | |
| 202 | What was the diagnosis at admission? | 1. Mild preeclampsia<br>2. Severe PE | |
| 203 | Where did the patient referred from? | 1. Self-referral<br>2. Hospital<br>3. Private clinic<br>4. PHC | |
| 204 | What was the reason for refferal | | |
| 205 | The gestational age (in weeks) at admission | | |
| 206 | The gestational age (in weeks) at delivery | | |
| 207 | Was there any co-morbidity? | 1. Yes<br>2. No | If no skip 208 |
| 208 | What was co-morbidity? | 1. Diabetes mellitus.<br>2. Renal disease.<br>3. Previous history of hypertension<br>4. Other | |
| 209 | Was anti-hypertensive given? | 1. Yes | |

| | | | |
|---|---|---|---|
| | | 2. No | |
| 210 | Was the mother monitored for mgso4 toxicity? | 1. Yes<br>2. No | If no skip 211 |
| 211 | Which Mgso4 toxicity? | 1. Deep Tendon reflexes<br>2. Respiration rate<br>3. Urine output | |
| 212 | Was the mother monitored for sever preeclampsia? | 1. Yes<br>2. No | If no skip 212 |
| 213 | What was severity sign | 1. Epigastric pain<br>2. Blurring of vision<br>3. Sever head ache<br>4. Other | |
| 214 | What was the mode of onset of labour | 1. Spontaneous<br>2. Induced | |
| 215 | If delivery was induced what was the indication? | | |
| 216 | What was Mode of delivery? | 1. Vaginal<br>2. Vacuum/forceps<br>3. C/S | |
| 217 | Did the mother develop any complications after admission? | 1. Yes<br>2. No | If no skip2017 |
| 218 | What was major complication? | 1. Liver failure<br>2. Renal failure<br>3. HELLP syndrome<br>4. DIC<br>5. Other | |
| 219 | Was the mother admitted to ICU? | 1. Yes<br>2. No | |
| 220 | What was duration of ICU admission? | | |
| 221 | Does a woman transfused blood? | 1. Yes<br>2. No | |
| 222 | What was maternal outcome? | 1. favorable<br>2. unfavorable | If yes skip 222 |
| | What was maternal condition at discharge | Alive<br>died | |
| 223 | What was primary cause of death | | |

1. Vital sign and investigations at admission and discharge

| CBC | | | RFT | | | LFT | | | PROTEIN UREA | | Vital sign | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Admission | Discharge | | Admission | Discharge | | Admission | Dischargе | admission | Discharge | | admission | Discharge |
| WBC | | | Cr | | | AST | | | | | BP | | |
| HGB | | | BUN | | | ALT | | | | | RR | | |
| HCT | | | Ol oligourea | | | ALP | | | | | PR | | |
| PLT | | | | | | | | | | | TT | | |
| OTHERS | | | LL LDH | | | UA | | | | | | | |

Date of data collection_____

Name of data collector_____ signature _____