MANAGEMENT OUTCOME AND ASSOCIATED FACTORS AMONG WOMEN WITH ANTEPARTUM HEMORRHAGE IN METTU KARL REFERRAL HOSPITAL, OROMIA REGIONAL STATE, ILLU ABABORA ZONE, SOUTH WEST ETHIOPIA

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ARESEARCH SUBMITTED TO THE HEALTH RESEARCH AND GRADUATING STUDIES COORDINATING OFFICE, COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCE, JIMMA UNIVERSITY; IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE MASTERS SCIENCE IN INTEGRATED EMERGENCY SURGERY (GENERAL SURGERY, OBSTETRICS AND GYNECOLOGY).

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JIMMA, ETHIOPIA

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LIST OF ABBREVETIONS

AP	Abruption Placenta
APGAR	Activity, Pulse rate, Grimace, Appearance and Respiration
APH	Ante partum Hemorrhage
CD	Cesarean Delivery
D & C	Dilatation & Curettage
DIC	Disseminated Intravascular Coagulopathy
EDHS	Ethiopian Demographic and Health Survey
HELLP	Hemolysis, Elevated Liver Function, Low Platelet Count
ICU	Intensive Care Unit
IESO	Integrated Emergency Surgery and Obstetrics
IUFD	Intrauterine Fetal Death
JUSH	Jimma University Specialized Hospital
LBW	Low Birth Weight
MKRH	Mettu Karl Referral Hospital
NICU	Neonatal Intensive Care Unit
NRFHR	Non Reassurance Fetal Heart Rate
PIH	Pregnancy Induced Hypertension
PP	Placenta Previa
PPH	Postpartum Hemorrhage
SDG	Sustainable Development Goals
SPSS	Statistical Package of Social Science
SVD	Spontaneous Vaginal Delivery
WHO	World Health Organization

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ABSTRACT

Background: Antepartum hemorrhage is a grave obstetrical emergency and is one of the leading causes of maternal and perinatal morbidity and mortality globally. Timely access to quality obstetric services is the major determinant of both maternal and newborn outcomes after antepartum hemorrhage. In Ethiopia particularly in Mettu Karl referral hospital, the magnitude and management outcomes of antepartum hemorrhage were not well studied.

Objective: To assess management outcome and associated factors of Antepartum hemorrhage at Mettu Karl Referral Hospital, from February01 to July 30/2019

Methods: A hospital-based cross-sectional study design was used with sample size of 125. By using census all pregnant women whose gestational age ≥28th complete weeks who visited the Obstetrics and Gynecology department with diagnosis of APH and delivered, their new born at labor ward and in NICU during the study period was included as study subjects. Data were collected using structured interviewer administered questionnaire.and reviewing patient's records. The collected data was analyzed by using SPSS Version 22. Descriptive analysis was presented by frequency and percentage. The result was presented by tables, graphs and text. Binary and multivariable logistic regression analysis was applied to identify associated factors at P value <0.05.

Results: During the study period a total of 3224women gave birth in MKRH.One hundred twenty five (125) women were diagnosed to have APH with prevalence of 3.9%. The prevalence of placenta previa and abruptio placenta was 1.77% and 1.46% among mothers who gave birth in MKRH in 2019. A total of 136 babies were born to 125 mothers. Perinatal mortality rate among births to mothers with APH was 22.8%. Long duration of complaint >12 hours and Deranged maternal vital sign at presentation were statistical significant with Perinatal mortality. 33(26.2%) of mothers had developed different complications. From those anemia is the major complication accounts 24(72.7%). delay >12 hrs, maternal Vital sign at presentation and Hgb at admission were statistical significant with maternal bad out comes.

Conclusions: This study revealed that antepartum hemorrhage is still a leading cause of maternal morbidity and perinatal mortality in our country. Delay before arrival to current health facility, deranged maternal vital sign at presentation and Hgb at admission were statistically significant with maternal bad out comes.

Keywords- Antepartum hemorrhage, placenta previa, placenta abruption, maternal and perinatal morbidity and mortality.

CHAPTER ONE: INTRODUCTION

1.1: Background

Antepartum Hemorrhage (APH) is defined as genital tract bleeding from 28th week of gestation till delivery of the fetus. Antepartum hemorrhage i grave obstetrical emergency and one of the leading causes of maternal and perinatal morbidity and mortality globally, complicates 3.8% of pregnancies (1, 2). Abruptio placenta and placenta previa were the major causes of APH, complicate 65.1% and 26.7% of APH patients, respectively. Other causes including leech infestation and unknown causes accounted for 8.2% of the cases (3).

Maternal complications of APH deliveries were postpartum hemorrhage, blood transfusion, retained placenta, rupture uterus, covelaire uterus and higher rates of caesarian sections, per partum hysterectomies and coagulation failure. (4,5). On the other hand, perinatal complications were prematurity, low birth weight, IUGR, perinatal mortality, neonatal death, neonatal intensive care unit admission (NICU) and birth asphyxia (6, 1).

Local study done in Ethiopia indicated that poor access to comprehensive obstetric care is significantly associated with maternal complications (3).Length delay before arrival, low gestational age, maternal anemia, male fetal sex and vaginal delivery were among factors significantly associated with predictors of perinatal complications in a study conducted in Ethiopia (7).

1.2: Statement of the problem

Maternal mortality is unacceptably high. Worldwide approximately 830 women die every day from preventable causes related to pregnancy and childbirth; 99% of those 830 daily deaths are women from developing countries (8). Direct obstetrical complications are the main causes of maternal deaths, with bleeding identified as the first cause (9).

Developed regions report nine maternal deaths per 100,000 live births compared to 450 maternal deaths in developing regions, where 14 countries have maternal mortality ratios of at least 1,000 per 100,000 live births. Half of maternal deaths (265,000) occur in sub-Saharan Africa (10).

Ethiopia has one of the world's highest MMRs. The overall percentage of female deaths due to pregnancy-related causes is 25% (11). The estimated pregnancy-related mortality ratio (PRM) is 412 deaths per 100,000 live births during the 7 year period before the 2016 EDHS, approximately four women died during pregnancy, childbirth, or within 2 months after childbirth. The lifetime risk of pregnancy-related death (0.021) indicates that of 1,000 women of exact age 15, about 21 (one per 48 woman) would die before age 50 during pregnancy, childbirth, or within 2 months of childbirth (11).

On the other hand more than 3.3 million stillbirths and over 3 million early neonatal deaths are estimated to take place every year. In the year 2000, over 6.3 million perinatal deaths occurred worldwide: almost all of them (98%) occurred in developing countries. It is five times higher in developing than in developed regions (12).

Despite reductions observed during the last decade, perinatal mortality also remained high compared to other developing and developed countries (12). In 2016, the average perinatal mortality rate in Ethiopia was 33 perinatal deaths per 1,000 (11).

Obstetric hemorrhage remains one of the major causes of maternal deaths (16), and one of the primary obstetric causes of perinatal mortality (13). Antepartum hemorrhage (APH), bleeding from the genital tract of a pregnant mother with a viable fetus before the onset of labor, complicates 3.8% of pregnancies and it constitutes one of the reasons for emergency hospital visits among pregnant women (1).The incidence of maternal and perinatal death of antepartum hemorrhage is different in different literatures.

A study done in Jimma University specialized hospital (JUSH) in 2013, high risks of perinatal mortality (36.9%) and maternal mortality (3.1%) were observed among APH, and number of complications were diagnosed among surviving patients too. Postpartum hemorrhage and anemia were the commonest postpartum complications diagnosed in 37.4% and 38.0% of the cases respectively. Hysterectomy was done 3.1% patients with uncontrolled postpartum hemorrhage. 6.7% of the patients developed endomyometritis during postpartum period.34.4% of the patients were discharged within two days of admission; 62.1% stayed for three to seven days; 1.5% were hospitalized for longer than a week.(3).

Study conducted in Hawassa university referral hospital, the total perinatal mortality rate due to placenta previa and abruption about 495/1000 births or nearly 50%. The perinatal mortality rates associated with placenta previa and placental abruption were about 447/1000 births and 564/1000 births, respectively (7).

This study is aimed to assess the, maternal and perinatal outcomes and factors associated in cases diagnosed as antepartum hemorrhage and delivered in Mettu Karl referral hospital. Findings arising from this study may be used as an entry point in the severity of this problem so that a management and preventive protocol can be established to avert possible maternal and perinatal outcome.

1.3: Significance of the study

In Ethiopia, there are little researches done on management outcome and associated factors of antepartum hemorrhage. So, this study will provide baseline information about the maternal and perinatal outcome of APH cases who delivered at MKRH. It will also have significant advantage for health professionals and other concerned bodies in that it will add useful information about management outcome of APH deliveries.

The result of this study will be also provide epidemiological and clinical information that will serve as an essential input for policy makers to design proper strategies and help as references for those who want to undertake researches on the management outcome and associated factors of APH. Since there was no adequate study conducted in our country which deals about it and will help the hospital to act on the issue depending on the findings to decrease the maternal and perinatal morbidity and mortality.

CHAPTER TWO

2.1: LITERATURE REVIEW

A study conducted in India in 2015 showed that, total 8568 deliveries were conducted during this period, of which 326 cases were of APH. It is more common(60%) in 21-30 years combined age group which is the most common reproductive age group. Incidence of APH is more in multigravida (88%). Placenta previa occurs mostly between 33-36 weeks gestation (47%) and abruption placenta occurs mostly near term (15%). In this study 10.6% of patients of placenta previa and 5.8% of abruptio placenta had abnormal presentation. Most of the patients (75%) were anemic (<10 gm%) at the time of admission and 22% of the patients had pre-eclampsia. Among patients with placenta previa, 8% had previous curettage and 12% had previous caesarean sections. While 80% of the diagnoses were made by Ultrasonography, the rest 20% of the diagnoses were made clinically. Blood transfusion was required in many patients and ≥5 units were given in 3 cases of placenta previa and 2 cases of abruption placenta. In abruptio placenta the rate of caesarean section was 55.8% while in all cases of placenta previa the mode of delivery was caesarean section. There was no maternal mortality.

The perinatal outcome where in the perinatal mortality rate of abruptio placenta is 44.1% and placenta previa is 12.1%. Perinatal loss is 22.5% for up to 2 kg weighing fetuses, 18.7% for fetuses weighing 2.1-2.5 kg and 27.02% for that ≥2.6 kg (2).

A cross-sectional study conducted in Iraq in 2016, Out of 14609 deliveries at Maternity Teaching Hospital, 343 cases were presented with APH. It is found out that 54.1% of women aged ≤20 years developed abruption placenta compared with 34.5% and 35.3% among women aged 21-34 years and ≥35 years respectively.

On the other hand, women aged 21-34 years were the most common presenting ages in placenta previa group (60.1%). 62.2% of the nulliparous women developed abruption placenta compared with 30% among multiparous women (Para1-4), while 64.2% of multiparous women developed placenta previa. Women with GA <34 weeks, commonly presented with abruption placenta comparing to women with GA between 34-36 weeks and ≥ 37 weeks in which placenta comparing to women with GA between 34-36 weeks and ≥ 37 weeks in which placenta previa were most common (62.8% and 62%, respectively). the associated obstetrical condition with the

types of APH, and it points out that placenta previa was mostly occurred in anemic women (57.8%), women with previous caesarean scar (91%) and those with previous curettage (77.0%). while, abruption placenta mostly occurred among those with preeclampsia (72.9%), previous APH (66.7%) and parity ≥ 5 (51.2%). 94.4% of women with placenta previa delivered by cesarean section. This was 57.1% in abruption placenta. There were three cesarean hysterectomy cases in this study, all of them were for previa accreta trying to stop bleeding, one of them ended with maternal death due to irreversible shock.

The rate of perinatal mortality (PNM) in this study was 23.64%. Furthermore, vaginally delivered babies were most commonly stillborn (90%) while babies born by cesarean section mostly developed early neonatal death (73.08%).The shock was 9.6 times more likely to exhibit PNM than those without shock (14).

A retrospective comparative study conducted in Nigeria in 2012,a total of 11,815 deliveries out of which 385 (3.25%) had antepartum hemorrhage. placental praevia or abruption as the cause of their antepartum hemorrhage while the rest were due to incidental causes and these were cancer of the cervix and cervicitis. A total of 182 (1.5%) had praevia while 117 (1%) had abruption. Early warning bleeding occurred in 96.4% of those with praevia while it occurred in 3.6% of those with abruption. None of the patients who presented with abruption was conservatively managed while 13 of those who had praevia had expectant management and consequently with placenta previa: >12 hours delay before arrival in placenta previa and placental abruption group was 157 (62.1%) and 81 (45%), respectively.

Overall, 238 (55.1%) women accessed the study hospital more than 12 hours after onset of their bleeding. In more than half of the cases (51.2%), with almost equivalent proportion in both placenta previa and placental abruption, the gestational ages had reached term (37+ weeks). On arrival at the hospital, 142 (32.9%) were fetal demise, and 53 (12.3%) fetuses had abnormal fetal heart rate (persistent bradycardia, persistent tachycardia, or irregularly fluctuating from normal range to bradycardia or tachycardia).

On admission, 334 (77.3%) of the women were found to have anemia. The distribution of severe, moderate, and mild anemia was almost proportional. Severe and mild anemia was detected in the majority of women with placenta previa and placental abruption, respectively. When these women were discharged from the hospital, the severity of anemia was found even worsening. The proportion of overall severe anemia increased from27.8% on admission to 41.2% at

discharge and moderate anemia from 27.1% to 30.6%. In patients with placenta previa, severe anemia increased from 33.2% on admission to 51.4% at discharge.

All women with placenta previa and the majority of women with placental abruption whose hemoglobin level <7 gm/dL at discharge were transfused 1-2 units of blood before having this amount of hemoglobin. Three women with placental abruption were not at all transfused despite having a hemoglobin level of <7 gm/dL. There were 214 perinatal deaths, making the total perinatal mortality rate due to placenta previa and abruption about 495/1000 births or nearly 50%. The perinatal mortality rates associated with placenta previa and placental abruption were about 447/1000 births and 564/1000 births, respectively. Of the total perinatal deaths, 164 (38.0%) fetuses were found to be stillbirths and 50 (11.6%) were early neonatal deaths. Out of the total perinatal deaths, placenta previa and placental abruption related deaths were 44.7% (113/253) and 56.4% (101/179), respectively.

For more than three-fifths of the total fetuses (62.5%), their birth weight was above 2500 gm and 259 (60.0%) of the fetuses were male, with comparable proportion in both placental abruption and placenta previa. The gestational age distribution of the perinatal deaths in weeks was 28–33 for 60 (28.0%), 34–36 for 52 (24.3%), and 37+ for 102 (47.7%)(8).

A hospital based prospective cohort conducted in JUSH between January 1 and December 31, 2013 shows that, a total of 3,854 women gave birth in JUSH. One hundred ninety five of them were diagnosed to have APH showing a cumulative incidence of 5.1% in 2013.

Abruptio placenta and placenta previa were the major causes of APH. Other causes including leech infestation and unknown causes accounted for 16 (8.2%) of the cases. Among patients with placenta previa, 41 (78.9%) had placenta previa totalis. Placenta previa partialis and placenta previa marginalis posterior were the second most common type of placenta previa, each accounting for 5 (9.6%) of placenta previa patients . There was only one (1.9%) mother with low lying placenta; and no mother was diagnosed with placenta previa marginal anterior. Of the 127 patients with abruptio placentae, just over half (52%) had grade 1 or grade 0 according to Sher's grading criteria (Grade I (Retrospective) Not recognized clinically before delivery: small retro placental Hematoma discovered on maternal surface of placenta after delivery, No APH; Grade II mild vaginal bleeding, uterine tenderness and tetany, No fetal distress, no maternal shock; Grade III Severe vaginal bleeding, uterine tenderness and tetany, fetal distress then death,

maternal shock, according to DIC: IIIa: Without DIC, IIIb:With DIC) diagnosed in 34 (26.8%) and 32 (25.2%) of ccess. Majority, 158 (81%), of the mothers with APH had at least one prenatal care visit to a health facility. Fifteen (28.8%) of patients with placenta previa and 19 (15%) of those with abruptio placentae had no prenatal visits.

One hundred sixty three (83.6%) of the patients were referred from another health facility. At the time of presentation, 138 (70.8%) of them had vaginal bleeding.

Cesarean delivery (CD) was the common mode of delivery used in 106 (54.4%) of APH patients. It was employed in 49 (94.2%) mothers with placenta previa of which 39 (79.6%) were done as emergency. Fifty four (42.5%) of mothers with abruptio placentae delivered by CD; 21(16.5%) delivered with instrumental delivery, forceps being the commonest. Non-reassuring fetal heart beat pattern (bradycardia) was the major indication for CD in mothers with abruptio placentae documented in 36 (66.7%) of cases. Of the total 206 babies born, 143(69.4%) were liveborns and 63 (30.6%) were stillborn. An additional 13 neonates (6.3%) died within seven days of life after referral to Neonatal Intensive Care Unit (NICU). Overall, perinatal mortality rate among births to mothers with APH was 36.9%. The prevalence of low birth weight among all births was 35%. Newborns to mothers with APH from Jimma town (where the study hospital is located) were 0.47 times less likely to die during their perinatal life compared to those from outside of Jimma.

Six ((3.1%) of the patients with APH died during the peripartum period, four of which were because of hypovolemic shock secondary to bleeding. The other two deaths were because of respiratory failure. One (1.7%) maternal death occurred among APH cases from Jimma compared to 5 (3.7%) among cases from outside of Jimma. A number of complications were diagnosed among surviving patients too. Postpartum hemorrhage and anemia were the commonest postpartum complications diagnosed in 73 (37.4%) and 74 (38.0%) of the cases respectively. Hysterectomy was done for six (3.1%) patients with uncontrolled postpartum hemorrhage.Thirteen (6.7%) of the patients developed endomyometritis during postpartum period. Sixty five (34.4%) of the patients were discharged within two days of admission, (62.1%) stayed for three to seven days; and three (1.5%) were hospitalized for longer than a week (3).

2.2: Conceptual framework

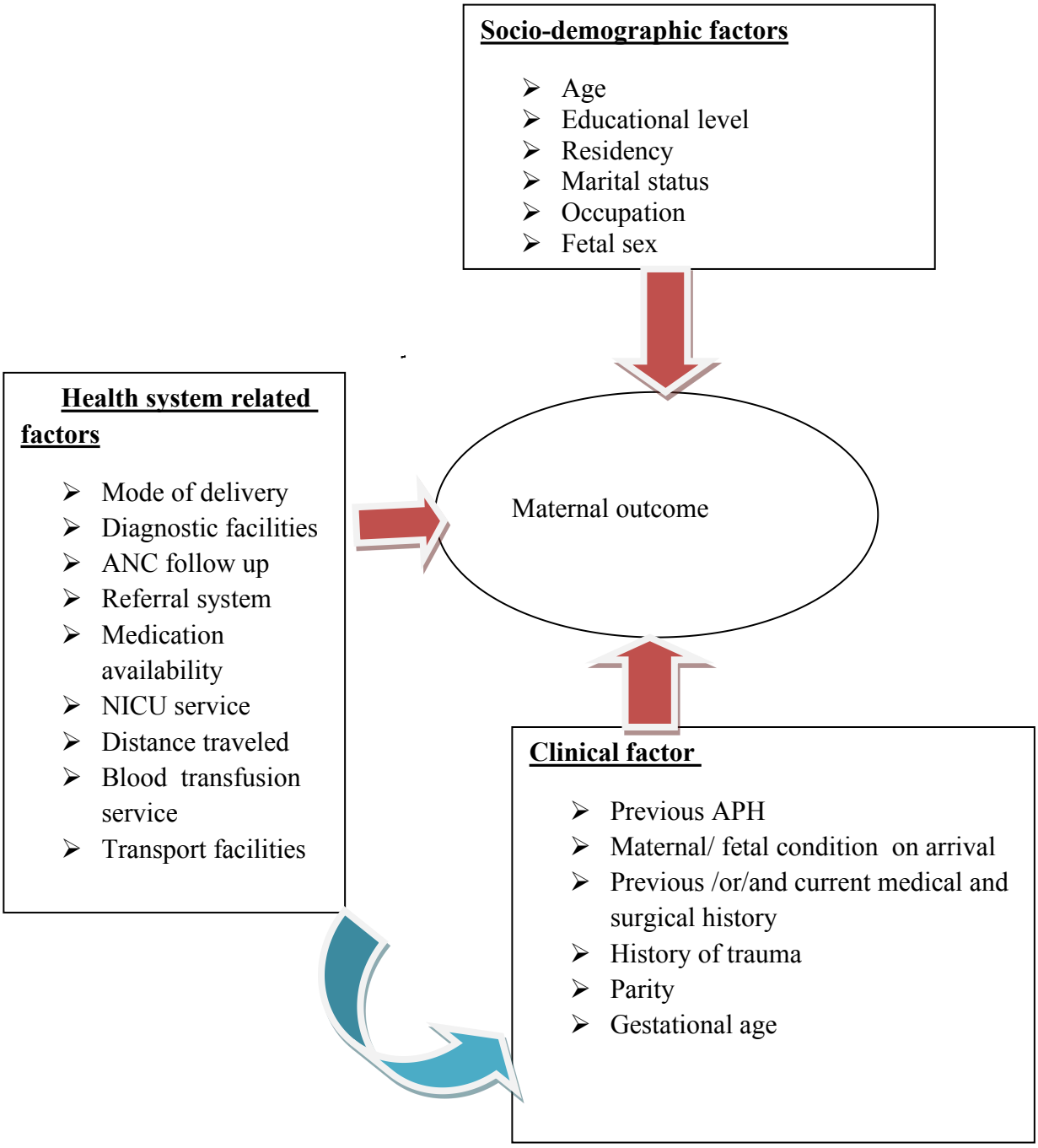

Figure1: Conceptual frame work of factors associated with maternal outcome among mothers with diagnosis of antepartum hemorrhage at MKRH, 2019

CHAPTER THREE: OBJECTIVE

3.1: General objective

To assess management outcome and associated factors among pregnant women who admitted to Mettu Karl Referral Hospital with antepartum hemorrhage from February01 to July 30/2019.

3.2: Specific objective

1. To determine maternal outcome of APH among mothers managed and delivered in MKRH from February 01 to July 30/2019.
2. To determine perinatal outcome of APH among mothers delivered and admitted in NICU in MKRH from February 01 to July 30/2019.
3. To identify the associated factors of maternal outcome among mothers managed and delivered for APH in MKRH from February 01 to July 30/2019.

4. CHAPTER FOUR: METHODOLOGY

4.1: Study area and period

The study was conducted at Mettu Karl referral hospital from February 01 to July 30/2019. Mettu Karl referral Hospital which was found in the centre of capital city of Illu-Ababora Zone, Mettu Town at 600 Km to the South West of Addis Ababa. It is the only hospital in the town established by Swedish Missionaries and Ras Teferi in 1932. Currently, it is providing full health care services for the population of Illu-Ababora zone and its surroundings estimated to be 1.6 million people. The total number of staff of the hospital is 343 including 2 general surgeon, 2 gynecologist obstetrician, 1 internist, 2 IESO, 20 general practitioners, 8 anesthetists, 1 dentist,112 nurse 22 midwife, 10 laboratory technologists,4 lab technician and 10 pharmacists,3drugist ,2 radiographer ,2 optometrist ,146 supportive staff. There were a total of 214 beds in the surgical, medical, gynecology-obstetrics, and pediatrics wards of the hospital. Of which 42 beds were found in the Obstetrics and gynecology ward. Currently, the Obstetrics and gynecology ward is run by two gynecologists, two IESO and 22 midwifes

4.2 Study design

Institution based cross-sectional study was carried out at Mettu Karl referral hospital

4.3: Source population

All Pregnant women whose gestational age ≥28th completed weeks and delivered in Mettu Karl referral hospital during the study period.

4.4: Study population

All pregnant women with a diagnosis of APH and delivered, their new born at labor ward and admitted in NICU in Mettu Karl referral hospital during the study period.

4.5: Eligibility criteria

4.5.1: Inclusion criteria

All pregnant women whose gestational age ≥28th completed weeks who visited the Obstetrics and Gynecology department with diagnosis of APH and delivered, their new born at labor ward and admitted in NICU in Mettu karl referral hospital during the study period.

4.5.2: exclusion criteria

- Patients come from outside after delivered with complication of APH.

4.6: Sample size and sampling technique

4.6.1: Sample size

All pregnant women whose gestational age ≥28th complete weeks who visited the obstetric and gynecology department with diagnosis of APH and delivered, their new born at labor ward and admitted in NICU in Mettu karl referral hospital during the study period.

4.6.2: Sampling technique

By using census all mothers whose gestational age ≥28th complete weeks with diagnose of APH and delivered, their new born at labor ward and in NICU during the study period that was meet the inclusion criteria were included in this study.

4.7: Study variable

4.7.1: Dependant variable

Maternal outcome of APH

4.7.2: Independent variables

Socio-demographic factors

Age, Residence, occupation, marital status, educational status, fetal sex

Health System related factors

Referral system, distance traveled, transport facilities, blood transfusion facilities, diagnostic facilities, NICU service, prolonged hospital stay and adequately trained medical and paramedical staff, medication availability.

Clinical factors

Hypertension, history of previous abruption and placenta previa, previous history of C/D, previous history of D&C, maternal vital sign at presentation, HGB at admission, types of current APH, fetal presentation, fetal heart beat at presentation, ANC follow up, history of trauma, mode of delivery, parity, gestational age.

4.8: Measurements

Management outcome and associated factors of APH was determined by using the number of cases identified during the six month study period and the aggregate number of mothers who was managed and delivered for APH, their neonates delivered to the labor ward of Mettu Karl Referral Hospital. Patient Socio-demographic characteristics, maternal and perinatal morbidity and mortality were measured among APH cases.

4.8.1: Data collection instrument and technique

A structured interviewer administered questionnaire was adopted from different literatures (1, 3, 4, 7, and 14) and the necessary adjustment was made to fit the local condition. The main contents of the questionnaire were general patient characteristics, causes of APH, maternal outcomes and newborn outcomes for each APH case.

4.8.2: Data collection procedure

Data was collected by using structured interviewer administered questionnaire.and reviewing patients' records. Perinatal outcome for neonates referred to neonatology unit was obtained by reviewing patients' records and registration book in the NICU. Data was collected by four midwifes and they were trained on how to complete the data collection questionnaire. The data collection process was supervised by the supervisor during the data collection period.

4.9: Data processing and management

The collected data was reviewed checked for completeness before data entry and analyzed by using SPSS Version 22.Descriptive analysis like; frequency and percentage. The results were presented by tables, graphs and text. Binary and multivariate logistic regression analysis was applied to identify associated factors at P value <0.05

4.10: Data quality assurance

The quality of data was controlled by trained data collectors starting from the time of data collection. Then, collected data was cleaned, checked and cross checked for their completeness and internal consistency by the data collectors followed by data entry. To maintain the quality of the study, expert advice of data collection, data clearing and editing, strict supervision of data investigators and commenting the problems at spot was made by supervisors.

4.11: Operational definition and definition of terms

Bad maternal outcome:-A mother dead or sustained complication like hemorrhagic shock, postpartum hemorrhage, severe anemia, DIC, couvelaire uterus, placental accrete, renal failure, peri-partum hysterectomy and wound dehiscence after diagnosed and managed for APH.

Good maternal outcome: - A mother alive or no complication after diagnosed and managed for APH.

Perinatal outcome (died):-perinatal death (intrauterine fetal death/still birth +death of neonates within the first seven days of extra uterine life)

Perinatal outcome (alive birth):-Alive neonate delivered from APH cases who diagnosed & managed mother until discharge.

Perinatal mortality: death of fetus between 28 weeks of intrauterine life and the first seven days of extra uterine life**.**

Acute renal failure: Persisted oliguria (urine ≤500ml/24hours) and presence of elevated serum creatinine ≥ 140 mmol/l.

Prolonged hospital stay: Patient admitted for more than one day for SVD and three days for C/D.

Length delay: In this study is to mean a period that lasted more than 12hours since the onset of APH symptoms.

Long distance traveled implies 50kms or more to reach to the hospital.

Deranged vital sign: -hypotension: blood pressure<90/60mmHg, tachycardia: pulse rate >100 beats per minutes, temperature≥38^{o}c, fast breathing>24breath per minutes

Gestational age: was estimation/calculation of duration of pregnancy with different mechanisms such as last normal menstruation period, early first trimester ultra-sound, month of amenorrhea, quickening time, hCG and fundal height.

4.12: Ethical consideration

The ethical issue of this study was approved by the ethical committee of the Jimma University Collage of Public Health and Medical Sciences and official permission to undertake the study was obtained from the MKRH.

CHAPTER FIVE

5. RESULT AND DISCUSSION

5.1. RESULT

During the study period a total of 3224women gave birth in MKRH. One hundred twenty five(125) women were diagnosed to have APH with magnitude of 3.9%.The distribution of socio-demographic characteristics among women with APH broadly reflects the population composition of reproductive age women in the catchment area; majority of the mothers included in this study were Oromo (66.4%), Muslims (52%), housewives (58.4%) married (94.4%), and illiterate (52.8%). (68%) of the mothers were in the age range of 21 and 34 (Table 1). Most of the women didn't remember their LNMP and the gestational age were estimated by US. Based on US result, about 57.6% of cases were within 37+ weeks, 16.8% within 34-36weeks and (21.6%) within 28-33 weeks. About (48%) were Para II-IV, (27.2 %) Para V and above and the rest were Para I.

Table 1: Socio-demographic characteristics of mothers with APH (n=125) in MKRH from February 01 to July 30/2019

variable	Category	Frequency	Percent
Residence	Rural	90	72
	Urban	35	28
Age in year	20 and younger	23	18.4
	21-34	85	68
	35 and above	17	13.6
Ethnicity	Oromo	83	66.4
	Amhara	22	17.6
	Others	20	16
Religion	Muslim	65	52
	Orthodox	34	27.2
	Protestant	26	20.8
Marital status	Married	118	94.4
	Un married	6	4.8
	Divorced	1	0.8
Occupation	Housewife	73	58.4
	Government employed	26	20.8
	Student	6	4.8
	Merchant	18	14.4
	Other	2	1.6
Educational status	Illiterate	66	52.8
	Atteneded grades1-8	19	15.2
	attended grades 9-10	13	10.4
	Attended grade 10 or above	27	21.6

Other=daily worker

5.1.1Causes of APH

Placenta previa and abruption placenta were the major causes of APH established as final diagnosis in 57(45.6%) and 47 (37.6%) of APH patients, respectively. Other causes include uterine rupture 10 (8%) and local causes accounted for 11 (8.8%) of the cases. The prevalence of placenta previa and abruption placenta was 1.77% and 1.46% among mothers who gave birth in MKRH in 2019.

Among patients with placenta previa, 21 (37%) had low lying placenta previa. Placenta previa totalis was the second most common type of placenta previa accounting for 19 (33%) of placenta previa patients. Others Placenta previa marginalis and placenta previa partialis accounts 9(16%) and 8(14%) respectively (fig2).

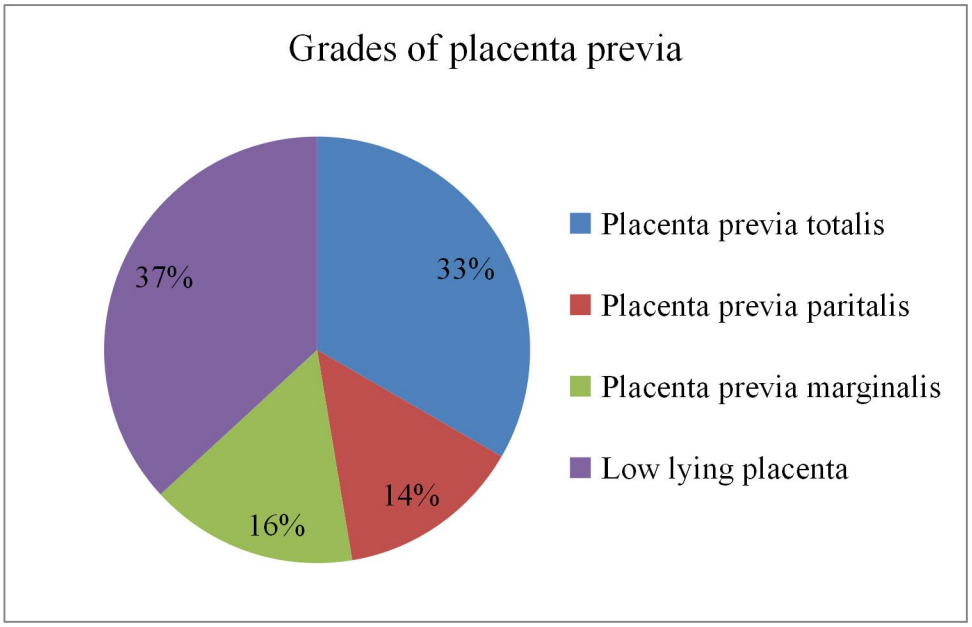

Figure 2: Proportion women having Placenta Previa by type (n=57) in MKRH from February 01 to July 30/2019

Of the 47 women with abruption placenta, 43% had grade 1 and 21% grade 0, 11% Grade 2, 19% Grade 3A and 6.4% had grade 3B of patients, respectively (fig3).

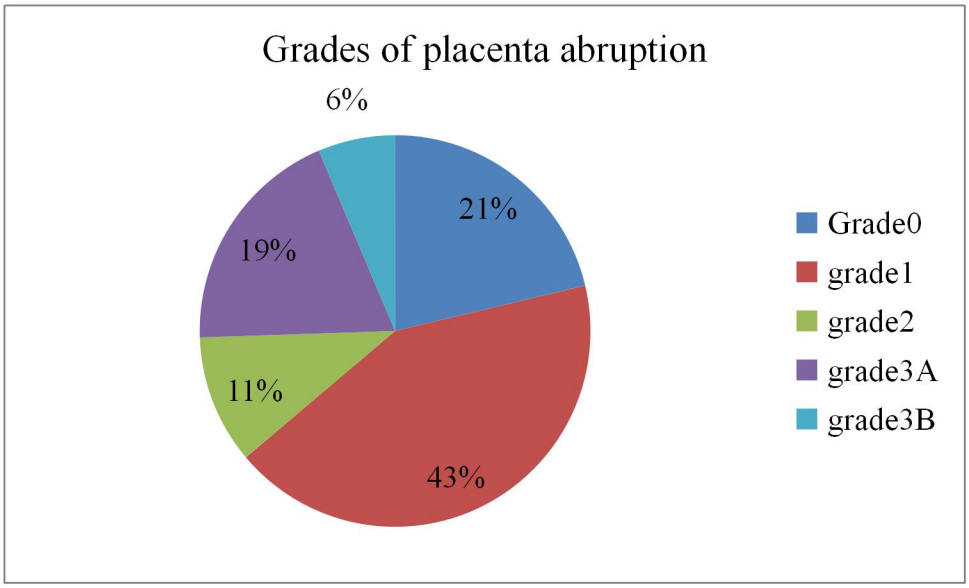

Figure 3: Proportion of women having placenta Abruption by grade (n=47) in MKRH from February 01 to July 30/2019

Majority, 118 (94.4%), of the mothers with APH had at least one prenatal care visit to a health facility. 85(68%) of the patients were referred from another health facility. 27 (21.6%) patients were delay >12 hrs before arrive to current health facility and most cause of dalliance were delay in the decision to access care 15(56%) and 8 (40.7%) delay to get transport to reach a medical facility. At the time of presentation, 80 (64%) of them had vaginal bleeding while the rest 42 (33.6%) had abdominal pain and only 3(2.4%) had decreased fetal movement. On presentation, 38 (30.4%) had deranged vital signs.

Cesarean delivery (CD) was the common mode of delivery used in 59(47.2%) of APH patients. It was employed in 57(45.6%) mothers with placenta previa of which 29 (50.9%) were done as emergency. 21 (44.7%) of mothers with abruptio placenta delivered by CD. Non-reassuring fetal heart beat pattern (bradycardia) was the major indication for CD in mothers with abruptio placenta documented in 10 (47.6%) of cases. (Table 2)

Table 2: Healthcare Services to mothers with APH in MKRH from February 01 to July 30/2019

Characteristics of care	Categories	Number	Percent
Types of vaginal delivery	Spontaneous vaginal delivery	34	27.2
	Induced vaginal delivery	20	16
	Instrumental delivery	2	1.6
Types cesarean delivery	Emergency	48	38.4
	Elective	11	8.8
Prior obstetric care	Had prenatal care	118	94.4
	Referred from another health facility	85	68

5.1.2 Maternal outcome

33(26.2%) of mothers had developed different complications. From those anemia is the major complication accounts 24(72.7%).31(24.8%) of mothers were candidates for transfusion and 27(87%) of them were transfused with at least one unit of compatible blood and 79.2% of cases had Hgb level of >10gm/dl, 19.2%had 7-10gm/dl and only 1.6% had HGB level <7gm/dl at discharge (table 3 and 4). Majority (59.2%) of mothers stayed in hospital for 2-7days after delivery. (Table 3) No maternal deaths occurred during the period of study.

Table 3: Maternal complications and Need of Transfusion in women with APH MKRH from February 01 to July 30/2019

Variable	Category	Frequency	Percent
Complication occurred	peri-partum hysterectomy	2	6.1
	DIC	2	6.1
	Anemia	24	72.7
	PPH	4	12.1
	Other	1	3
	Total	33	100.
Indication for transfusion	Yes	31	24.8
	No	94	75.2
	Total	125	100
Transfusion with at least one unit	Yes	27	87
	No	4	13
	Total	31	100

* Other=Surgical site infection

Table 4: Duration of hospital stays and Hgb level at discharge among women with APH from February01 to July 30/2019

Variable	Category	Frequency	Present
Length of hospital stay in day	<2	47	37.6
	2-7	74	59.2
	>7	4	3.2
	Total	125	100
Hgb level at discharge	<7gm/dl	2	1.6
	7-10gm/dl	26	19.2
	>10gm/dl	99	79.2
	Total	125	100.0

5.1.3 Perinatal Outcomes

A total of 136 babies were born to 125 mothers.114 (83.8%) were singleton babies; the rest 22 (16.2%) were twins. Of the total 136 babies born, 111(81.6%) were live borns and 25 (18.4%) were stillborn. An additional 6 neonates (4.4%) died within seven days of life after referral to Neonatal Intensive Care Unit (NICU). Overall, perinatal mortality rate among births to mothers with APH was 22.8%. The prevalence of low birth weight among all births was 26.3 %(fig4).

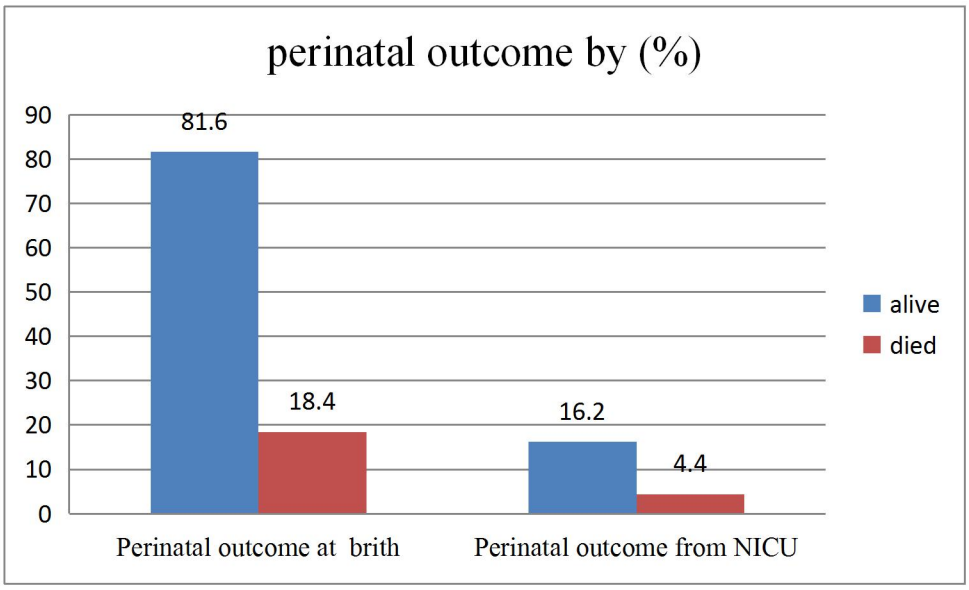

Figure 4: Magnitude of perinatal deaths among APH cases in MKRH from February 01 to July 30/2019

Out of all neonates delivered, more than 2/3 weighing >2500gm and the rest weighing < 2500gm and the prevalence of low birth weight among all births was 27.2%. Out of 111 neonates, 27(24.3%) were scored <7 APGAR Score and 84(75.7%) scored >7 APGAR score (table 5).

Table 5: Proportion of neonatal Out Comes in MKRH from February 01 to July 30/2019

Variable	Category	Frequency	Percent
Number of neonates delivered	Single	114	83.8
	Twin	22	16.2
	Total	136	100
Life outcome of neonates	Alive	111	81.6
	Dead (stillbirth)	25	18.4
	Total	136	100
Birth weight of neonates in(g)	1000-1500	2	1.5
	1500-2500	35	25.7
	>2500	99	72.8
	Total	136	100
APGAR Score of neonates	<7	28	25.2
	>7	83	74.8
	Total	111	100

Out of alive neonates, 28.8% were admitted to NICU with indication of perinatal asphyxia (56.3%), low birth weight (25%), Prematurity (15.6%) and others (3.1%). Out of neonates admitted to NICU, 81.3% were discharged improved and 18.7% were died. The cause of neonatal death in NICU was respiratory failure (16.7%) and neonatal sepsis (83.3%) (Table 6)

Table 6: Promotion of neonates admitted to NICU and their Outcomes in MKRH from February 01 to July 30/2019

Variable	Category	Frequency	Percent
Admission to NICU	Yes	32	28.8
	No	79	77.2
	Total	111	100
Indication of admission to NICU	Asphyxia	18	56.3
	LBW	8	25
	Prematurity	4	15.6
	Other	2	3.1
	Total	32	100
Condition at discharge	Improved	26	81.3
	Dead	6	18.7
	Total	32	100
Cause of neonatal death	Respiratory failure	1	16.7
	Neonatal sepsis	5	83.3
	Total	6	100

*other=femoral fracture

5.1.4 Factors associated with maternal outcomes of APH

Binary logistic regression analysis for predictors or contributors for maternal out comes showed that residence of the Mather and duration of complaint in hours were associated with adverse maternal outcomes but not statistical significant with (p=0.057and 0.051) respectively. Delay >12 hrs, Vital sign at presentation and Hgb at admission were statistical significant for maternal bad out comes. Mothers who delay >12 hours were 14.5 times more likely to develop bad maternal treatment outcome as compared to those women with came before 12 hr [AOR=14.5; 95% CI (1.2,175.6)].Mothers who had deranged Vital sign at presentation were 5.5times more likely had bad maternal outcome compared to those women with normal vital sign at presentation[AOR=5.5; 95% CI (1.4,21)] and mothers who had Hgb 7-10gm/dl were 17.7 times more likely had bad maternal outcome when compared to those with Hgb >10gm/dl. [AOR=17.7; 95% CI (4.3, 72)]. (table7)

Table 7: Binary regression analysis of and Maternal Out comes and Associated Factors of APH in MKRH from February 01 to July 30/2019

Variable	Category	Maternal outcome		COR and 95%CI	AOR and 95%CI	P Value
		Good	Bad			
residence	Rural	56(60.8%)	27(81.8%)	2.9(1,7.7)	4.2(1,18)	0.057
	Urban	36(39.1%)	6(18.2%)	1.0	1.0	
Duration of complaint in hours	>12	16(17.3%)	13(39.4%)	3(1.3,7.5)	0.1(0,1)	0.051
	<12	76(82.6%)	20(60.6%)	1.0	1.0	
delay >12 hrs	Yes	12(13%)	15(45.5%)	5.6(2.2,13.9)	14.5(1.2,175.6)	**0.036**
	No	80(87%)	18(54.5%)	1.0	1.0	
Vital sign at presentation	Deranged	14(15.2%)	24(72.7%)	14.9(5.7,38.6)	5.5(1.4,21)	**0.013**
	Normal	78(84.8%)	9(27.3%)	1.0	1.0	
Hgb at admission	<7gm/dl	4(4.4%)	1(3%)	2.5(0.3,25.5)	1.1(0.1,15)	0.925
	7-10gm/dl	7(7.6%)	24(72.7%)	34.7(11.5,105.5)	17.7(4.3,72)	**0.000**
	>10gm/dl	81(88%)	8(24.3%)	1.0	1.0	

5.2. Discussion

The prevalence of APH in this study was 3.9%. Prospective cohort study design conducted in JUSH in (2013) the incidence of APH was 5.1 %(3), 3.25% in Nigeria in 2012 (15), 2.34% in Iraq in 2017(14) and 3.8% in India in 2016 (1). The finding of this study was almost similar to India, but higher than studied in Nigeria and Iraq and lower than in JUSH.

In this study prevalence of placenta previa and abruption placenta was 1.77% and 1.46% respectively. In JUSH in (2013) the incidence of placenta previa was 1.4%, Abruption placenta 3.3%(3),in Hawasa in (2014) the incidence of placenta previa was2.6%,Abruption placenta1.9%(7), in Nigeria placenta previa 1.5%,abruption 1% (15) and in India in (2016) abruptio placenta was 1.64%(1), The incidence of placenta abruption is lower than placenta previa in this study. This is because of most of placenta abruption are missed to diagnosed. The diagnosis of placenta abruption mostly clinical and other investigations are supportive.

Majority (68%) of the mothers were within 21-34 years of age which is comparable with age group mostly observed in JUSH in 2013 and other studies (1, 2, 3). Incidence of APH is more in

multi Para (75.2%) than in null Para 24.8%) in this study which is supported by study conducted in India which was multi Para(74%) and null Para 26% (4) .

In this study 26.2% of mothers had developed different complications and anemia is the major complication accounts 72.7% and PPH was the 2nd complication accounts 12%.24.8% of mothers were candidates for transfusion .this is supported by study conducted in Jimma in 2013 Postpartum hemorrhage and anemia were the commonest postpartum complications diagnosed 37.4% and 38.0% respectively(3). A retrospective comparative study conducted in Nigerian 2012 Postpartum anemia was commoner in the patients with placenta praevia (52.9%) as against those with abruption (47.1%) and more of the patients with praevia had blood transfusion (53.8%) compared with those with abruption (46.2%(14).In India in 2016 Post partum hemorrhage was the most common complication observed in 22% of the cases and Majority (64%) of the patients in this study required blood transfusions (1).

In this study hospital Perinatal mortality was 22.8%.Study conducted in JUSH in 2013 Perinatal mortality was 36.9%(3), 50% in Hawasa university in 2014(7),in India in 2015 Perinatal mortality was 21%(5)and in Iraq in 2017 23.64 %(14). The finding in this study hospital was higher than study conducted in India but lower than other studies.

Binary logistic regression analysis for predictors or contributors for maternal out comes showed that mothers who delay >12 hours were 14.5 times more likely to develop bad maternal treatment outcome as compared to those women with came before 12 hr [AOR=14.5; 95% CI (1.2,175.6)]. This finding is supported by other studies.

6.3. Limitations of the study

The results of this study should be interpreted with the following possible limitations.

- ✓ Associated factors of Perinatal outcome not studied
- ✓ .the study does not show long-term complications.
- ✓ Because of the study is institutional based it might not be representative for the community's problem.
- ✓ Since the study is cross sectional, it may not show causation.

CHAPTER SIX

6. CONCLUSION AND RECOMMENDATION

6 .1.CONCLUSION

This study revealed that antepartum hemorrhage is still a leading cause of maternal morbidity and perinatal mortality in our country. Delay before arrival to current health facility, deranged maternal vital sign at presentation and Hgb at admission were statistically significant with maternal bad outcome.

6.2. Recommendations

Based on the findings of this study, the following recommendations were made.

Health institutes should provide quality antenatal care Services to early identification of cases and early referral.

It is better to facilitate good transportation facility for pregnant women.

Since the study is cross sectional, it is better to do other research to show long term complication for the mother and newborn.

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Appendix: Questionnaire

Jimma University Institute of Health, Department of OB/GYN. Questioner prepared to collect data on associated factors maternal and Perinatal outcome of APH deliveries MKRH oromia regional state, south west Ethiopia.

I am a final year IESO student in master's program at Jimma University. I brought these questionnaires to study associated factors, maternal and Perinatal outcome of APH deliveries.

Medical record number: ----------.

Part I. Identification of the patient who visited the gynecology/ obstetric department with diagnosed APH and delivered.

1. Residence: (a). urban (b). rural

2. Age of mother APH diagnosed & managed---------- (1) 20 and younger (2)21-34 (3)35 and above

3. Ethnicity: (a) Oromo (b) Amhara (c) others specify--- .

4. Religion: (1) Muslim (2) Orthodox (3) Protestant (4) others specify---------

5. Marital status: (1) married (2) un married (3) (4) widowed

6. Occupation: (1) housewife (2) government employed (3) student (4) merchant (5) others specify---

7. Educational status: (1) Illiterate (2) attended grades 1-8 (3) attended grades 9-10 (4) attended grade 10 or above

Part II. Gynecologic /OBS History

1. Gestational age in weeks

1.1. Did she know her LNMP: (1) yes (2) no

1.2. If yes, how many week ------ (1) 28-33wks (2)34-36wks (3)37wks and above

1.3 If no, by fundal height---------cm/finger (1) 28-33wks (2)34-36wks (3)37wks and above

1.4. If no, by early us ---------- (1) 28-33wks (2)34-36wks (3)37wks and above

2. Gravid. (1) I (2) II-V (3) above V

3. Parity. (1) para I (2) para II-V (3) above V

4. What was the complaint of client at presentation? (1) Vaginal bleeding (2) abdominal pain (3) decreased fetal movements.

5. Duration of complaint in hours before arrival to hospital? ------- (1) <12 (2) >12

6. Did the mother referred from other health facility? (1) yes (2) no

7. Distance traveled in Km to arrive this hospital--------- (1) <50 (2)50-100 (3)>100

8. Mode of transportation to this hospital (1) Ambulance (2) public transport (3) other specifies --

9. Is there any delay >12 hrs. Before arrive to current health facility? (1) Yes (2) no

10. If yes, where? (1) Delay in the decision to access care (2) delay to get transport to reach a medical facility (3) delay in the receipt of adequate and appropriate treatment.

11. History of ANC follows up, if applicable (1). Yes (2). No

If yes,how many times she visit (a) 1 (b) 2 (c) 3 (d) 4 and above.

12. She has history of HTN? (1). yes (2). No

13. Previous history of C-delivery? (1). yes (2) .No

14. Previous history of Abruption? (1). yes (2). No

15. Previous history of Placenta previa?(1). Yes (2). No

16. Previous history of D&C (1) yes (2) no.

17. Has history of trauma? (1) Yes (2) no

Part III. General Physical examination

1. Vital sign at presentation: (1) normal (2) deranged {hypotension: blood pressure less than 90/60 mmHg, tachycardia: pulse rate more than 100 beats per minute}.

2. **Obstetric Examination**

2.1. Feta presentation (1) cephalic (2) Breech (3) others specify---------

2.2. Fetal heart beat at presentation---------- (1) absent (2) abnormal (3) normal

2.3. Pv done- (1) Yes (2) No

2.4. If yes, cervical dilatation------- (1) closed (2) 2-3cm (3) 4-6cm (4) 7-10cm (5) fully dilated

Part IV. Lab investigation done

1. Hgb at admission------(1)<7gm/dl (2) 7-10gm/dl (3) >10gm/dl
2. Grouping and typing, cross-match done (1) yes (2)no.

3. Platelet count done (1) yes (2) no

4. If yes, how much? ---- (1) <50000cells/ml (2) 50000-100000cells/ml (3)>100000cells/ml

5 .Additional test done (1) yes (2)no.

6.If yes, what (1)Renal function test (2)Liver function test (3) coagulation profile.

Part V. Radiologic findings

1. Did US investigation done? (1) Yes (2) no

2. If yes, what was the cause of APH? (1) PP (2)Ap (3) others specify

3. If placenta previa, which type? (1) pp.totalis (2) pp.paritalis (3) pp.marginalis (4) low lying

4. If placental abruption, which grade? (1) Grade0 (2) grade1 (3) grade2 (4) grade3A (5) grade3B

5. If others, (1) Vasaprevia (2) local cause (3) uterine ruptures (4) Heavy show

Part VI. Management outcome

1. Plan of management (1) expectant (2) Vaginal delivery (3) Caesarian delivery (4) laparotomy.
2. If expectant, what measures taken (1) corticosteroids (2) tocolytics (3) other specify…….
3. If vaginal delivery: (1) spontaneous (2) induced (c) instrumental deliveries.
4. If CD (1) Emergency (2) Elective

Part VII. Fetal outcome

1. Number of neonate delivered? (1) single (2) twin
2. Sex of neonate delivered (1)male (2)female
3. Perinatal outcome (1) alive birth (2) died(IUFD/still birth and early neonatal death)

    3.1 if alive APGAR score -------(1) <7 (2)>7

    3.2 Birth Asphyxia--------- (1) yes (2) no

    3.3 Birth weight in grams------- (1)1000-1500gm (2)1500-2500gm (3) >2500gm
4. Did the neonate admitted to NICU? (1) yes (2) no
5. If yes, what was the indication of admission? (1) Birth Asphyxia (2) low birth weight (3) prematurity (4) other specify---
6. What was the condition of neonate at discharge? (1) improved (2) died
7. If died, what was the cause of death? (1) Respiratory failure (2) neonatal sepsis (3) other specify—
8. Did the neonate admitted to NICU? (1) yes (2) no
9. If yes, what was the indication of admission? (1) Birth Asphyxia (2) low birth weight (3) prematurity (4) other specify---
10. What was the condition of neonate at discharge? (1) improved (2) died
11. If died, what was the cause of death? (1) Respiratory failure (2) neonatal sepsis (3) other specify—

    1.1 If neonates are twin

    1.1.1 Sex of twin B (1)male (2)female

    1.1.2 Perinatal outcome (1) alive birth (2) died(IUFD/still birth and early neonatal death)

        1.1.2.1 if alive APGAR score -------(1) <7 (2)>7

        1.1.2.2 Birth Asphyxia--------- (1) yes (2) no

    1.1.3 Birth weight in grams------- (1)1000-1500gm (2)1500-2500gm (3) >2500gm

    1.1.4 Did the neonate admitted to NICU? (1) Yes (2) no

1.1.5 If yes, what was the indication of admission? (1) Birth Asphyxia (2) low birth weight (3) prematurity (4) other specify---

    1.1.6 What was the condition of neonate at discharge? (1) Improved (2) died

1.1.7 If died, what was the cause of death? (1) Respiratory failure (2) neonatal sepsis (3) other specify—

Part VIII. Maternal outcome

1. Maternal outcome (1) good (2) bad

1.1. If dead what was the cause of death? (1) Hypovolemia shock (2) Renal failure (3) DIC (4) respiratory failure.

1.2. If alive did any complication occurred? (1) Yes (2) no

1.3. If yes, what complication? (1)Hemorrhagic Shock (2) peri-partum hysterectomy (3) DIC (4) anemia (5) PPH (6) other specify--------

2. Did the mother indicated for transfusion? (1) Yes (2) no
3. If yes, did the mother transfused with at least one units of blood? (1) Yes (2) no
4. Hospital stays after delivery in days? ------(1)<2 (2)2-7 (3)>7
5. What was her Hgb at discharge? --------(1)<7gm/dl(2)7-10gm/dl (3) >10gm/dl
6. What was the condition of the mother at discharge? (1) Improved (2) died

Appendix II: ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the thesis result and provision of required progress reports as per terms and conditions of the Jimma University Institute of Health in effect at the time of grant is forwarded as the result of this application.

Name of the student: _____

Date:_____ Signature:_____

APPROVAL OF THE ADVISOR

Name of the advisor:_____

Date:_____ Signature:_____