

Maternal and perinatal outcome among mothers managed for antepartum hemorrhage in Attat Hospital, Southern ETHIOPIA, 2017.



BY SEID AMAN (BSc)

A RESEARCH PAPER TO BE SUBMITTED TO JIMMA UNIVERSITY INSTITUTE OF HEALTH ,RESEARCH AND POST GRADUATE COORDINATING OFFICE, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN INTEGRATED EMERGENCY OBSTETRICS AND GYNECOLOGY AND GENERAL SURGERY.

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Advisors: - 1. Yesuf Ahmed (MD, Assistant professor of Gynecology and Obstetrics)

2. Abiyot Girma (BSc, MPH in Epidemiology)

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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 intervention recommended to avert both maternal and newborn unfavorable outcomes after antepartum hemorrhage. In Ethiopia particularly in Attat hospital, the magnitude and consequences of antepartum hemorrhage were not well studied.

Objective: The objective of the study was to determine maternal and perinatal outcome among mothers managed for antepartum hemorrhage in Attat hospital.

Methods: A hospital-based cross-sectional study was conducted on 106 mothers with antepartum hemorrhage in Attat hospital from February 1 to July 30, 2017. All eligible mothers and their newborns were included till the sample size was achieved. Data were collected by using pre-tested structured interviewer administered questionnaire and reviewing medical records of mothers and their newborns. The data were entered and analyzed using SPSS version 20. Binary logistic regression analysis was used to test associations between the independent and dependent variable. Variables with P-value < 25% during bivariate analysis were included to multivariable logistic regression model. Finally, variables with P-value \leq 5% were expressed as factors associated with maternal and perinatal outcome of antepartum hemorrhage.

Results: One hundred six mothers with antepartum hemorrhage gave birth in Attat hospital. Majorities 79 (74.5%) of the mothers were multipara and 100 (89.3%) of new born were singleton birth. The incidences of maternal and perinatal unfavorable outcome of antepartum hemorrhage were 60 (56.6 %) and 83 (74.1%) respectively. Antenatal care (AOR=0.34, 95% CI: 0.13, 0.9) was found factor associated with maternal outcome. On the other hand, duration of complaint < 12 hours (AOR=0.36, 95% CI: 0.08, 0.98), non-reassure fetal status (AOR=5, 95% CI: 1.23, 20.5) and low gestational age (AOR=24.6, 95% CI: 7, 87.7) were found factors associated with perinatal outcome.

Conclusion: The incidences of maternal and perinatal outcome were lower than a study done in Ethiopia. It also pointed out factors associated with maternal and perinatal outcome of antepartum hemorrhage as antenatal care, duration of complaint, low gestational age and non-reassure fetal status. Work hard to improve maternal and perinatal outcome on the area of antenatal care and visit health facility within 12 hours onset of complaint.

Keywords- Antepartum hemorrhage, maternal and perinatal outcome, Attat hospital, Ethiopia.

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LIST of ABBREVIATIONS

APH-Ante partum Hemorrhage

AP-Abruption Placenta

PP-Placenta Previa

APGAR Score-Activity, Pulse rate, Grimace, Appearance and Respiration

CD-Cesarean Delivery

DIC-Disseminated Intravascular Coagulopathy

IESO-Integrated Emergency Surgery and Obstetrics

IUFD-Intrauterine Fetal Death

JUSH-Jimma University Specialized Hospital

LBW- Low Birth Weight

NICU –Neonatal Intensive Care Unit

NRFHR-Non Reassurance Fetal Heart Rate

PPH-Postpartum Hemorrhage

PVB- Per-vaginum Bleeding

SVD-Spontaneous Vaginal Delivery

PIH-Pregnancy Induced Hypertension

SNNP-Southern Nation’s Nationality & People

SPSS-Statistical Product and Service Solutions

HELLP-Hemolysis, Elevated Liver Function Test, Low Platelet Count

LSTCS-Lower Segment Transverse Caesarian Section

ICU-Intensive Care Unit

D & C- Dilatation & Curettage

EDHS-Ethiopian Demographic and Health Survey

I_x-Investigation

COR-Crude Odd Ratio

AOR-Adjusted Odds Ratio

WHO-World Health Organization

SDGs-Sustainable Development Goals

EmONC-Emergency Obstetric and Newborn Care

1. Introduction

1.1 Back ground

In 2015, maternal mortality ratio (MMR) - defined as the number of maternal death per 100,000 live births and neonatal mortality rate per 1000 live birth—were estimated at 216 and 19 respectively in the world. Africa accounts the highest burden with almost two-third of maternal and neonatal death globally [1]. Ethiopia has one of the world's highest MMRs at 412 maternal deaths per 100,000 live births in 2016, showing reduction from its 2011 level of 676 maternal deaths per 100,000 live births[2]. Despite reductions observed during the last fifteen years, perinatal mortality also remained high compared to other developing and developed countries [1]. For the period of 2012 to 2016, the average perinatal mortality rate in Ethiopia was 47 perinatal deaths per 1000 pregnancies of seven or more months of gestation [2]. Antepartum Hemorrhage (APH) is defined as genital tract bleeding from 28th week of gestation till delivery of the fetus. Antepartum hemorrhage is a grave obstetrical emergency and is one of the leading causes of maternal and perinatal morbidity and mortality globally (complicates about 2-5% of all the pregnancies) [3].

Maternal outcomes of APH deliveries were malpresentation, premature labor, postpartum hemorrhage, shock, retained placenta. It also includes higher rates of caesarian sections, per partum hysterectomies, coagulation failure and even death. A study conducted in India revealed that, required blood transfusion was additional outcomes of APH [4, 5]. On the other hand, perinatal unfavorable outcomes were prematurity, low birth weight, intrauterine death, early neonatal death, congenital malformations, neonatal intensive care unit admission (NICU), and birth asphyxia [6, 7].

There are different factors associated with maternal and perinatal outcome of ante partum hemorrhage deliveries in different literatures. Local study done in Ethiopia indicated that poor access to comprehensive obstetric care is significantly associated with maternal unfavorable outcome [7]. Length delay before arrival, low gestational age, maternal anemia, male fetal sex and vaginal delivery were among factors significantly associated with predictors of perinatal unfavorable outcome in a study conducted in Ethiopia [8].

1.2 Statement of the problem

Antepartum hemorrhage is a grave obstetrical emergency and is one of the leading causes of maternal and perinatal morbidity and mortality globally (complicates about 2-5% of all the pregnancies) [3]. The incidence of maternal and perinatal outcome of antepartum hemorrhage is different in different literatures. A study conducted in Tanzania revealed that PPH (5.9%), required blood transfusion (21.3%) and prolong hospitalization (1%) were outcome of APH deliveries[9]. On the other hand, Apgar score(<7) at fifth minutes(8.8%), premature(7.3%), intrauterine growth retardation(IUGR)(6.5%), still birth(52.4%) and early neonatal death (5.6%) were perinatal unfavorable outcomes among APH deliveries[10].

A case-control study done in Nigeria showed women with APH deliveries had significant maternal and neonatal complications. These include maternal anemia (12.4%), PPH (7.1%), prolonged hospital stay (72.4%) and caesarean deliveries (63.9%) while neonatal complications were birth asphyxia (38.9%), admission to neonatal intensive care unit (24.8%) and perinatal death (22.2%) [11]. A study done in Jimma University specialized hospital (JUSH), Ethiopia showed more than 85% of mothers develop at least one of the following unfavorable outcomes: postpartum hemorrhage, renal failure, anemia, hysterectomy, endomyometritis, wound dehiscence and maternal death [7]. Perinatal death (50%) and low birth weight (37.5%) were perinatal unfavorable outcome among APH deliveries a study conducted in Hawassa university referral hospital, Ethiopia [8]. This study will be aimed to assess the magnitude and factors associated with maternal and perinatal unfavorable outcomes of antepartum hemorrhage deliveries in Attat hospital. Findings arising from this study may be used to gauge the severity of this problem so that a management and preventive protocol can be established to avert possible fatal maternal and perinatal outcome.

2. Literature review

2.1 Burden of Antepartum Hemorrhage

Ante partum hemorrhage is one of the leading causes of obstetrical hemorrhage and associated with maternal and perinatal morbidity and mortality, which is complicated more by prematurity [1]. In spite of a lot of improvement in the form of antenatal care, intra partum surveillance, prevalence related to unfavorable outcome of antepartum hemorrhage has not abated.

A study conducted in India showed, incidence of APH was 1.5% with frequency of PP seen is 3.7/1000 deliveries, AP 8.6/1000 deliveries, UC 2.6/1000 deliveries[12]. This finding is lower than in a study conducted in India(4.8%), Nigeria(3.25%) and Ethiopia(5.1%,2.25%)[7, 8,10,13]. But higher than a study done in India(1.3%) and Thailand(0.83%)[5,14].

2.2 Rate/incidence and factors associated with maternal outcome among APH deliveries

Rate/incidence of maternal outcome among APH deliveries

The incidence of maternal unfavorable outcome is different in different study findings in different parts of the world. A study conducted in India revealed that incidence of unfavorable maternal was 20(40.0%) [3]. This finding was less than a study conducted in Thailand (86.67%), Ethiopia (89.74%), Nigeria (53.25%) and two studies India (66.67%, 53.4%) [6-7, 13-15]. But higher than a study conducted in Tanzania(28.15%) and two studies India(4% ,2.15%)[9,16,17].

Postpartum hemorrhage is among the complications in mothers with APH. A Study conducted in India found, 8(16%) mothers develop PPH [5] while in Tanzania 16(5.9%) and Ethiopia 73(37.4%) mothers develop PPH respectively [7, 9].

Anemia is one of the complications in mothers with APH. A Study conducted in Nigeria showed, 155(77.7%) mothers develop anemia [13], while in India 33(11%) and Ethiopia 74 (37.9%) mothers develop anemia respectively [7, 15].

Peri-partum hysterectomy is other complication in mothers with APH. A Study conducted in Thailand revealed, 3(10%) mothers sustained peri-partum hysterectomy for uncontrolled PPH [14]. There were similar findings obtained in India 4(3%) and Ethiopia 6(3.1%) mothers sustained peri-partum hysterectomy for uncontrolled PPH respectively [5, 7].

DIC is among the complications in mothers with APH. A Study conducted in India revealed 3(6%) mothers develop DIC [4], while in Nigeria 35(0.09%) mothers develop DIC [13].

Shock is also other complication in mothers with APH. A Study conducted in India found, 2(4%) mothers develop shock [4].

Factors associated with maternal outcome among APH deliveries

Different study revealed different factors associated with unfavorable maternal outcome of ante partum hemorrhage deliveries.

Absence of antenatal care follow up is factor associated with unfavorable maternal outcome in different literature. According to world health statistics 2016 report absence of antenatal care follow up was a factor associated with unfavorable maternal outcome[1], and a study conducted in Nigeria found mother who had absence of antenatal follow up were more likely develop unfavorable maternal outcome than those had antenatal follow up [13]. This finding is consistent with local studies conducted in different countries in which absence of antenatal follow up is a factor associated with unfavorable maternal outcome [4, 10, 11].

Multiparity was a factor associated with maternal unfavorable outcome in a hospital based prospective study conducted in India [15].

Availabilities of blood transfusion service are among the factors significantly associated with the development of maternal unfavorable outcome in a study conducted in Tanzania [9]. This finding is in line with the world health statistics 2016 and studies conducted in different parts of the world [5-7, 11-13, 15, 17].

A study done in India and Nigeria, found increased rates of cesarean section is among the list of factors that affect maternal outcome. Mothers who had repeated cesarean section are more likely to develop unfavorable outcome than those mothers who have no history of previous cesarean section [6, 9, 11, 13, 15].

Anemia during presentation is among the factors significantly associated with the development of unfavorable maternal outcome in a study conducted in India [4, 10].

Hypertension with placental abruption is also among the factors significantly associated with the development of unfavorable maternal outcome in a study conducted in India [4, 10].

According to world health statistics 2016 poor access to comprehensive obstetric care was a major contributor for the observed maternal unfavorable outcome [1]. Local study done in Ethiopia and other countries supported this finding, indicated that poor access to comprehensive obstetric care is significantly associated with maternal unfavorable outcome [7, 11, 13, 15].

2.3 Rate/incidence and factors associated with perinatal outcome among APH deliveries

Rate/incidence of perinatal outcome among APH deliveries

The incidence of adverse perinatal outcome is different in different study findings in different parts of the world. A study conducted in India revealed that incidence of perinatal unfavorable outcome was 80.65% [1]. This finding was lower than a study conducted in Tanzania (88.52), two studies Ethiopia (84.95%, 87.04%) and India (92.2%) [3, 7-9]. However, nearly similar with a study conducted in Nigeria (80.44%) [13].

Live birth with certain complications is one of the adverse perinatal outcomes in newborn those delivered from APH mothers. A Study conducted in India found, 39(68.4%) newborn had low birth weight [6], while in Tanzania 130(48.1%) and Ethiopia {72(35%), 45(10.4%)} newborn had low birth weight respectively [7-9].

Low Apgar score is other complication in new born delivered among APH mothers. A Study conducted in Nigeria obtained 72(44.4%) new born had low Apgar score [13], while in India 79(79%) neonates had low Apgar score [15].

Prematurity is among the complications in new born with APH deliveries. A Study conducted in Thailand showed, 25(34.7%) new born had prematurity [18]. But a study conducted in India 12(12.5%) and Nigeria 50(18.5%) new born had prematurity respectively [7, 15].

Preterm delivery is also other complication in new born delivered from APH mothers. A Study conducted in India revealed 28(70%) new born delivered in the preterm gestational age [4], while in Ethiopia 100(48.54%) had preterm delivered neonates [7].

Indeed, birth asphyxia is one complication in new born delivered among APH mothers. A Study conducted in Nigeria obtained 14(38.9%) new born had birth asphyxia [11].

Factors associated with perinatal outcome among APH deliveries

Different literature's revealed different factors associated with unfavorable perinatal outcome among ante partum hemorrhage deliveries. A study done in India found, low birth weight were significantly associated factors with unfavorable perinatal outcome of ante partum hemorrhage [10]. This finding is in line with the studies conducted in different parts of the world [3- 5, 9, 11, 13- 15, 18].

Low gestational age was found to be a strong predictor of unfavorable perinatal outcome when compared to appropriate gestational age. Local study done in Ethiopia and other countries supported this finding [4, 5, 8, 10].

According to world health statistics 2016 absence of antenatal follow up was a major contributor for the adverse perinatal outcome [1]. Local study done in Ethiopia and other countries supported this finding, indicated that absence of antenatal follow up is significantly associated with unfavorable perinatal outcome [8, 10, 15].

Address is another factor associated with unfavorable perinatal outcome as indicated in the study conducted in Ethiopia [7].

Low Apgar score was a factor associated with unfavorable perinatal outcome in different literature. A study done in Nigeria found new born with Apgar score <7 at first minutes were four times more likely to have adverse outcome compared to Apgar score >7 at fifth minutes [8]. This finding is consistent with local studies conducted in different countries in which low Apgar score is a factor significantly associated with unfavorable perinatal outcome [9, 11].

Being abruption is among the factors significantly associated with the perinatal unfavorable outcome in a study conducted in India and Nigeria [4, 5, 11, 13].

No NICU service was a factor significantly associated with perinatal unfavorable outcome in different literatures. A study done in Tanzania found neonates admitted to NICU with different indications had three times favorable perinatal outcome than those who had no NICU service [19]. This finding is in line with the studies conducted in different parts of the world [4, 9, 10].

Prematurity was one of the determinants of unfavorable perinatal outcome [10, 15].

A study conducted in Ethiopia revealed that length of delay before arrival, maternal anemia; male fetal sex and vaginal delivery were factor significantly associated with unfavorable perinatal outcome [8].

On the other hand, fetal status at presentation is among factors significantly associated with predictors of unfavorable perinatal outcome a study conducted in India [12].

2.4 Conceptual frame work

This conceptual framework shows the relationship between factors associated with maternal and perinatal outcomes of antepartum hemorrhage deliveries.

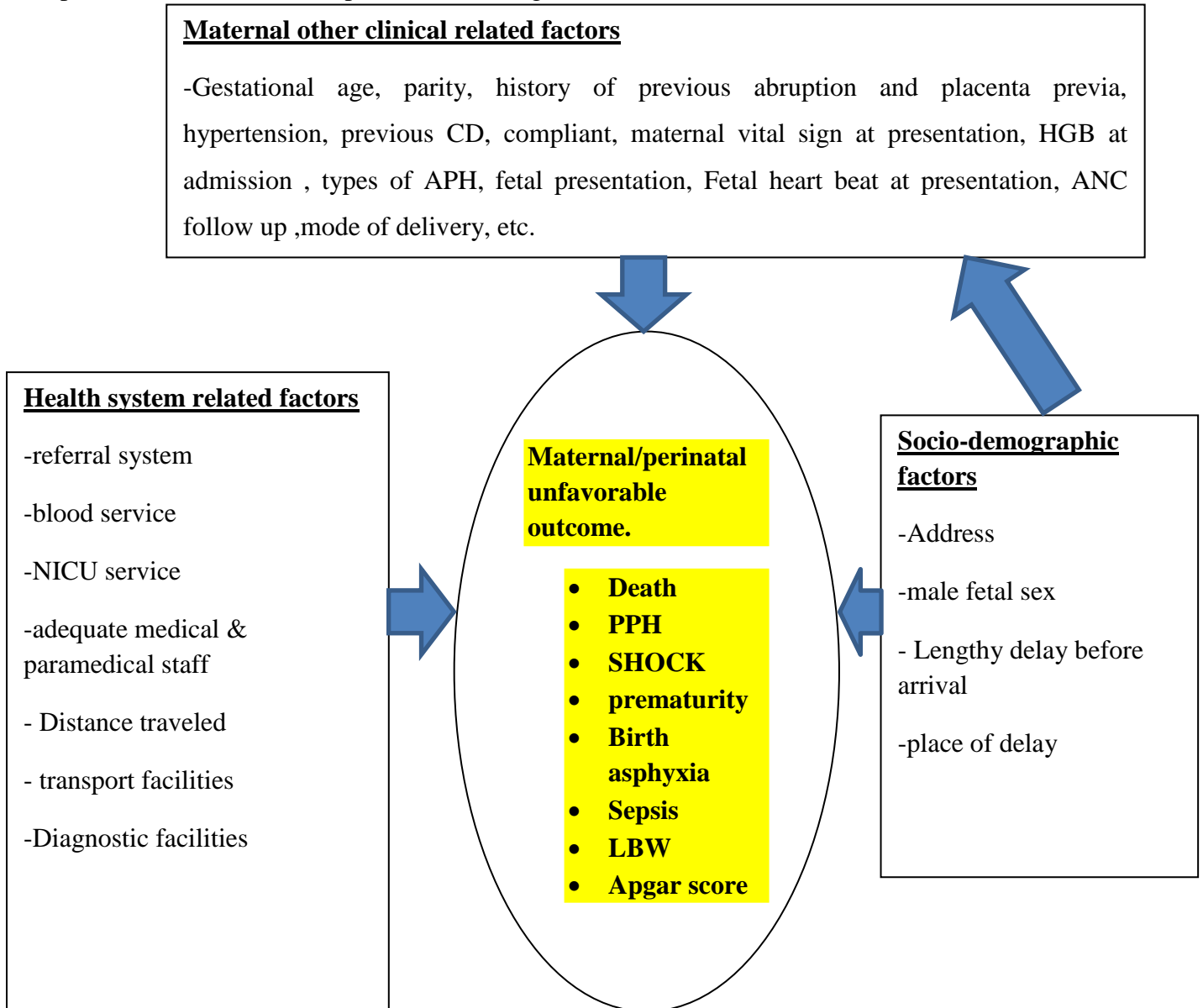


Figure 1 Conceptual frame work of factors associated with maternal and perinatal outcome among mothers with antepartum hemorrhage.

(Source: - adapted and modified from N jo ro g e. E, 2011 [21])

3. Objective

3.1 General Objective

To determine maternal and perinatal outcome among mothers managed for antepartum hemorrhage in Attat Hospital from february1 to July 30/2017.

3.2 Specific Objective

To assess incidence of maternal and perinatal outcome among mothers managed for antepartum hemorrhage in Attat Hospital.

To identify factors associated with maternal outcome among mothers managed for antepartum hemorrhage in Attat Hospital.

To identify factors associated with perinatal outcome among antepartum hemorrhage deliveries in Attat Hospital.

Significance of study

Ante partum hemorrhage is one of the obstetric emergency cases that cause major mortality & morbidity of both mother and fetus if not managed early and appropriately. In Ethiopia, where early diagnosis and intervention is not equally performed at all setups due to lack of human resources, diagnostic facilities, inadequate transportation facilities, low awareness of community to seek health care early, which might contribute to difficulty of managements and increased risk of unfavorable out comes; it is important to assess the magnitude and factors associated with maternal and perinatal unfavorable outcome among mothers with APH deliveries.

In Ethiopia particularly in Attat hospital, the magnitude and consequences of antepartum hemorrhage were not well studied. So, this study providing baseline information about the magnitude and factors associated with unfavorable outcome of APH deliveries in our country to minimize maternal and perinatal morbidity and mortality by: early prediction and detection, and initiation of resuscitation and definitive management on time before complication develop. It was also have significant advantage for health professionals and other concerned bodies in that it was add useful information about unfavorable outcome of APH deliveries.

The result of this study was also add epidemiological and clinical information that was serve as an essential input for policy makers to design proper strategies and also helps as references for those who want to undertake researches on the incidence and unfavorable outcome of APH since there was no adequate study conducted in our country which deals about it and was help the hospital to act on the issue depending on the findings to decrease the maternal and perinatal unfavorable outcome.

4. METHODS

4.1 Study area and period

The study was conducted from February 1 to July 30, 2017 in Attat hospital which is found in Cheha district, Gurage zone in SNNP, Ethiopia. It was located 168km to the south west of Addis Ababa & 254km far from regional city of Hawassa. It gives service for 800,000 populations of Gurage zone, some parts of south west showa, Silte and Hadiya zone. Currently it has 100 beds, staffed with 94 health professionals of different categories such as:-Gynecologist, General Surgeon, IESO, General practitioner, Health officers, nurses, midwives and 68 administrative workers. The hospital provides outpatient, inpatient services, major and minor operation, NICU, psychiatric, MCH, HIV/TB control, laboratory, x-ray, US, Pharmacy and Physiotherapy services. Specifically in labor & delivery ward there were :- 10 midwives & 6 beds for active 1st stage of labor, 4 delivery coach in 2nd stage room, 8 beds in postnatal room with different delivery & neonatal resuscitation instruments.

4.2 Study design

The hospital based cross-sectional study was conducted at department of obstetrics and gynecology unit in Attat hospital in the study period.

4.3 Source Population

All Pregnant women whose gestational age were $\geq 28^{\text{th}}$ complete weeks and delivered, their new born at labor/maternity ward in Attat hospital during the study period.

4.4 Study Population

All pregnant women whose gestational age were $\geq 28^{\text{th}}$ complete weeks with diagnosis of antepartum hemorrhage and delivered, their new born at labor/maternity ward in Attat hospital during the study period. And those mothers, new born and their corresponding medical records that fulfill eligibility (inclusion/exclusion) criteria were considered study population.

4.5 Inclusion/Exclusion criteria

Exclusion Criteria

Patients referred to other hospital, patients disappeared by themselves, patients managed conservatively and patients come from outside after delivered with diagnosed antepartum hemorrhage.

4.6 Sample size and Sampling technique

Since all mothers with APH identified were included during the study period, due to which mother come with APH to labor/maternity ward was difficult to determine.

4.7 Variables of the study

Dependent Variable

Maternal outcomes:

- Unfavorable outcome
- Favorable outcome.

Perinatal outcomes:

- Unfavorable outcome
- Favorable outcome.

Independent VARIABLES

Socio-demographic factors

Residence, lengthy delay before arrival, male fetal sex and place of delay.

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.

Clinical factors

Gestational age, parity, hypertension, history of previous abruption and placenta previa, previous C-D, complaint, maternal vital sign at presentation, HGB at admission, types of APH, fetal presentation, fetal heart beat at presentation, ANC follow up ,mode of delivery etc.

4.8 Measurements

Incidence of outcome of APH was determined by using the number of cases identified during the six month study period those who were admitted and managed for APH, their neonates delivered

to the maternity/labor ward of Attat hospital. Patient Socio-demographic characteristics, maternal and perinatal unfavorable outcome were measured among APH cases.

Instruments and data collection procedure

Data was collected by reviewing medical records & interviewing mothers during study period until discharge from the hospital. A pretested structured interviewer administered questionnaire was used to collect data regarding: patient Socio-demographic characteristics, health system related and clinical factors associated with maternal and perinatal outcomes for each APH case. Hemoglobin, blood group & cross- match, platelet count, organ function test, ultrasound result collect from laboratory and radiologic department. Data was collected by six midwives and three second year IESO students who were trained on how to complete the data collection questionnaire during six month data collection period.

Give training for six midwives, three 2nd year IESO students and one supervisor who were staff & graduated with nutrition. The training take two days and focus on refreshment about APH how to present, I_x modalities, management option & its maternal and perinatal complication, how to fill the questionnaire, way of approach to the client & communication with supervisor.

Newborn outcome for neonates referred to neonatology unit was obtained by reviewing neonatology unit registration book. Aggregate data on total number of mothers who gave birth in the hospital during the study period was obtained by reviewing registration books of the labor/maternity ward. The data collection process was supervised by the supervisor, who was staff & graduated with nutrition during the data collection period on daily bases.

4.9 Data processing and Analysis

The data were entered and analyzed using Statistical Product Service and Solutions (SPSS) version 20. The entered data were cleaned, checked for consistency, extent of outliers, the different statistical assumptions and the appropriate correction was done prior to analysis. First descriptive analysis was carried out for each of the independent variables. Second, Bivariate analysis was done for each of the independent variables with the outcome variables. Variables which had p-value < 0.25 on bivariate analysis were taken as candidates for multivariate binary logistic regression model to identify their independent effects. Finally, Variables with p-value less than 0.05 on multivariable logistic regression model analysis were taken statically

significant factors for the outcome variable. The strength of association between dependent variable and independent variables were expressed by odds ratio (OR) and the findings were described and summarized using tables, figure and paragraphs.

4.10 Ethical Consideration

Before data collection, Ethical Review Committee of the Jimma University Institute of Health, research and post graduate coordinating office approved this study. Written consent was obtained from all APH patients included in the study to promise keeping confidentiality of their response & no any influence on their own culture.

4.11 Data quality management

To check clarity of questioner pretest questionnaire was prepare two weeks before actual time of data collection, data collectors were trained on how to complete the data collection questionnaire, collect and fulfill documentation and strict daily follow up during data collection time by supervisor.

4.12 Operational definition and definition of terms

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

Favorable maternal outcome: - A mother alive with no deranged vital sign and any complication after diagnosed and managed for APH.

Unfavorable perinatal outcome:-perinatal death (intrauterine fetal death/still birth +death of neonates with in first seven days of extra uterine life) or neonate delivered with low birth weight/birth asphyxia, low Apgar score, premature and neonatal sepsis-jaundice delivered from APH diagnosed & managed mother.

Favorable perinatal outcome:-Alive neonate delivered from APH diagnosed & managed mother without any complication.

Maternal mortality: was defined as any death reported as occurring during pregnancy or childbirth, or within two months after the birth or termination of a pregnancy.

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

Neonatal mortality: the probability of dying within the first month of life.

Acute renal failure: Persisted oliguria (urine $\leq 500\text{ml}/24\text{hours}$) and presence of elevated serum creatinine $\geq 140\text{ mmol/l}$.

Preterm baby: babies born alive before 37 weeks of pregnancy are completed.

Peri-partum hysterectomy: Is a surgical removal of the uterus performed at the time of delivery or within 24 hours after delivery.

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

Birth asphyxia: - is a progressive accumulation of lactic acid and carbon dioxide results in acidosis and reduction of oxygen characterized by FHB $< 100\text{ B/min}$ or $> 180\text{ B/min}$.

Quality obstetric service: provision of service for mother and new born with comprehensive EmONC setup like parenteral(antibiotics, oxytocin drugs, anticonvulsants), OR/ anesthetic facilities, use of blood and its products to correct anemia, neonatal intensive care unit facilities and adequately trained medical and paramedical human resource.

APGAR score:-A score for the new born based on appearance, heart rate, grimace, activity (movement) and response.

Low APGAR score:-Is new born Apgar score of < 7 at 1st /5th minutes.

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

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

Low birth weight:-Is new born baby weight between 1500- 2499 gram at time of delivery.

Normal birth weight:-Is new born baby weight 2500 to 4000 gram at time of delivery.

Live birth: - Newborn shows signs of life after the delivery.

Postpartum hemorrhage:-Excessive bleeding following delivery ($> 500\text{ ml}$ in vaginal delivery, $> 1000\text{ ml}$ in CD and twin vaginal deliveries, $> 1500\text{ ml}$ following cesarean hysterectomy) or a drop in hematocrit $> 10\%$ from baseline or derangement in vital sign following bleeding after delivery of fetes to 6 weeks postpartum.

Anemia:-Maternal hemoglobin $< 11\text{ gram/ deciliter}$.

Cesarean delivery: - Delivery of the fetus through a surgical incision through the abdominal wall (laparotomy) and uterine wall (hysterotomy) after 28 weeks of gestation.

Parity: - Number of delivery experiences after 28 completed weeks of gestation. A woman whose first delivery or viable pregnancy was twin was considered primiparous.

Primipara:-A single delivery experience after 28 completed weeks of gestation.

Multi Para:- ≥ 2 deliveries experience after 28 completed weeks of gestation.

Residence:-Kebeles putted in whole number on mothers card (eg, 01, 02,..) were taken as Urban and Kebeles putted in specific name on mother's card were taken as Rural.

Ante natal care:-Health care given to a pregnant woman so as to ensure the birth of healthy baby with minimal health risk to the mother.

Deranged vital sign: - hypotension: blood pressure $< 90/60$ mmHg, tachycardia: pulse rate > 100 beats per minutes, temperature $\geq 38^{\circ}$ c, fast breathing > 21 breath 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, human chorionadotrophin hormone (hCG) and symphysis fundal height.

Non-reassure fetal status:-The presence of fetal compromise signs such as repetitive deceleration (variable/late), loss of beat-to-beat variability and baseline bradycardia or tachycardia.

Basic EmONC:-cares given in primary health care facility include parenteral (antibiotics, oxytocin drugs & anticonvulsants), manual removal of placenta, removal of retained product of conception, assisted vaginal delivery and newborn care.

Comprehensive EmONC:-all Basic EmONC plus surgery (caesarian section), blood transfusion service and care to sick and low birth weight newborn service (NICU).

4.13 Dissemination plan of the result

Findings were submitted to the department of IESO Jimma University, Attat hospital and Gurage zone health department. Also there was an attempt to publish the result in reputable journals.

5. Results

5.1 Socio-Demographic Characteristics of Respondents

February 1 to July 30/ 2017, a total of 1,786 women gave birth in Attat hospital. One hundred six of them were diagnosed to have APH showing prevalence of 5.94%. Majority of the mothers were rural residence (78.3%) and Gurage (67%) ethnicity. The highest proportion of mothers (43.4%) was in the age group of 21-34years with mean age of 28.76 years with standard deviation of 6.81 years (table1).

Table 1.Socio-demographic characteristics of respondents with APH and those who gave birth in Attat Hospital, 2017(N=106).

variables	frequency	percentage
Age in yr.'s		
20 or younger	28	26.4
21-34	46	43.4
35 and above	32	30.2
Residence		
Rural	83	78.3
Urban	23	21.7
Marital status		
Married	104	98.1
unmarried	2	1.9
Educational status		
No formal education	49	46.2
primary	34	32.1
Secondary	8	7.5
>secondary	15	14.2
Religion		
Muslim	46	43.4
Christian	60	56.6
Ethnicity		
Gurage	71	67
Amhara	20	18.9
Others	15	14.1
Occupation		
House wife	78	73.6
employed	18	17
Student	1	0.9
Merchant	9	8.5

5.2 Clinical conditions and health system related factors of mothers with APH.

Majorities 79(74.3%) of the mothers were multipara and 79(74.5%) of mothers come without referral paper. Regarding maternal vital sign at presentation, 55.66% of the mothers had deranged. About 85.8% of mothers had hemoglobin <11gm/dl at admission (Table2).

Table 2. Clinical conditions and health system related factors of mothers with APH and those who gave birth at Attat Hospital, 2017(N=106).

Clinical conditions & health system related factors	Frequency	Percent
Gestational age in weeks		
<37wks	67	65.7
≥37	35	34.3
Gestational age by month of amenorrhea		
7-9month	4	40
>9month	6	60
Parity		
Primipara	27	25.5
Multipara	79	74.5
Complaint of client at presentation		
Vaginal bleeding	71	75.5
Abdominal pain	25	20.9
Decrease movements	10	3.8
Duration of compliant		
<12hours	47	44.3
≥12hours	59	55.7
ANC follows up		
Yes	77	72.6
No	29	27.4
HTN		
Yes	24	22.6
No	82	77.4
History of C-delivery		
Yes	20	44.34
No	86	55.66
Maternal vital sign at presentation		
Normal	47	44.34
Deranged	59	55.66
Fetal presentation		
Cephalic	54	55.7

Breech	47	38.7
Others(brow, transverse lie)	5	5.6
Foetal heart beat at presentation		
Absent	6	5.7
Non-reassure fetal status	42	39.6
Normal	58	54.7
Types of APH		
Placenta previa	44	41.5
Abruptio placenta	33	31.13
Uterine rupture	8	7.5
local cause/leech infestation	3	2.83
Others(heavy show & unknown)	18	16.9
Maternal haemoglobin at admission		
<7gm/dl	40	37.7
7-9.9gm/dl	35	33.0
10-10.9gm/dl	16	15.1
≥11gm/dl	15	14.2
Mode of delivery		
Vaginal	22	20.8
Caesarian	76	71.7
laparotomy	8	7.5
Is there any delay		
Yes	42	39.6
No	64	60.4
Distance travelled in km		
<50	50	47.2
≥50	56	52.8
Mothers referred		
Yes	27	25.5
No	79	74.5
Place of delay		
Delay at home	25	23.6
Delay on the way	10	9.4
Delay in health facility	7	6.6
Mode of transport		
Ambulance	63	59.4
Public transport	42	39.6
Other option	3	2.83

5.3 Maternal Outcome

The incidence of maternal unfavorable outcome was 60(56.6%). More than half (52.83%) of mother's were alive with certain complications and (3.8%) of them died. Other (43.4%) of them alive without complication (table3).

Table 3.Distribution of maternal outcome among APH mothers who gave birth in Attat Hospital, 2017.

Maternal outcome		frequency	percentage
Life outcome	Alive without complication	46	43.4
complications	died	4	3.8
	PPH	25	24.5
	Anemia	16	15.7
	Hemorrhagic shock	10	9.8
	Per-partum hysterectomy	3	2.94
	DIC	2	1.96
Length of hospital stay	<3days	24	22.64
	≥3days	82	77.36
Blood transfusion indicated	Yes	38	35.8
	No	68	64.2
Transfused at least 01unit of Blood	Yes	16	42.1
	No	22	57.9

5.4 Perinatal Outcome

The incidence of perinatal unfavorable outcome was 83(74.1%). Majority (62.5%) of newborns were live birth with certain complications and (6.25%) still birth and (5.35%) of them were early neonatal death. Other (25.9%) live birth without complication (table4).

Table 4.Distribution of perinatal outcome among newborns those delivered from APH mothers who gave birth in Attat Hospital, 2017.

Perinatal outcome		frequency	percentage
Life outcome	Live birth without complication	29	25.9
complications	died		
	Still birth	7	6.25
	Early neonatal death	6	5.35
	Low birth weight	36	32.14
	prematurity	5	4.5
	Birth asphyxia	17	15.2

	Low Apgar score	11	9.8
	Neonatal sepsis-jaundice	1	0.9
NICU admission	Yes	61	54.5
	No	51	45.5
Indication of NICU admission	Low birth weight	17	15.2
	Birth asphyxia	36	32.1
	Preterm birth	3	2.68
	others	5	4.5
Number of fetus	single	100	89.3
	twin	12	10.7
Sex of newborn	Male	59	52.68
	Female	53	47.32
Apgar score	<7 at first minute	33	31.4
	≥7 at first minute	72	68.6
Apgar score	<7 at fifth minute	11	6
	≥7 at fifth minute	94	94

5.5 Factors associated with maternal outcome among mothers managed for APH

Association of each independent variable on outcome variable was assessed by bivariable and multivariable logistic regression. Different socio-demographic and health system related/clinical variables were tested for their association with the maternal unfavorable outcome among mothers managed for APH. None of the socio-demographic variables of the mothers illustrated an association with the maternal unfavorable outcome in mothers at the bi variate analysis. Variables which have association with outcome variable by bivariable analysis were; delay, place of delay, and antenatal care follow up at P-value <0.25 significance level.

To identify independent factors of maternal unfavorable outcome, variables that exhibited significant association at P-value <0.25 by bivariable analysis were simultaneously entered in to multivariable logistic regression analysis to control confounding.

Finally, absence of antenatal care follow up remains statically significant at P-value <0.05 on multivariable logistic regression analysis. The finding revealed the odds of absence of antenatal care follow up was 3 times more likely maternal unfavorable outcome than those with antenatal care follow up (AOR=3, 95% CI: 1.09, 7.9; p=0.033) (Table5).

Table 5. Factors associated with maternal outcome of APH on bivariable and multivariate logistic regression analysis among mothers who gave birth in Attat hospital, 2017.

Variables	Maternal outcome		COR(95%CI)	AOR(95%CI)
	Favorable outcome	Unfavorable outcome		
ANC follow up				
Yes	39(84.8)	38(63.33)	1.0	1.0
No	7(13.2)	22(36.67)	3.23(1.2,8.4)*	3(1.09,7.9)**
Parity				
Primipara	14(51.9%)	32(40.5%)	1.0	
Multipara	13(48.1%)	47(59.5%)	1.6(0.66,3.8)	
Maternal Vital sign at presentation				
normal	25(53.2%)	21(35.6%)	1.0	
deranged	22(46.8%)	38(64.4%)	2.06(0.94,4.5)	
Age in years				
20 or younger	15(32.6%)	13(21.67%)	1.0	
21-34	19(41.3%)	27(45.0%)	1.64(0.64,4.23)	
35 and above	12(26.09%)	20(33.3%)	1.9(0.69,5.4)	
Residence				
Urban	9(19.6%)	14(23.33%)	1.0	
Rural	37(80.4%)	46(76.67%)	0.8(0.3,2.05)	
Hgb at admission in gm/dl				
<7	14(30.4%)	26(43.33%)	2.8(0.822,9.44)	
7-9.9	13(28.3%)	22(36.67%)	2.54(0.74,8.77)	
10-10.9	10(21.74%)	6(10%)	0.9(0.212,3.82)	
≥11	9(19.6%)	6(10%)	1.0	
Is there any Delay				
Yes	13(28.3%)	29(48.33%)	2.34(1.05,5.38)*	1.2(0.22,5.92)
No	33(71.7%)	31(51.67%)	1.0	1.0
Place of delay				
Delay at home	6(12.24%)	19(31.67%)	3.37(1.19,9.54)*	2.6(0.42,15.76)
Delay on the way	4(8.2%)	6(10%)	1.59(0.41,6.2)	1.4(0.19,10.94)
Delay in other facility	3(6.1%)	4(6.67%)	1.42(0.3,6.9)	1.5(0.34,11.87)
No delayance	33(67.35%)	31(51.67%)	1.0	1.0
Distance traveled in km				
<50	21(45.6%)	29(48.33%)	1.0	
≥50	25(54.4%)	31(51.67%)	0.9(0.42,1.94)	

Mothers referred			
Yes	13(28.3%)	14(23.3%)	1.0
No	33(71.7%)	46(76.7%)	1.3(0.54,3.1)

*Variables which had p-value <0.25 by bivariate analysis.

**Variables which had p-value<0.05 by multivariate analysis.

Even though 91 (85.85%) of the women were found to have anemia during admission; however this high figure no significantly associated with maternal unfavorable outcome.

5.6 Factors associated with perinatal outcome among newborn those delivered from APH mothers.

Association of each independent variable on outcome variable was assessed by bivariable and multivariable logistic regression. Different socio-demographic and health system related/clinical variables were tested for their association with the unfavorable perinatal outcome among newborns those delivered from APH mothers. None of the socio-demographic variables of the mothers illustrated an association with the unfavorable perinatal outcome in newborns at the bi variate analysis. Variables which have association with outcome variable by bivariable analysis were; non-reassure fetal status and low gestational age at P-value <0.25 significance level.

To identify independent factors of unfavorable perinatal outcome, variables that exhibited significant association at P-value <0.25 by bivariable analysis were simultaneously entered in to multivariable logistic regression analysis to control confounding.

Finally, duration of complaint, non-reassure fetal status and low gestational age were remains statically significant at P-value <0.05 on multivariable logistic regression analysis. The finding revealed the Odds of visit health facility beyond 12hours onset of complaint was 4times more likely unfavorable perinatal outcome than those visit health facility within 12hours (AOR=4, 95% CI: 1.02, 12.84; p=0.046) and the odds of non-reassure fetal status was 5times more likely unfavorable perinatal outcome than those normal fetal status (AOR=5, 95% CI: 1.23, 20.5; p=0.025). On the other hand, the odds of low gestational age was 25 times more likely perinatal unfavorable outcome than those appropriate for gestational age(≥ 37 weeks) (AOR=25, 95% CI: 7, 87.7; p<0.001) (Table6).

Table 6. Factors associated with perinatal outcome of APH on bivariable and multivariable logistic regression analysis among new born in Attat hospital, 2017.

variables	Perinatal outcome		COR(95%CI)	AOR(95%CI)
	Favorable outcome	Unfavorable outcome		
FHB at presentation				
absent	0	6(7.2%)	12(0.00,26)	9.3(0.0,12.5)
Non-reassure	4(13.8%)	38(45.8%)	7.2(2.27,22.82)*	5(1.23, 20.5)**
normal	25(86.2%)	39(47%)	1.0	1.0
Gestational age in weeks				
<37	5(17.2%)	66(92.9%)	28.8(9.07,91.5)*	25(7, 87.7)**
≥37	24(82.8%)	17(7.1%)	1.0	1.0
Antenatal care follow up				
Yes	23(79.3%)	57(68.7%)	1.0	
No	6(20.7%)	26(31.3%)	0.612(0.22,1.7)	
Duration of compliant				
<12hrs	19(65.5%)	31(37.34%)	1.0	1.0
≥12hrs	10(35.5%)	52(62.66%)	3.3(1.36,8.14)	4(1.02,12.84)**
Types of APH				
Placenta previa	13(44.8%)	34(41%)	0.908(0.32,2.6)	
Abruptio placenta	8(27.6%)	28(33.7%)	1.2(0.381,3.72)	
others	8(27.6%)	21(25.3%)	1.0	
Mothers referred				
Yes	8(27.6%)	22(26.5%)	1.0	
No	21(74.4%)	61(75.5%)	0.86(0.33,2.26)	
Distance traveled in km				
<50	12(41.4%)	41(49.4%)	1.0	
≥50	17(58.6%)	42(50.6%)	1.4(0.6,3.3)	

*Variables which had p-value <0.25 by bivariate analysis.

**Variables which had p-value<0.05 by multivariate analysis.

6. Discussion

In this study, the incidences of unfavorable maternal and perinatal outcome among antepartum hemorrhage deliveries were 60(56.6%) and 83(74.1%) respectively. Absence of antenatal care follow up was statically significant factor associated with maternal unfavorable outcome among antepartum hemorrhage deliveries. On the other hand, Visit health facility beyond 12hours onset of complaint, non-reassure fetal status at presentation and low gestational age were statically significant factors associated with perinatal unfavorable outcome among APH deliveries.

More than half of mothers with APH deliveries developed at least one of the following complications: post-partum hemorrhage, hemorrhagic shock, anaemia, coagulation failure, sepsis and life loss. This finding was comparatively higher when compared to world health statistics 2016(27%) [1] , and a study conducted in Tanzania (28.2%), Nigeria (53.3%)and three studies in India (4%, 53.4%and 2.2%) [9, 13, 15- 17]. But lower than a study conducted in Thailand (86.7%), India (66.7 %,) and Ethiopia (89.74%) [6, 7, 14]. Possible explanation regarding higher figure in this study might be inadequate blood transfusion service for example mothers who had indicated for transfusion were 38; however only 16 mothers transfused at least one units of blood whereas for low figure likely short duration of follow up especially outcome of mothers and neonates after discharged from hospital was unknown.

Postpartum hemorrhage is one of the complications among mothers with APH. In this study 24.5 % of the mothers developed PPH. This finding is higher than a study conducted in India (16%) and Tanzania (5.9%) [4, 9].But less than a study conducted in Ethiopia (37.4%) [7].

Anemia is another complication in mothers with APH. Sixty percent of the mothers develop anemia. This result is higher than in a study conducted in India (11%) [15].However, lower than in a study conducted in Nigeria (77.7%) and Ethiopia (37.4%) [7, 13].

DIC is among the complications in mothers with APH. In this study 1.96% of mothers develop DIC. This finding is lower than in a study conducted in India which revealed 6% [4] but higher than a study conducted in Nigeria which was 0.09% [13].

Peri-partum hysterectomy is other complication in mothers with APH. In this study 2.94% mother's peri-partum hysterectomy done for uncontrolled PPH. The result is nearly similar with a study conducted in India and Ethiopia, which were 3%, 3.1% respectively [5, 7].But less than a study conduct in Thailand (10%) [14].

Shock is also another complication in mothers with APH. This study shown 9.8% of mothers develop shock. This finding is higher than a study conducted in India (4%) [4].

In this study, there was statically significant association between absences of antenatal care follow up and maternal unfavorable outcome indicating that mothers who hadn't antenatal care follow up were 3times more likely maternal unfavorable outcome than those mothers with antenatal care follow up. According to the world health statistics and EDHS 2016 report, factors like antenatal care follow up were found to be factor associated with maternal unfavorable outcome [1, 2]. Other studies conducted in different part of the world also reported that antenatal care follow up is associated with maternal unfavorable outcome [4, 10, 11,13]. This might be absence of ANC follow up shows preventable obstetric complication which makes the mothers vulnerable to unfavorable outcome of APH.

The study revealed that about three-fourth of neonates born from APH mothers developed complications like: birth asphyxia, low Agar score, prematurity, early onset neonatal sepsis and jaundice and death. This finding was lower than a study conducted elsewhere [6-10, 13].

Low birth weight took the lion share complications observed among neonates born from APH mothers. In this study 36(32.14 %) of the new born develop low birth weight. This finding is lower than in a study conducted in India (68.4%), Tanzania (48.1%) and Ethiopia (35%) [6-7, 9].But more than a study conducted in Ethiopia (10.4%) [8].

Low Apgar score is other complication in new born delivered among APH mothers. Eleven (9.8%) new born had low Apgar score (<7) at fifth minutes. The result is less than a study conducted in India (79%) and Nigeria (44.4%) [13, 15].

Preterm delivery is also other complication in new born delivered from APH mothers. In this study preterm birth was 2.68%. This finding is less than a study conducted in India (70%) and Ethiopia (48.54%) [4, 7].

Indeed, birth asphyxia is another complication in neonates' delivered from mothers with APH. Seventy (9.8%) of new born develop birth asphyxia in this study. This result is less than a study conducted in Nigeria (38.9%) [11].

In this study, low gestational age was a strong predictor of perinatal unfavorable outcome indicating that new born who had low gestational age were 25 times more likely to be perinatal unfavorable outcome than those new born who had appropriate for gestational age. This finding

is in line with the studies done in different parts of the world [4, 5, 7, 10]. This might be low gestational age was related to prematurity contribute for unfavorable outcome.

Non –reassuring fetal status at presentation was a second factor associated with perinatal unfavorable outcome revealed that fetus who had non –reassuring fetal status at presentation were 5times more likely to had perinatal unfavorable outcome than those fetus who had normal fetal status at presentation. This finding is consistent with a study conducted in India, Thailand and Nigeria [5, 12, 14].

Visit health facility beyond 12hours onset of complaint was another factor associated with perinatal unfavorable outcome which showed new born those delivered from APH mother visit health facility beyond 12hours onset of complaint were 4times more perinatal unfavorable outcome than those visit health facility within 12hours onset of complaint. This finding was compatible with the study conducted in India, Nigeria and Ethiopia [5, 8,11].

Limitations of this study are as follows: firstly, Short duration of follow up, only followed APH mothers from admission to discharge from the hospital. However, the study couldn't show the condition of mother after discharge up to 42days of post-partum. Although unfavorable perinatal outcome extends up to 07days of postnatal period; this study was limited to the time neonates were discharged from hospital. Therefore, the finding of this study if limited with short duration of follow up may reflect the magnitude of problems probably worse outcome back in the village. Secondly, lack of generalizability due to institution (health) facility based study.

7. Conclusion and Recommendation

The study revealed a comparatively low incidence of maternal and perinatal unfavorable outcome among mothers with antepartum hemorrhage deliveries when compared to other studies done in different parts of the world, except few studies in India and Tanzania. It also pointed out absence of antenatal care follow up was factor associated with maternal unfavorable outcome whereas visit health facility beyond 12hours onset of complaint, low gestational age and non-reassure fetal status at presentation were factors associated with perinatal unfavorable outcome in antepartum hemorrhage deliveries.

Therefore, based on this finding the following points were recommended;

- Attat hospital administrative collaboration with Gurage zone health department, work hard to improve maternal unfavorable outcome in our country particularly on area of change health seeking behavior of mothers to follow antenatal care.
- Attat hospital administrative collaboration with Gurage zone health department, promote mothers visit health facility within 12hours onset of complaint to prevent perinatal unfavorable outcome related to non-reassure fetal status at presentation.
- Further comparative cohort study needs to identify these factors were significantly associated with maternal and perinatal outcome.

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9. Annexes

Information and Consent Form

Information sheet

My name is _____ I am working with Seid Aman who is doing research for partial fulfillment for the requirement of Master of Integrated Emergency Obstetrics and General Surgery at Jimma University Institute of Health, Department of Gyn/Obs.

I am conducting study on the maternal and perinatal outcome of ante partum hemorrhage deliveries within this Attat hospital. The result that will come out of this study will be used by the government and the hospital to base their rational decision to develop appropriate strategies to combat this problem. The research is intended to benefit the community including the people that will be participating in this research and will introduce no risk to the participant. Your participation is entirely voluntarily and you can quit from the study any time you want. You will have no penalty if you fail to show desire to participate and the quality of any service that you want from this facility won't be compromised due to your unwillingness. I, however, do hope that you will participate since the data that come from you will be important input for this study. I would like to ask you to be honest for your responses and be sure the responses are real because your real response to this study is very important. Your name and other personal identity will not be used and hence the information we will collect from you will completely be kept confidential and will not be disclosed to any third person other than the people participating in this study. For any question you want to ask us, you can use the contact address here under.

May I now begin the interview?

If yes, continue interviewing

If No, thank and stop interviewing

Name of the interviewer: _____ Sign. _____ Date _____

Name of the supervisor: _____ .Sign. _____ Date _____

Addresses Tel: -----

Consent Form

I am (the respondent), informed that the researcher is going to conduct study in this hospital to determine maternal and perinatal outcome of APH. I am also informed that the result of the study will be used by both the government and the hospital appropriate strategies to tackle this problem and the research will benefit the community in general including me, and the research will not inflict any harm to me. I have been told that I have full right to understand and then take part in the study on the basis of my interest and I can ask them questions I found any. Moreover, I am notified that my participation in the study is entirely voluntarily, and that I can quit from the study any time I want. Likewise, I will not be subjected to any form of punishment and service that I want from this facility won't be compromised following my failure to participate in the study. In the same way, I am explained that the information collected from me will be kept confidential unless obtained permission from me. Finally, the information that I (the respondent) will give is honest and I am sure the responses are real.

Name of the interviewer_____

Date: _____ Signature_____.

10. Questionnaire

Jimma University Institute of Health, Department of OB/GYN. Questioner prepared to collect data on maternal and perinatal unfavorable outcome of APH deliveries in Attat hospital Gurage Zone, SNNP regional state, Ethiopia.

I am Seid Aman a final year IESO student in master's program at Jimma University. I brought these questionnaires to study maternal and perinatal unfavorable 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-----.
3. Ethnicity: (a)Gurage (b) Amhara (c) Hadiya (d)Oromo (e) others specify--- .
4. Religion : (a) Muslim (2) Orthodox (3) Protestant (4) others specify-----
5. Marital status: (a) never married (b) married (c) living together (d) separated\divorced (e) widowed
6. Occupation: (a) housewife (b) employed (c) student (d) merchant (e) others specify---
7. Educational status : (a)no formal education (b) primary (c) secondary (d) more than secondary.

Part II. Gynecologic /OBS History

1. Gestational age in weeks
 - 1.1. Did she know her LNMP: (a) yes (b) no
 - 1.2. If yes, how many week -----.
 - 1.3 If no, by fundal height----- cm/finger
 - 1.4. If no, by early us -----.
 - 1.5. If no, by month of amenorrhea-----month.
- 2 . How many deliveries do you have? -----.

3. What was the complaint of client at presentation? (a) Vaginal bleeding (b) abdominal pain (c) decreased fetal movements.
4. Duration of complaint -----
5. Is there any delay >12 hrs. before arrive to current health facility? (a) Yes (b)no
6. If yes, where? (a) Delay in the decision to access care (b) delay in the identification of –and transport to –a medical facility (c) delay in the receipt of adequate and appropriate treatment.
7. Did the mother referred from other health facility? (a) yes (b) no
8. Distance traveled in Km to arrive this hospital-----.
9. Mode of transportation to this hospital (a) Ambulance (b) public transport (c) other specify ---
10. History of ANC follows up, if applicable (a). Yes (b). No
11. If yes, how many times she visit (a) 1 (b)2 (c)3 (d)4 and above.
11. She has history of HTN? (a). yes (b). No
12. Previous history of C-delivery? (a). yes (b) .no
13. Previous history of Abruptio? (a). yes(b). No
14. Previous history Placenta previa?(a). yes (b). no

Part III. General Physical examination

1. Vital sign at presentation: (a) normal (b) 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 (a) cephalic (b) Breech (c) others specify-----
 - 2.2. Fetal heart beat at presentation -----.
 - 2.3. Pv done- (a)Yes (b) no
 - 2.4.If yes, cervical dilatation-----cm.

Part IV. Lab investigation done

1. Hgb at admission-----
2. Grouping and typing, cross-match done (a)yes (b)no.
3. Platelet count done (a) yes (b) no
4. If yes, how much?-----
- 5 .Additional test done (a) yes (b)no.
- 6.If yes, what (a)Renal function test (b)Liver function test (c) coagulation profile.

Part V. Radiologic findings

- 1.Did US investigation done ? (a) yes (b) no
- 2.If yes, What was the types of APH ? (a) PP (b) abruption.p (c) others specify
3. If placenta previa, which type ? (a) pp.totalis (b) pp.paritalis (c)pp.marginalis (d) low lying
4. If placental abruption, which grade? (a) grade 0 (b) grade1 (c) grade2 (d)grade3A (e) grade3B
5. If others, (a) Vasa previa (b) local cause (c)uterine rupture

Part VI. Management outcome

1. Plan of management: (a) Vaginal delivery (b) Caesarian delivery c) laparotomy.
2. If vaginal delivery: (a) spontaneous (b) induced c) instrumental deliveries.
4. IF CD (a) Emergency (b) Elective

Part VII. Fetal outcome

1. Number of neonate delivered? (a) single (b) twin (c) triplet
2. Sex of neonate delivered (a)male (b)female
3. Perinatal outcome (a) favorable (b) unfavorable
 - 3.1. Life outcome (a) live birth (b) died (IUFD/still birth and early neonatal death)
 - 3.2. APGAR score -----

3.3. Have neonate sign of prematurity----- (a)yes (b)no

3.4. If yes, which sign? (a) Abnormal breathing pattern (b) lanugo (body hair) (c) enlarged clitoris (c) lower muscle tone & less activity than full term infant.

3.5. Birth Asphyxia----- (a) yes (b)no

3.6 Birth weight in grams-----.

4. Did the neonate admitted to NICU? (a) yes (b) no

5. If yes, what was the indication of admission? (a) Birth Asphyxia (b) low birth weight (c) prematurity (d) other specify---

6. What was the condition of neonate at discharge? (a) improved (b) died

7. If died, what was the cause of death? (a) Respiratory failure (b) neonatal sepsis (c) other specify—

Part VIII. Maternal outcome

1. Maternal outcome (a) favorable (b) unfavorable

1.1.Life outcome----- (a) alive (b) died

1.2. If dead what was the cause of death? (a) Hypovolemic shock (b) Renal failure (c) DIC (d) respiratory failure.

1.3. If alive did any complication occurred? (a) Yes (b) no

1.4. If yes, what complication? (a) Hemorrhagic Shock (b) peri-partum hysterectomy (c) DIC (d) anemia (e) PPH (f) other specify-----

2. Did the mother indicated for transfusion? (a) Yes (b) no

3. Did the mother transfused with at least one units of blood? (a) Yes (b) no

4. Hospital stays after delivery in days? -----.

5. What was her Hgb at discharge? -----.

6. What was the condition of the mother at discharge? (a) Improved (b) died

Name of data collector----- Sign----- Date-----

Name of Supervisor-----Sign----- Date

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: Seid Aman

Date: _____ Signature: _____

APPROVAL OF THE ADVISORS

Name of the first advisor: Yesuf Ahmed(MD, Assistant professor and consultant in GYN/OBS)

Date: _____ Signature: _____

Name of the second advisor: Abiyot Girma (MPH Epidemiology)

Date: _____ Signature: _____

Name of internal/external examiner: Fanta Asefa (MD, Assistant professor and consultant in GYN/OBS)

Date: _____ Signature: _____

