

**MANAGEMENT OUTCOMES OF PREGNANCY RELATED
HYPERTENSIVE DISORDER IN METTU KARL REFERRAL HOSPITAL,
METU TOWN, SOUTH WEST ETHIOPIA: -A THREE YEAR
RETROSPECTIVE STUDY.**



BY: ESHETU SEYOUM (BSC)

THESIS SUBMITTED TO JIMMA UNIVERSITY COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCE, DEPARTMENT OF OBSTETRICS/ GYNECOLOGY AND SURGERY COORDINATING OFFICE; IN PARTIAL FULLFILMENT FOR THE REQUIREMENTS FOR DEGREE OF MASTERS IN INTEGRATED EMERGENCY OBSTETRICS/GYNECOLOGY AND GENERAL SURGERY.

July 1, 2014

JIMMA, ETHIOPIA

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ABSTRACT

Background:-pregnancy related Hypertensive disorder complicates 5 to 10 % of all pregnancies, and together they form one member of the deadly triad, along with hemorrhage and infection, that contribute greatly to maternal morbidity and mortality rates. Preeclampsia/eclampsia syndrome is the most dangerous which results poor maternal and perinatal outcome.

Objective:-To determine management outcome and factor associated with pregnancy related hypertensive disorder in Mettu Karl Referral Hospital, Mettu, South west Ethiopia.

Method: - Hospital based retrospective cross-sectional study was conducted on pregnancy related HTN at Mettu Karl Referral Hospital from December 1st to January20/2013 by reviewing medical records. The collected data were checked for any inconsistency, coded, and entered into SPSS version 16.0 for data processing and analysis. Descriptive, binary and multiple logistic regression analysis were used. A 95 % CI and P- value of < 0.05 were considered statistically significant.

Result:-The magnitude of pregnancy related hypertensive disorder was 2.4% and eclampsia was 0.37%. Majority 82.6% of the mothers were in the age range b/n 18 to 34 years the mean age 24.4(SD±5.12). Sever preeclampsia was the most common 35.5%, followed by eclampsia 19% and HELLP 12.4%. Maternal complications were renal failure 6.6%, postpartum hamorrhage7.4%, abruptio placenta 6%, liver infarction 11.5%, thrombocytopenia 3.3%, and anemia 28.1%, and there was no maternal death. And fetal management outcomes were perinatal mortality rate 120.37 per thousand deliveries, stillbirth rate 10.2%, low birth weight 30.5%, and low APGAR 18.5%, abortion 10.7% and preterm delivery 31.4%. Maximum blood pressure and urine albumin were statistically significant associated with the maternal management outcomes. Low APGAR score and preterm deliveries were statistically significant associated with the fetal management outcomes.

Conclusion:-The magnitude of pregnancy related hypertensive disorder was low and has adverse maternal & fetal management outcome. Mothers with maximum blood pressure and Proteinuria were more affected. Preterm and low APGAR score deliveries were more affected.

Recommendation:-The hospital have to mobilize to built well organized neonatal intensive care unit (NICU)

Key words:

Gestational HTN, Preeclampsia, Eclampsia, HELLP, Perinatal mortality.

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ACRONYMS

ANC	Antenatal Care
APGAR	Appearance, Pulse, Grimace, Activity and Reflex
BP	Blood Pressure
CFR	Case Fatality rate
CD	Cesarean Delivery
C/S	Cesarean Section
DBP	Diastolic Blood Pressure
DIC	Disseminated Intravascular Coagulopathy
EDHS	Ethiopian Demographic Health Survey
IEOS	Integrated Emergency Obstetrics/gynecology and General Surgery
ICF	International Coach Federation
IUGR	Intra Uterine Growth Restriction
HDP	Hypertensive Disorder of Pregnancy
HTN	Hypertension
HELLP	Hemolysis Elevated Liver Enzyme, and Low Platelet
LNMP	Last Normal Menstrual Period
LUSTCS	Lower Uterine Segment Transverse Cesarean Section
MDG	Millennium Development Goal
mmHg	Millimeter Mercury
MMR	Maternal Mortality Rate

1. CHAPTER ONE:-INTRODUCTION

1.1. Backgrounds

Hypertensive disorder of pregnancy /HDP/complicates 5 to 10 % and Eclampsia 0.05% to 0.1%, the rate is much higher in developing countries. HDP together they form one member of the deadly triad, along with hemorrhage and infection that contribute greatly to maternal morbidity and mortality rates. Preeclampsia, either alone or superimposed on chronic HTN, is the most dangerous.12 % of maternal deaths are due to hypertensive disorders of pregnancy (1, 5, 8).

HDP remains among the most common causes of adverse maternal & perinatal outcome. Morbidity and mortality are highest with severe-preeclampsia or Eclampsia (2).HDP describes a mild elevation in blood pressure or sever hypertension with various organ dysfunction, & manifestations are clinically similar (e.g. hypertension, Proteinuria); However they may result from different underlying cases such as chronic HTN, renal disease, or pure preeclampsia (3). Pregnant woman with increased BP are classified in to Preeclampsia, Gestational HTN, chronic HTN, eclampsia, and HELLP syndrome (4).

Preeclampsia is a pregnancy specific syndrome which occurs after 20 weeks of gestation & the etiologic agent remains unknown. Preeclampsia subdivided in to mild and severe (5). Severity signs are Oliguria, Cerebral or visual disturbances, impaired liver function, systolic BP ≥ 160 mmHg or diastolic BP ≥ 110 mmHg, & Proteinuria $\geq 3+$ (2, 5). Gestational HTN is a hypertension detected for the first time after 20weeks with the absence of Proteinuria. Chronic HTN is a hypertension diagnosed before the 20th week of gestation (4). HELLP syndrome is hemolysis, Elevated liver enzymes or Low platelet count (3). Eclampsia is a preeclampsia, seizures that cannot be attributed to other causes (4).

Risk to the mother are DIC, intracranial hemorrhage, renal failure, retinal detachment, pulmonary edema, liver rupture, abruptio placenta, and death (5).Risk to the fetus & neonate are growth restriction, preterm, stillbirth, and neonatal death (2). Prevention is to recognize the disease early. Delivery is the definitive management. Anticonvulsant is indicated to prevent convulsions & to control blood pressure with antihypertensive drugs (4). There are few studies exploring HDP in Ethiopia, and there hasn't been a single study done in the study area. Because of the limited data available, HDP has been found to be common and associated with poor maternal and perinatal outcomes. Therefore, this study will be conducted to explore the magnitude and management outcomes of pregnancies complicated by HDP.

1.2. Statement of the problem

Estimated total of 536 000 maternal deaths worldwide, developing countries accounted for 99 % (533 000) of deaths. Slightly more than half of the maternal deaths (270 000) Occurred in the sub-Saharan African region alone, followed by south Asia (188 000). Sub-Saharan African and south Asia accounted for 86% of global maternal deaths (6). Worldwide distribution of maternal death by region south Asia 59%, Africa 30%, Latin America 7%, East Asia 3% and developed countries 1% (3).The adult life time risk of maternal death (the probability that a 15-years-old female will die eventually from maternal cause) is highest in Africa (1 in 26), while in developed regions lifetime risk (1 in 7300) and life time risk of maternal death in Ethiopia (1 in 27) (6).Global cause of maternal mortality are sever bleeding 25%, indirect causes20%, infection 15%, Unsafe abortion 13%, preeclampsia/eclampsia 12%, obstructed labor 8%,other direct causes 8%(7).In Ethiopia Pregnancy complications claim the lives of 25,000 mothers annually (8).

Estimated total of 133 million live births; 3.7 million of these died in the neonatal period. 3 million infants were stillborn. 98% of deaths took place in the developing world, where 90% of babies were born. According to these estimates, neonatal mortality in developing countries was 31 deaths per 1000live births; of those deaths, 76%, or 3 million, occurred in the early neonatal period (9).The neonatal mortality rate In Ethiopia is 37 deaths per 1,000 live births, the perinatal mortality rate 46 per 1,000 Pregnancies (10).

The cause fatality rate of preeclampsia eclampsia in Ethiopia rages from 4% to 36% (11).HDP complicates 5 to 10 % of all pregnancies (1). HDP remains among the most common causes of adverse maternal /during pregnancy and 42 days postpartum / and perinatal outcome (2). Risk to the mother is disseminated intravascular coagulation, intracranial hemorrhage, renal failure, retinal detachment, pulmonary edema, liver rupture, abruptio placenta, and death (5). Risk to the fetus & neonate are growth restriction, preterm, stillbirth, and neonatal death (2).Risk factors found to be significant are age<20 years or >35years, non-white race (African-American and other), clinical- center , null parity , twin birth, body mass index, Family history of preeclampsia in previous pregnancy, Chronic hypertension ,type 1 diabetes, & gestational diabetes (2,4, 12, 13).

The fifth millennium development goal aims to improve maternal health and targets reducing MMR by 75% between 1990 and 2015, it seeks to achieve an expected 5.5% annual decline. However, maternal mortality has decreased at the global level at an average of less than 1 % (6). Treatment remains

prenatal care, timely diagnosis, proper management, and timely delivery. The type of information expected from this project is to determine the prevalence, the case fatality rate, the perinatal mortality rate, to determine the maternal & fetal morbidity ,how cases of HDP managed in the study period and to determine factors associated maternal and fetal management out come. To contribute little for the overcoming, prevailing challenges in the control of hypertensive disorder of pregnancy in Ethiopia.

1.3. Significance of the Study

This study was conducted to answer how confirmed and common HDP epidemiologically in the study area. This study described the maternal and fetal management outcomes and identified factors associated with the maternal and fetal management outcomes. It has great significance in preventing maternal and perinatal morbidity and mortality due to HDP, thereby to achieve MDGs, by improving access to appropriate obstetric care, particularly during labor and delivery and better screening and treatment of HDP in the study area. It will also have significant advantage for health professionals in that it will add useful information regarding the scope of HDP and its management outcome such that the importance of early predict and detection of the disease and initiation of on time management during practice. The outcome of this study will also add essential input for policy makers to design proper strategies and serve as baseline information for other studies.

2. CHAPTER TWO:-LITRATURE REVIEW.

This literature review is developed by reviewing many other related articles they mainly showed that sever preeclampsia is the common type of HDP ,and primigravida are most affected. The prevalence of HDP ranges from 2.32 to 10%, the case fatality rate from 0 to 34 % and the perinatal mortality rate 47/1000 to 328/1000 births, prematurity 10.6 to 66.6%. Emergency caesarian section rate in mothers with HDP ranges 30 to 64.5%, other mode of deliveries and onset of labor in most literatures are vacuum, forceps and by induction and elective c/s.

2.1. The Magnitude pregnancy related HTN

Hypertensive disorder of pregnancy complicates 5 to 10 % of all pregnancies and eclampsia 0.05 to 0.1% in the United States, the rate is much higher in developing countries (1). A study, on the Prevalence of HDP in Shiraz, Southern Iran it was 2.32% (17).Prevalence of preeclampsia rates from **African countries** such as South Africa, Egypt, Tanzania, and Ethiopia vary from 1.8% to 7.1% (18).A study done in Yekatit 12 hospital Addis Ababa, on preeclampsia/eclampsia 4.8% were pre-eclamptic and 0.3% were eclamptic (19). And a study done in Tikur Ambesa on prevalence of HDP was 5.3% (27).

2.2. Review of Maternal and Fetal management Outcome.

Hypertensive disorders remains among the most common causes of adverse maternal & perinatal outcome (2). Risk to the mother is disseminated intravascular coagulation, intracranial hemorrhage, renal failure, retinal detachment, pulmonary edema, liver rupture, abruptio placenta, and death (5). Risk to the fetus & neonate are growth restriction, preterm, stillbirth, and neonatal death (2). Estimated total of 133 million live births; 3.7 million of these died in the neonatal period. 98% of deaths took place in the developing world (9).And the perinatal mortality rate in Ethiopia is 46 per 1,000 Pregnancies (10).

A study done on HDP in Asian countries such as in Kocaeli University Turkey, 54.11% were severe preeclampsia ,34.50% mild preeclampsia, 11.37% chronic hypertension, 11% had eclamptic and 11% HELLP syndrome; Intrauterine growth restriction was seen in 29.4%, and Perinatal mortality rate was found to be 144/1,000 births (21). Hospital based study in India; the age of the patients ranged between 19 to 32 mean 24.75 +/- 3.36 years, 57% were primigravida and Low birth weight was seen in 66.66%. Preeclampsia was seen in 44.44%, eclampsia in 40.28%, HELLP syndrome in 6.94%, chronic

hypertension with superimposed PE in 6.94% and chronic HTN in 1.38% (15). A study in Sinhalese women Sri Lanka, 66.6% and 33.3% preterm and term delivery respectively Maternal Complications were, SBP \geq 160 mmHg 75.5%; DBP \geq 110 mmHg 83.8% and there was one maternal death (22). A study in ayub medical college abbotabad, pakistan. Neonatal outcome in pre-eclamptic patients showed a perinatal mortality of 328 neonates per 1000 total births(16). A study at the North Western Armed Forces Hospital Program in Tabuk, Saudi Arabia, there was no maternal mortality during the study period & the perinatal mortality rate was 47/1000 births (23).

A study in United State of America, São Paulo Brazil on PIH, 64.5% were between 20 and 34 years old (average 29.4 years), 52.9% were multiparous, 62.1% had systolic blood pressure \geq 160 mmHg and 49.6% had a DBP \leq 110 mmHg; 81.0% weighed \geq 2,500 g, 10.6% new borns were premature, 68.1% were term, 84.0% a respectively (24). A study in Canadian province of Nova Scotia on PIH, 7.7% had mild PIH, 1.3% had severe PIH, 0.2% had HELLP, 0.02% had eclampsia, 0.6% had chronic, and 0.4% had superimposed PIH (25).

A study on HDP in University Of Benin Teaching Hospital, Nigeria, the perinatal mortality rate (PNMR) was 110.3 per 1000 deliveries a(26).

A study done in **Ethiopia**, in Addis Ababa teaching hospitals on eclampsia Eighty-four women (38.9%) had any antenatal care, 157 (72.7%) were nulli-parous . The most frequently sited symptoms include headache in 83.8%, visual disturbance in 41.6% and epigastric pain in 38.4% of the cases. Ninety nine (45.8%) women were delivered by cesarean section . There were 5.5% mothers with acute renal failure and 11.6% postpartum hemorrhage A study done in **Ethiopia**. the cause fatality rate on preeclampsia/eclampsia rages from 4% to 36% (11).

A study done in **yekatit 12** hospital Addis Ababa, on Preeclampsia /eclampsia,78.2% had no antenatal care and only 39.3% of women from the total number of deliveries were unbooked,84.1% severe preeclampsia and 15.9% mild preeclampsia, The case fatality rate was 23.8% and perinatal mortality rate was 165 per 100 deliveries (19). A study done in **Tikur Anbessa** Hospital on HDP ,78.2% were severe pre eclampsia and eclampsia,14.8% chronic hypertension. Preterm delivery rate was 48.6% for all cases of HDP. Intervention rate was high with 44.3% induction of labor and 44.3% caesarian section (27).

A study done in **Jima** university specialized hospital on HDP, 66.5% & 56.9% of the mothers affected were nullipara & from rural area respectively; Severe preeclampsia was 51.9% ,eclampsia23.4%, HELLP syndrome 8.9%, mild-preeclampsia 7.6% .The rate of preterm delivery was 31.6%,still birth rate of 27.5%,rates of low and very low birth weight were 35.6% and 12.3% respectively, and the perinatal mortality rate 317.1 / 1000 births .Instrumental and caesarean deliveries were (7.8%) and (34%) . (20).

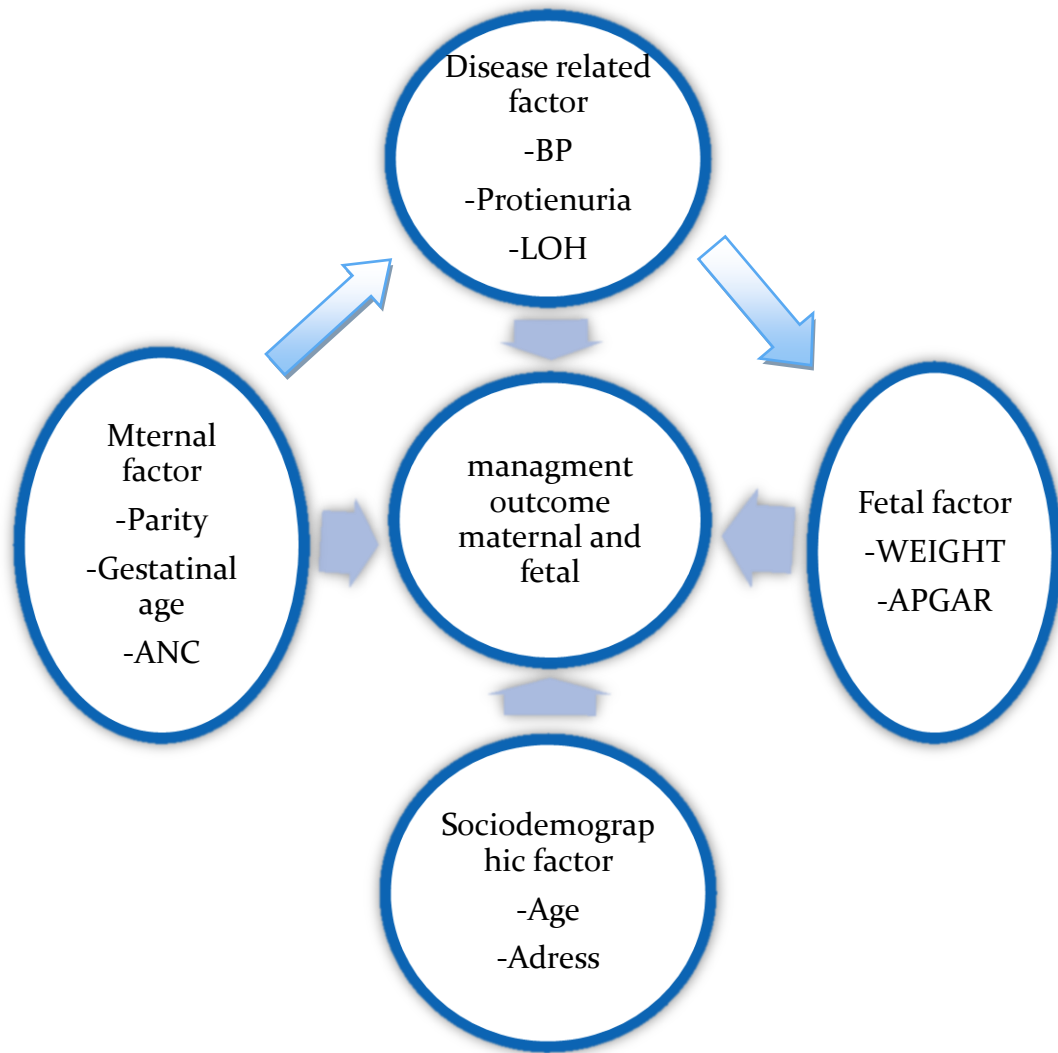
Challenges in the management of pregnancy related HTN is delay to seek care, delay reaching health facility, and delay in health service provision(18).Management of HDP and Prevention has focused identifying women at higher risk, and recognizes the disease process in its early stages. Delivery is always appropriate therapy for the mother. The goal of therapy is to prevent eclampsia and severe complications of preeclampsia. Anticonvulsant therapy is usually indicated either to prevent recurrent convulsions in eclampsia or to prevent convulsions in women with preeclampsia. Antihypertensive can be withheld as long as maternal pressure is only mildly elevating (4). In women with preeclampsia without contraindications to labor, vaginal delivery is the preferred Approach. Cervical ripening agents and oxytocin are used as needed. Convulsion alone is not an indication for cesarean section. However, if vaginal birth is not possible within a reasonable period of time, cesarean delivery is performed (2).

A study done on HDP in Asian countries at University of Kocaeli, Turkey, vaginal delivery was 41.2% while 58.8% underwent c/s (21);In Shiraz, Southern Iran, 45.8% of all patients with HDP experienced c/s mode of delivery (17);In Fatima Jinnah Medical college /Sir Ganga Ram Hospital, Lahore Pakistan 27% terminate pregnancy by induction, 59% woman had vaginal delivery; while 10.47% had elective and 30% had emergency C/S (28).

A study done in **USA** são Paulo, Brazil mothers with PIH the mode of delivery was 64.5% C/S, 28.9% vaginal, and 6.6% forceps (24). A study in University of Nigeria Teaching Hospital Enugu (UNTH), women received MgSO₄ and women received diazepam. Eclampsia occurred only in a member of the diazepam group but there were no maternal deaths. Perinatal mortality did not differ b/n the groups (29).A Case control study in University Of Benin Teaching Hospita , Benin City, Nigeria C/D rate of HDP was 35.7%(26).

A study done in Ethiopia at Tikur Anbessa, 44.3% induction of labor and 44.3% were with C/D (27). In Jimma University Hospital Induction, c/s section and instrumental delivery which were 36.6%, 34% and 7.8%, respectively while 5.9% pregnancies needed elective C/D (20).

CONCEPTUAL FRAME WORK



Reference texts and literatures

Diagram 1 Conceptual frame work on factors that affect the management outcome of HDP.

3. CHAPTER THREE:-OBJECTIVES

3.1. General objective:-

To describe maternal and fetal management outcome, and to identify factors associated with fetal and maternal management outcome in mothers with pregnancy related hypertensive disorder in Mettu Karl Hospital, south west Ethiopia, Mettu town.

3.2. Specific objectives:

- To describe the maternal management outcome in pregnancy related HTN.
- To describe the fetal management outcomes in pregnancy related HTN.
- To identify factors associated with maternal and management outcome.
- To identify factors associate with fetal management outcome.

4. CHAPTER FOUR:-METHODS AND MATERIALS

4.1. Study Area and Period

This hospital based retrospective study was conducted from January 1st, 2011 to December 30, 2013 in Mettu karl hospital, which is 595km south west from Addis Ababa. It is established by the Swedish missionary and Ras Teferi in 1964. 1.5 million people of Illuababora zone, gets health service there, that the majority lives depend on farming. The hospital has 138 health professionals in different fields. The number of pregnant mother in the catchment per year is 55.860. There is a total of 160 beds in all wards of which 47 beds (38gynecology and 9 in obstetrics) and three delivery coaches are found. Currently the gynecology and obstetrics ward is run by one Msc. Emergency surgical officer and 11 midwives

4.2. Study Design:-

A three years hospital based retrospective cross-sectional study design was implemented

4.3. Population

4.3.1. Source Population:-

All pregnant mothers treated for pregnancy related hypertension disorder within three years.

4.3.2. Study Population

All pregnant mothers treated for pregnancy related hypertension disorder within three years.

4.4. Inclusion and exclusion criteria

2.1.1. Inclusion Criteria

All women who developed hypertensive disorder of pregnancy and admitted to the labor ward were included in the study.

4.4.1. Exclusion Criteria

The client cards with incomplete data were excluded from the study.

4.5. Sample Size determination and sampling technique: -

All mothers managed as pregnancy related hypertension disorder, who full fill the inclusion criteria in the study period, were included.

4.6. Study variables

Dependent variables

Maternal outcome

Fetal outcome

Independent variables

Socio-demographic

Age

Address

Fetal factor

Weight of new born

APGAR scores

Maternal factor

Parity

ANC follow up

Gestational age

Disease related factor

Sign /symptom -----maximum blood pressure /BP/

Laboratory investigation ----urine albumin

Length of hospital stay

4.7. Data collection tools and pre-test

The data for this study was obtained from admission registration books, Delivery registration books and patient cards. The data was collected using pre-tested check list questioner which was a sociodemographic variables, obstetrics history, sign and symptoms at presentation, laboratory result, maternal and fetal outcomes. The questioner will be prepared in English. Pre-test before the actual data collection the questioner will be tested on 5% of the total study population during study period.

4.8. Measurements:-

With the structured questioner the **dependent variable maternal outcome** was measured with **favorable and unfavorable** maternal management outcome and **fetal management** was measured with **favorable and unfavorable** fetal management outcome.

Independent variables

Sociodemographic was measured by two factors age and address of mothers, where they come from.

Maternal factor was measured with three factors parity, ANC follow up, and gestational age.

Fetal factor was measured by two factors with weight of newborn and APGAR score and

DISEASE RELATED FACTOR was measured with three factor such as maximum blood pressure, urine albumin and length of hospital stay.

4.9. Data Collection Process

4.9.1. Data Collectors and Collection Methods:

Data for this study will be obtained from registration books & patient cards using structured questionnaires which contain socio-demographic characteristics, obstetric history, signs and symptoms at presentation, laboratory data, maternal and perinatal outcomes will be filled by five midwifery nurses & two 2nd year IEOS Students. The data collectors will be given one day training on how to review and abstract the required and pertinent information from the main document

4.10. Data processing and analysis

Collected data will be manually checked for completeness and for any inconsistency coded and entered into SPSS version 16.0 for data processing and analysis. Descriptive, binary and multiple logistic regression analysis were used .On binary logistic regression analysis a p-value ≤ 0.25 was used as a candidate for multiple logistic regression analysis .A 95 % CI and P- value of < 0.05 considered statistically significant and crude / adjusted odds ratio calculated. Final interpretation, discussion, recommendation will be made based on the finding.

4.11. Ethical Consideration

Ethical approval is obtained from Ethical review board of Jimma University, College of Public Health & Medical Science. Metu karl Hospital gives permission to conduct the study. Then, study permit is granted by the Hospital in accordance with the letter from the University. The privacy of mothers is kept secret by not recording the name of mothers on the questioner only the obstetrical

history and the management outcome of HDP is recorded for the study conducted management outcome of HDP.

4.12. Data quality assurance

Data collection tools (the checklists) to collect the data from the registration books and client cards was prepared and pretested with similar group as the target group and excluded from the sample. Necessary changes in the tools will be made accordingly. To assure the quality of the data, data collectors will be trained by principal investigator every day; All the collected data will be reviewed and checked for completeness and relevance. Data cleaning will be done by running frequency of variables using SPSS windows 16.0.

4.13. Operational Definition/definition of terms

Anemia:-is a haemoglobin concentration less than 11 gm/dL . Severe: Hgb < 7.0 , moderate: Hgb 7.0 - 9.9 and Mild: Hgb 10.0-10.9 g/dl.

Early neonatal deaths:-are deaths of a neonate within the first seven days of birth.

Eclampsia:-is in a woman with preeclampsia and at least one episode of convulsion that cannot attribute to other cause.

Favourable fetal outcome: - is an alive fetus without any complication.

Favourable maternal outcome:-mothers who have HDP but without complication.

FETAL weight:-1000-1499gram=very low, 1500-2499=low, & >2500gram=normal.

Gestational age:-28 to 37weeks =preterm, gestational age 37 to 42 weeks=term and gestational age \geq 42 weeks=post term.

Gestational hypertension: - is a hypertension detected after 20weeks of gestational age and with absence of Proteinuria.

HELLP:-is a form of severe preeclampsia with the presence of one or more of the following hemolysis, elevated liver enzyme, or low platelet count . H=hemolysis bilirubin \geq 1.2 mg/dl, or lactic dehydrogenase >600 IU/L. EL=elevated liver enzyme/liver infarction/=SGOT \geq 70 IU/L. LP=low platelet count /thrombocytopenia/ = Platelet count < 100,000/mm³.

Hypertension:-is a BP \geq 140/90 mmHg in two occasions at least 6 hours apart.

IUGR is the failure of a foetus to achieve its growth potential, resulting in abnormally low birth weight.

LOW APGAR:-score is < 7 and normal APGAR score ≥ 7 .

Mild Preeclampsia:-is BP $\geq 140/90$ - $159/109$ mmHg on two occasions at least 6 hours apart, Proteinuria +1 and +2.

PMR:-is the sum of still birth plus early neonatal death per thousand deliveries.

Preeclampsia:-is a hypertension and Proteinuria after 20 weeks of gestational age.

Prevalence:-is the proportion of persons in a population who have a particular disease at a specified point in time or over a specified period of time.

Proteinuria:-positive if 300mg in 24/hrs urine collection or $\geq 1+$ urine dipsticks and negative if < 300 mg in 24hrs urine collection.

Renal failure:-mothers with HDP who developed HELLP and whose serum creatinine ≥ 1.2 mg/dl.

Sever preeclampsia:-is a hypertension, Proteinuria after 20 weeks of gestational age and has signs and symptoms of severity. Severity signs or symptoms /i.e. blindness ,severe headache, Epigastric/right upper quadrant pain ,abnormal body movement, systolic BP ≥ 160 mmHg or diastolic BP ≥ 110 mmHg, Proteinuria ≥ 5 gram/24hrs/+3/, and Oliguria ≤ 400 ml/24 hrs.

Still birth:-The birth of a dead foetus at 28 weeks or after wards.

Still birth rate: The number of still born per total births (live born + still born infants).

Unfavourable fetal outcome:-is a fetus from mothers who have HDP delivery with complication and fetal loss. Complication such as, low APGAR score, growth restriction/ low birth weight/, preterm, abortion, IUFD/stillbirth/, and early neonatal death.

Unfavourable maternal outcomes:-are mothers, who developed sever forms of pregnancy related HTN /eclampsia, DIC/HELLP syndrome, sever preeclampsia/, and other complication i.e. Post partum haemorrhage, Placental abruption, blindness, renal failure and maternal death.

4.14. Plan for dissemination of findings

Findings were presented to master's thesis defense of Jimma University, Faculty of Public Health & Medical Science, school of Graduate Study. The results was planned to be submitted to the coordinator of IEOS, Metu Karl Hospital to use as input to improve some areas of the service in the future. There will be an attempt to publish the result

5. CHAPTER FIVE:-RESULT

5.1.Socio demographic characteristics

A total of 5415 pregnant mothers, who were admitted at Mettu karl obstetrics ward for delivery from January 1st/2010- December 30/2013, 130(2.4%) were with the diagnosis of pregnancy related hypertensive disorder and among these 121(93%) were retrieved for further analysis.

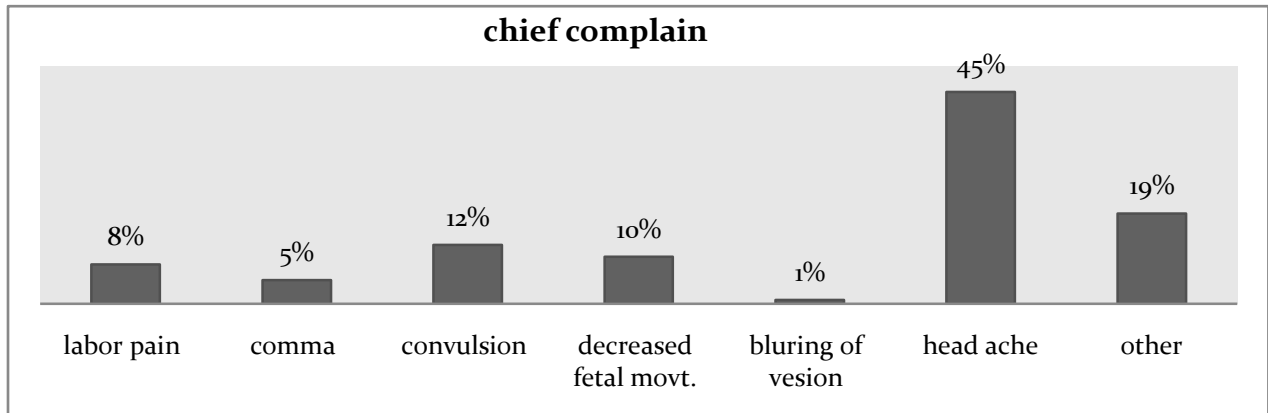
The minimum age was 15, maximum 39, and mean 24.4(SD±5.12) the majority 100 (82.6%) of the mothers were in the age range between 18 to 34 years. The place they come from outside Mettu town were 84(69.8%), unbooked for antenatal care follow up 62(51.2%), and Premiparous were 63(52.1%).

Table 1:-Socio demographic and obstetrics characteristics of mothers admitted with the diagnosis of pregnancy related hypertensive disorder at MKRH (December 1st to January20/2013) (n=121)

Variable		Frequency	Percent (%)
Age	<18yrs	12	9.9
	18 to 34yrs	100	82.6
	>35yrs	9	7.4
Address	Mettu town	37	30.6
	Outside Mettu t	84	69.4
Parity	Para I	63	52.1
	Para >or= 2	58	47.9
ANC	Yes	59	48.8
	No	62	51.2
	Total	121	100%

5.2. Chief complain and types of pregnancy related HTN

The commonest complain of mothers at presentation was head ache 54(44.6%), decreased fetal movement 12(9.9%), blurring of vision 1(0.8%), abnormal body movement 15(12.4%), comma 6(5%), pushing down labor pain 10(8.3%) and others 23(19%). And Maximum blood pressure recorded



(BP \geq 160/110) was 87(71.9%)

Figure: - Percentage of chief complaint of mothers at presentation. (n=121)

Among all types of pregnancy related HTN disorder ,Sever preeclampsia was the most common accounting 35.5%, followed by eclampsia which contributed 19%, mild preeclampsia 14.9%, HELLP12.4%, gestational HTN 13.2%, and chronic HTN 4.1% and two patients were superimposed preeclampsia. Risk mothers have diabetes mellitus 4(3.3%), chronic HTN 4(3.3%), and twining 5(4%).

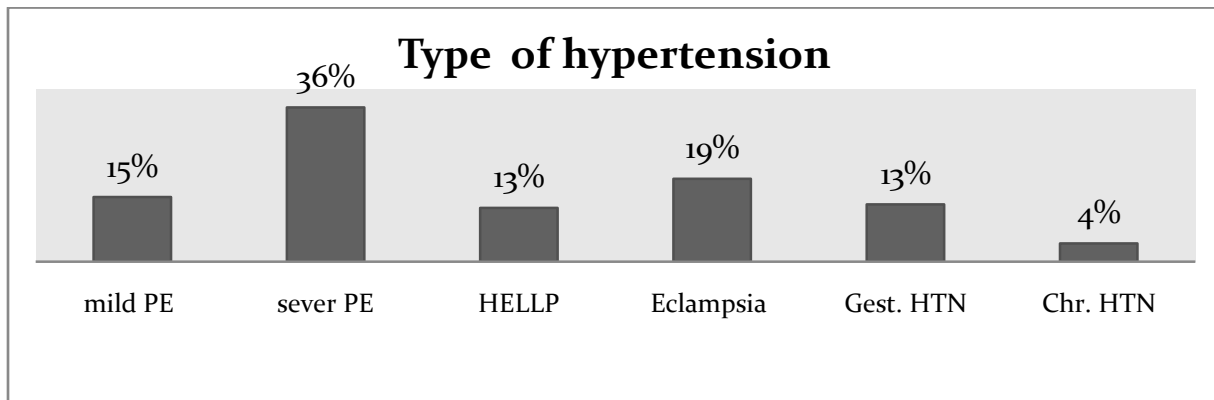


Figure: - Percentage of types of pregnancy related hypertensive disorder. (n=121)

5.3. Onset and mode of delivery

Delivery is always appropriate therapy for the mother. The goal of therapy is to prevent eclampsia and severe complications of preeclampsia (4). In this study spontaneous onset of labor was 50(46.3%), induction 55(51%) and elective cesarean delivery 3(2.8%). On the other hand Majority of the mothers were delivered by spontaneous vaginal delivery 76(70%), cesarean delivery 21(19.4%), forceps/vacuum 9(8.3%) and two destructive delivery.

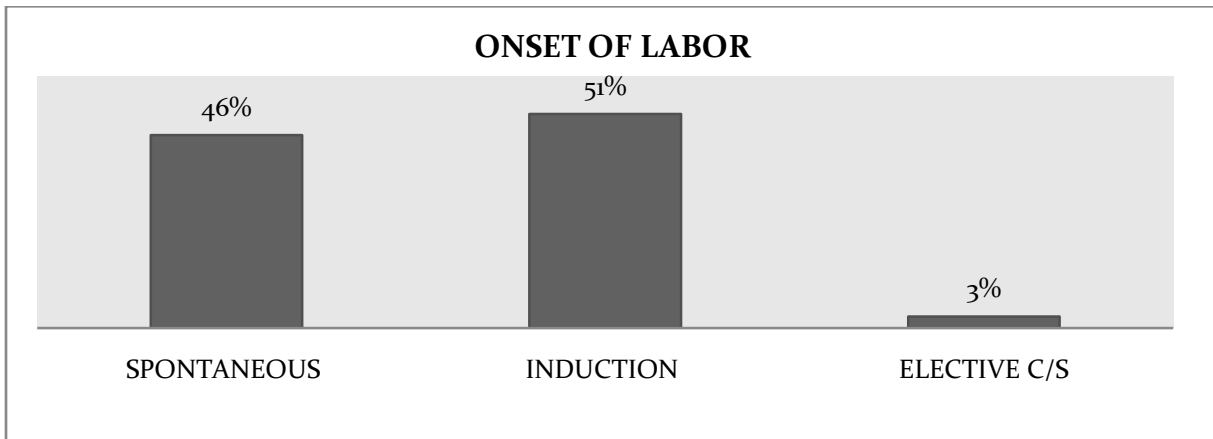


Figure: - Percentage of onset of labor. (n=108)

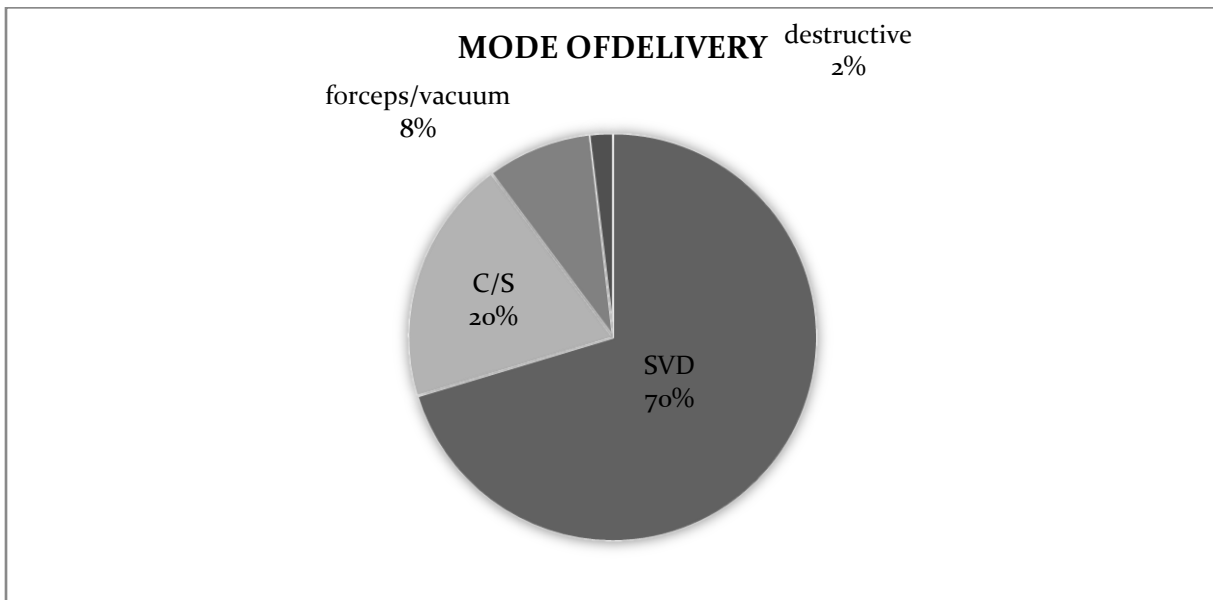
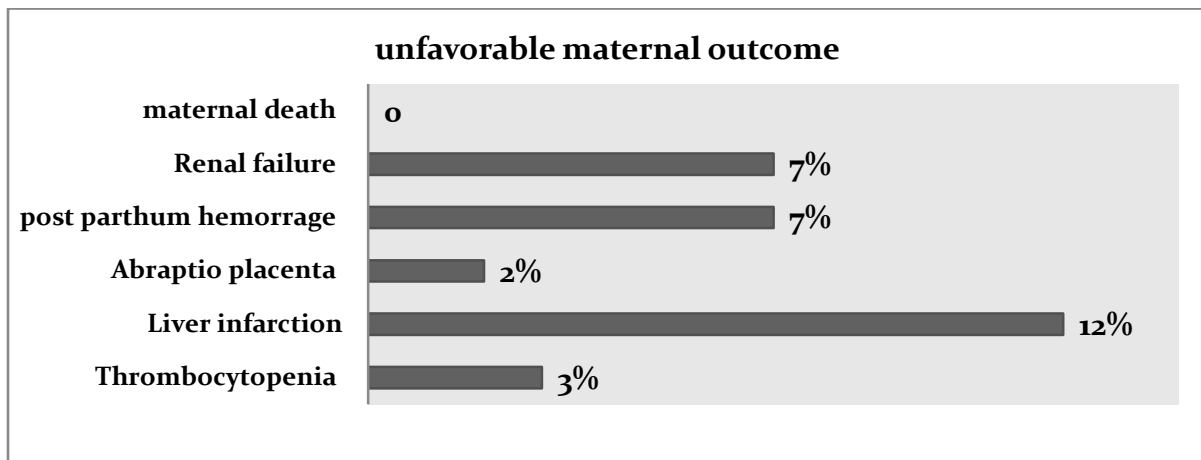


Figure: - Percentage of mode of delivery. (n=108)

5.4. Unfavorable maternal and fetal outcomes were.

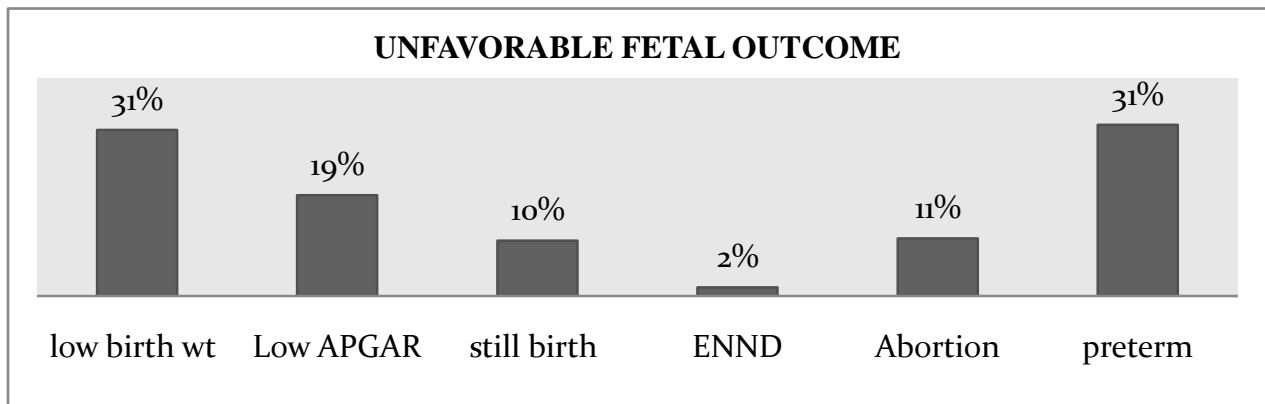
Hypertensive disorder of pregnancy remains among the most common causes of adverse maternal & perinatal outcome (2). In this study the maternal complications were 8(6.6%) renal failure, 9(7.4%) PPH, 2(1.6%) abruptio placenta, 14(11.5%) liver infarction/rupture/, 4(3%) thrombocytopenia, one mother under gone total abdominal hysterectomy and there was no maternal death during the study period. There were 34(28.1%) anemic mothers with HDP, among these 19(15.7%) mild anemia, 12(9.9%) moderate anemia and 3(2.5%) were with severe anemia.

Figure: - Percentage of mothers with unfavorable outcome. (n=121)



In this study the fetal management outcome was perinatal mortality rate 120.37 per 1000 deliveries, still births 11(10.18%), low birth weight 33(30.5%), low APGAR score 20(18.5%), preterm delivery 34(31.4%) among 108 deliveries .There were 2 early neonatal death2(1.6%) and abortion 13(10.7%).

Figure:-percentage of unfavorable fetal outcome. (N=121, n=108)



5.5. Intervention with antihypertensive and anti convulsant

Management of mothers 2(1.7%) of mothers were managed conservatively, 38(31.4%) with anti hypertensive, and 81(66.9%) with both anti hypertensive and anti convulsant.

Table 2:- Interventions with ant hypertension and anti convulsant of mothers with HDP at MKRH (December 1st to January 20/2013 G.C)

Variables	Type of HDP			
	Preeclampsia	Eclampsia	Gestational HTN	Chronic HTN
How patients managed				
Conservatively	0(0%)	0(0%)	2(100%)	0(0%)
Antihypertensive	17(44%)	2(5.3%)	14(36.8%)	5(13.2)
Antihypertensive + anticonvulsant	59(72.8)	21(25.9%)	0(0%)	1(1.2%)

5.6. Factors associated with maternal management outcome.

In this study there were two dependent variables fetal and maternal management outcomes. Each dependent variable was analyzed with every independent variable by binary logistic regression and those which full fill the criteria analyzed by multiple logistic regression. The following table shows seven variables were analyzed using binary logistic regression for the maternal management outcomes of pregnancy related hypertension disorder. Out of these; address, gestational age, maximum BP record, urine albumin and length of hospital stay were candidates for multiple logistic regression analysis.

Table 3:-Binary logistic regression on factors associated with maternal management outcomes on HDP at MKRH (December 1st to January20/2013 G.C) (N=121)

Variables	Management outcomes			
	Favorable	Unfavorable	COR (95% CI)	
Address	Live Mettu	12	25	1
	Live Outside Mettu	14	70	2.40(.98-5.88)
Parity	Multi Para	12	46	1
	Nullipara	142	49	0.91(0.38-2.18)
ANC	Yes	13	45	0.68(0.28-1.64)
	No	13	50	1
Gestational age	Term	20	55	1
	Preterm	5	29	2.11(0.72-6.20)
	Abortion	1	11	4.00(0.49-33.00)
Maximum BP	140/90-159/109mmHg	18	16	1
	≥160/110 mmHg	8	79	11.11(4.12-29.93)*
Urine albumin	Negative	14	7	1
	Positive	46	54	10.88(3.78-31.27)*
LOHS	<7days	7	8	1
	>or=7days	13	52	2.03(.75-5.54)

*Significant at p-value ≤ 0.05, 1 is Logical reference

ANC= antenatal care, GA= gestational age BP= blood pressure & LOHS= length of hospital stay

5.6.1 Predictors of maternal management outcomes

After analysis by binary logistic regression five of the variables Address, Gestational age, Maximum blood pressure record, Proteinuria and Length of hospital stay were found to be candidate for multiple logistic analysis. Therefore, a multivariate approach was applied to determine which factors best explained and predict maternal management outcome.

The outcome of the final stepwise multiple logistic regression models indicated that address, gestational age and length of hospital stay dropped from the final model. In this analysis maximum blood pressure record has significant statistical association with maternal management outcome of pregnancy related hypertension disorder (AOR=26, 95%CI: 5.11-132.35, p-value <0.001).

And the presence of Proteinuria has statistical association with maternal management outcomes of pregnancy related hypertension disorder of pregnancy (AOR=37.15, 95%CI: 6.58-209.85, p-value<0.001) Mothers who has Proteinuria more likely to develop unfavorable outcome as compared with mothers with negative Proteinuria.

Table 3:-Predictors associated with maternal management outcomes of pregnancy related HTN in MKRH (December 1st to January20/2013). (N=121)

Variables		Management outcomes		COR (95% CI)	AOR(95% CI)
		Favorabl e	Unfavorable		
Maximum BP in mmHg	BP=140/90- 159/109	18	16	1	
	BP>160/110	8	79	11.11(4.12-29.93)*	26.00(5.11- 132.35)**
Urine albumin	Negative	14	7	1	
	Positive	46	54	10.88(3.78-31.27)*	37.15(6.58- 209.85)**

*significant at $p \leq 0.05$ by binary, **significant $p \leq 0.05$ multiple logistic , and 1 is Logical reference

5.7.Factors associated with fetal management outcomes

The following table shows eight variables were analyzed using binary logistic regression for the fetal management outcomes of HDP. Out of these; Address, Gestational age, Antenatal care, Maximum blood pressure record, urine albumin, APGAR score and length of hospital stay were candidates for multiple logistic regression analysis.

Table 4:- Bivariate on factors associated with fetal management outcomes of HDP in Mettu Karl Referral Hospital from December 1st to January20/2013.

Variables	Management outcomes			
	Favorable	Un-Favorable	COR (95% CI)	
Address	Live Mettu	22	15	1
	Live Outside mettu	38	46	1.81(0.82-3.98)
Parity	Multipara	29	29	1
	Nullipara	31	32	0.97(0.48-1.99)
GA	Term	60	15	1
	Preterm	3	31	40.00(10.74-148.59)*
ANC	Yes	32	26	0.34(0.16-0.73)
	No	28	35	1
Maximum BP	140/90-159/109mmHg	22	12	1
	≥160/110 mmHg	38	49	2.06(0.91-4.67)
Albumin	Negative	14	7	1
	Positive	46	54	2.08(0.78-5.59)
APGAR	>or=7	60	29	1
	<7	3	17	12.14(3.29-44.8)*
LOHS	<7days	47	32	1
	≥7days	16	26	2.39(1.11-5.14)

*Significant at p-value ≤ 0.05 1 is reference logical reference

ANC antenatal care, GA gestational age BP blood pressure &LOHS length of hospital stay

5.7.1. Predictor of Fetal Management outcomes Of HDP.

After binary logistic analysis seven of the variables were found to be candidate for multiple logistic analyses. Therefore, a multivariate approach was applied to determine which factors best explained and predictor of fetal management outcome. The outcome of the final stepwise multiple logistic regression models indicated that Address, Antenatal care, Maximum blood pressure record, Proteinuria, and length of hospital stay dropped from the final model.

In this analysis Gestational age has significant statistical association with fetal management outcome of HDP (AOR=85.2, 95% CI: 13.13-552.89, p-value \leq 0.001). Preterm newborns are more likely to develop unfavorable fetal outcome as compared with term Pregnancy.

APGAR score has significant statistical association with fetal management outcome of pregnancy related HTN (AOR=26.64, 95% CI: 3.66-193.21, p-value \leq 0.05). Newborns with low APGAR score are more likely to develop unfavorable fetal outcome as compared with newborns with good APGAR score.

Table 5:-Predictors associated with fetal management outcomes of pregnancy related HTN in MKRH December 1st to January20/2013 (N=121, n=108)

Variables		Management outcomes			
		Favorable	Unfavorable	COR (95% CI)	AOR(95% CI)
GA	Term	60	15	1	
	Preterm	3	30	40.00(10.74-148.59)*	85.21(13.13-552.89)**
APGAR	\geq7	60	28	1	
	$<$7	3	17	12.14(3.29-44.8)*	26.64(3.66-193.77)**

*Significant at p-value \leq 0.05 binary, **significant at p< 0.05 multiple logistic regression

1 is logical reference

6. CHAPTER SIX:-DISCUSSION

In this study the magnitude of pregnancy related hypertensive disorder was 2.4% and eclampsia 0.37%. There was no maternal death, and the perinatal mortality rate was 120.37 per thousand deliveries. Predictors associated with maternal management outcome were maximum blood pressure record and Proteinuria. And predictors associated with fetal management outcome were preterm deliveries and low APGAR score.

The mean age of mothers with pregnancy related hypertensive disorder was 24.4 and 82% were in the age range between 18-34 years old, which is comparable, study done in India hospital ranged between 19 to 32 mean 24.75 +/- 3.36 year. Premiparous were 52.1% and those who came from outside Mettu town were 69.4% comparable with study in Jima hospital (66.5% & 56.9% nullipara & from rural area respectively. Those Mothers unbooked were 51.2%, which is comparable with the study done in Addis Ababa teaching hospitals (15, 20, 30).

The chief complaint of mothers at presentation was head ache 58(47.9%), which is low compared to the study done in Addis Ababa teaching hospitals 83.8%.

Severe preeclampsia is the most common hypertensive disorder of pregnancy accounting 35.5%. A study done in Tikur Anbessa Hospital on HDP, 78.2% were severe pre eclampsia and eclampsia and a study in Jima university specialized hospital Severe preeclampsia was 51.9% (20, 27).

Pregnancy related hypertensive disorder complicates 5 to 10% and eclampsia is 0.05 to 0.1% in the United States (1). Magnitude in this study was 2.4%, is not comparable this But similar with the study done, in Shiraz, Southern Iran on the Prevalence of HDP was (2.32%), and it is related with the study done in Tikur Ambesa which is 5.3% (TA). And magnitude of eclampsia 0.37% similar with the study done in Yekatit 12 hospital which is 0.3% (19).

A study done in Ethiopia, the cause fatality rate on preeclampsia/eclampsia ranges from 4% to 36% (11). In this study there was no maternal death similar to a study done at the North Western Armed Forces Hospital Program in Tabuk, Saudi Arabia. The maternal complication such as Renal failure 8(6.6%) and post partum hemorrhage 9(7.4%) which are comparable with the study done in Addis Ababa teaching hospitals which is renal failure (5.5) and postpartum hemorrhage (11.6%)(23,30).

Maximum blood pressure record has significant statistical association with maternal management outcome of HDP (AOR=26, 95%CI: 5.11-132.35, p-value <0.05). Mothers who presented with maximum blood pressure are more likely to develop unfavorable outcome as compared with mothers with low blood pressure. And Proteinuria has significant statistical association with maternal management outcomes of HDP (AOR=37.15, 95%CI: 6.58-209.85, p-value=0.05) Mothers with Proteinuria are more likely to develop unfavorable maternal outcome as compared with mothers with negative Proteinuria.

In this study the perinatal mortality rate was 120.37 per thousand deliveries, which is high relative to the national perinatal mortality rate in Ethiopia 46 per 1,000 Pregnancies . similar with the research done in Kocaeli University Turkey (144), University Of Benin Teaching Hospital, Nigeria, (110.3) and Yekatit 12 Hospital, Addis Ababa (165)(19,21,26).

Gestational age has significant statistical association with fetal management outcome of HDP (AOR=85.2, 95%CI: 13.13-552.89, p-value \leq 0.001). (Preterm newborns are more likely to develop unfavorable fetal outcome as compared with term. APGAR score has significant statistical association with fetal management outcome of HDP (AOR=26.64, 95%CI: 3.66-193.21, p-value \leq 0.05). Newborns with low APGAR score are more likely to develop unfavorable fetal outcome as compared with newborns with good APGAR score >7.

The difference in magnitude, maternal and perinatal mortality can be explained by Challenges in the management of pregnancy related hypertension disorder in the developing countries particularly in Africa, health care access is limited due to a number of factors resulting in three levels of delay. Delay to seek care, delay reaching health facility, and delay in health service provision.

In this study the onset of labor with induction was 55(50.9%) for termination of pregnancy for a mother with HDP which is comparable a study done in Tikur Anbessa Hospital 44.3%.Mode of delivery with forceps/vacuum 9(8.3%), which is comparable with the research done in Jima university specialized hospital instrumental 7.8% and a study done in USA são Paulo, Brazil forceps/vacuum 6.6%. And cesarean mode of delivery 21(19.4%), which is comparable with the research done in Jima university specialized hospital cesarean delivery 34% contrary study done in USA são Paulo, Brazil frequency of caesarean section was 64.5%(20,25,27).

LIMITATION OF THE STUDY

- The study was hospital based retrospective, with a relatively small sample size.
- Mothers who live in rural part of Ethiopia, they give birth at home.
- The Study may not be representative of the whole population in the study area.
- Inaccurate information at the study place in the secondary data may affect the final conclusion of the study.
- Limitation to find reference and literatures
- There was a difficulty to find the document of the fetal outcome

7. CHAPTER SEVEN:-CONCLUSION AND RECOMMENDATION

Conclusion

Based on the result of this study sever preeclampsia is the most common of all pregnancy related hypertension disorder followed by Eclampsia.

There was no maternal death during the study period, which is encouraging relative to the case fatality rate of preeclampsia/ eclampsia in Ethiopia. Maternal complications of HDP like renal failure, postpartum hemorrhage and liver rupture were observed. Mothers with maximum blood pressure and Proteinuria were statically significant associated with maternal management outcomes.

The perinatal mortality rate was, high relative to the national perinatal mortality rate, but similar with other study done in different sites. There were fetal complications such as low birth weight .And Low APGAR score and preterm deliveries were statistically significant associated with the fetal management outcomes of newborns.

The onset of labor by induction to terminate the pregnancy was similar with other studys and instrumental and C/S mode of delivery was low.

Further study should be done on fetal management outcome of pregnancy related HTN.

Recommendation

The Hospital have to make available the already existing drugs for the management of HDP.

To train health workers on specific field of study neonatal resuscitation and in general neonatal care.

To mobilize the community and NGO to build well organized neonatal intensive care unit (NICU).

To strengthen referral link between Mettu karl hospital with the governmental and private health facilities Including the ambulance service and referral feedbacks.

To strengthen the health education program and use the community Medias to create awareness about the disease.

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ANNEX I: QUESTIONNAIRE

JIMA UNIVERSITY COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCES

POST GRADUATE COORDINATOR OFFICES DEPARTMENT OF IEOS

Informed Consent for data collector:

My name is _____. I am serving as a data collector for a the study done on management outcome HDP conducted in Mettu Karl referral hospital by MSC in integrated emergency surgery student of Jimma university. I would like to inform you that your participation are very essential not only for the successful accomplishment of the study but also to gather relevant information from maternal record which will be helpful in improving the outcome of hypertensive disorder of pregnancy. To ensure confidentiality, maternal name will not be recorded on the questionnaire.

Do you agree? A, YES B, NO

Name and Signature data collector-----

Supervisors name and signature-----

QUESTIONNAIRE

This check list was designed to analyze the outcome of pregnancy complicated by HDP conducted at Mettu karl referral Hospital from, January 1st 2010 to December 30/2013 G.C. Encircle or write the correct response to the corresponding questions from pt. chart.

I -Socio demographic characteristics

Code no.....

101. Age -----

102. Address

1. Mettu Town

2.Outside Mettu

II- Obstetric history

103. Parity -----

1.multiparous

2. Premiparous

104. ANC follows up

1.yes

2. NO

105. Gestational age in weeks----- if LNMP is known, months of amenorrhea if not known

1. Term

2. Preterm

3.abortion

III- SYMPTOM AND SIGNS

106. Chief complaint of mothers

1. Headache 2.decreased fetal movement 3.Blurring of vision 4.Abnormal body movement

5. Coma 6.pushing down labor pain 7.others

107. Maximum BP record of pt. in mmHg? ----- 1.140/90-159/109 mmHg 2. \geq 160/110

108. Amount of urine/24 hrs)-----

IV. Laboratory data 109. HCT/hgb----- 110.urine albumin-----111.SGOT-----112.SGPT-----

113.platlate count-----114.creatinine -----

115. Type of hypertension

1. Preeclampsia 2.eclampsia 3.Gestational HTN 4.chronic HTN 5.super imposed preeclampsia

116. How patients managed

1. With anti hypertension only 2.with anti hypertension and anti convulsant 3.conservative

117. Onset of labor 1. Spontaneous 2. Induction 3. Elective c/s

118. Mode of delivery

1. Spontaneous vaginal delivery 2.c/s 3. Operative(vaccum/forceps) 4. Destructive delivery

119. Fetal weight in gram----- 1) ≥ 2500 gram 2) 1000 -2499gram

120. APGAR score of 5th minute----- 1) ≥ 7 2) < 7

121. Stillbirth 1.No 2.yes

122. Early neonatal death 1.No 2.yes

123. Abortion 1.No 2.yes

124. Fetal outcome 1.favorable 2.unfavorable

125. Eclampsia 1.No 2.yes

126. HELLP/DIC/SYNDREM 1.No 2.yes

127. Sever preeclampsia 1.No 2.yes

128. Mild preeclampsia 1.yes 2.No

129. Gestational HTN 1.yes 2.No

130. Superimposed preeclampsia 1.yes 2.No

131. Post partum hemorrhage 1.No 2.yes

132. Abruption 1.No 2.yes

133. Maternal death 1.No 2.yes

134. Maternal outcome 1.favorable 2. Unfavorable

135. Length of Hospital stay in -----days.

Annex II: APPROVAL

ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the college of public and medical science in effect at the time of grant is forwarded as the result of this application.

Name of the student: Eshetu Seyoum Teklie

Date: _____

Signature: _____

APPROVAL OF THE FIRST ADVISOR

Name of the first advisor: Netsanet Fentahun

Date: _____ Signature: _____

Name of the second advisor: Mubarek Abera

Date: _____ Signature: _____

