

Fetomaternal Outcome in Cases of Pregnancy Induced Hypertension in Singleton Pregnancy

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Received: 25-07-2024 / Revised: 23-08-2024 / Accepted: 26-09-2024

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Conflict of interest: Nil

Abstract:

Introduction: Pregnancy induced hypertension is a common health problem that affects mother as well as fetus. Hypertensive disorders complicate about 5-10% of all pregnancies and together they are the major contributors of maternal deaths along with infection and hemorrhage. Hypertensive disorders of pregnancy include gestational hypertension, preeclampsia and eclampsia syndrome, pre-existing chronic hypertension and preeclampsia superimposed on chronic hypertension. These are responsible for 9.1% maternal fatalities in Asia and Africa. Approximately 70% of women with PIH will have gestational hypertension-preeclampsia. PIH leads to maternal complications like abruptio placenta, DIC, HELLP syndrome, ARF, intracerebral hemorrhage, pulmonary edema and even death. Prematurity and its associated complications, low birth weight, growth restriction, low APGAR scores, neurologic injury are adverse neonatal effects of the disease.

Objective: Present research was conducted to study the fetomaternal outcome in pregnancy induced hypertension (PIH) in singleton pregnancy at tertiary care center.

Materials and methods: Present cross-sectional observational study was conducted at Dhiraj General Hospital (SBKS MI&RC), Piparia, Waghodia, Vadodara, Gujarat among 170 participants over a period of one and a half year. Detailed history including menstrual history, obstetrics history, past history, personal history, marital history, family history of the patient was taken. General and obstetrical examination were carried out. Partographs were used to track intrapartum occurrences. Details including the mode of delivery, the medical care provided, any complications (both maternal and fetal), and eventually the outcome for both the mother and the newborn were documented. Being an observational study rates, ratios and percentages were calculated

Results: PIH incidence rate was 9.5%. Preeclampsia (46.5%) was found to be more common than gestational hypertension (38.8%) and eclampsia (14.7%). PIH was more frequent in the 21 to 25 age group (57.6%) and in primipara. 54.1% patients delivered vaginally while cesarean section was done in 45.9%. Maternal complications like abruptio placenta, PPH, and pulmonary edema were seen in 4.7%, 2.35%, and 2.35% of women, respectively. Maternal mortality was seen in 0.6% of the women with PIH. Low birth weight was found in 52.4% of newborns while the rates of IUD, stillbirth, and infant mortality were 5.9%, 1.2%, and 1.8%, respectively.

Conclusion Pre-eclampsia and Eclampsia still remains a big concern in pregnancy. Feto-maternal outcomes are susceptible to deterioration in the presence of PIH. In situations of eclampsia, early administration of antihypertensive medicines, optimal timing of delivery, proper fluid balance, and anticonvulsants aid in achieving a favorable result. Early registration and frequent ANC visits in order to identify pregnancy-induced hypertension as early as possible is advocated to avoid its severity and related consequences. Detection and control of problems at an early stage and timely referral are essential for ensuring a good outcome for both mother and child.

Keywords: Pregnancy induced hypertension, pre-eclampsia, fetal outcomes, maternal complications, Eclampsia.

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Introduction

Pregnancy-induced hypertension is a common health problem affecting the mother and consequently the fetus. These group of disorders complicate 5-10% of all pregnancies.[1] According to the

World Health Organization (WHO), the incidence of preeclampsia ranges between 2% and 10% of pregnancies worldwide. About 1.8-16.7% of the incidents are reported in developing countries, while in

developed countries, the rate is 0.4%. [2] In India, in hospital practice, the incidence varies from 5% to 15%. [3] According to WHO's systematic review on causes of maternal death- triad of hemorrhage, infection and hypertensive disorders of pregnancy (HDP) are the major contributor to maternal deaths in developing countries.[4]

Hypertension is a sign of an underlying pathology that may be pre-existing or appear first in pregnancy. Preeclampsia remains a leading cause of hypertension. It refers to the new onset of hypertension (systolic blood pressure > 140 mm Hg or diastolic blood pressure > 90 mm Hg) on at least two occasions 4-6 hours apart and proteinuria (> 0.3 gm protein in 24 hours urine specimen) after 20 weeks of gestation in a previously normotensive woman.[5]. Severe Pre-eclampsia is considered if the blood pressure is > 160 mm Hg systolic or > 110 mm Hg or more diastolic on two occasions at least 15 minutes apart [6] or proteinuria of 5 gm or higher in a 24 hours urine specimen or evidence of end organ damage such as oliguria, cerebral or visual disturbances, pulmonary oedema, impaired liver function or thrombocytopenia is present.[7]

According to the working group of the National High Blood Pressure Education Program (NHBPEP), 2000, [8] hypertensive disorders of pregnancy are classified as-

- Gestational Hypertension
- Preeclampsia and eclampsia syndrome
- Chronic hypertension
- Preeclampsia superimposed on chronic hypertension

Pre-eclampsia is largely of unknown etiology, primarily affecting nulliparous women; however, there are certain known high-risk factors like age more than 35 years, multifetal gestation, BMI more than 30, past history of pre-eclampsia in previous pregnancy, chronic hypertension, kidney disease, gestational diabetes, thrombophilia, systemic lupus erythematosus, antiphospholipid antibody syndrome etc. [9,10] Abnormal placentation in form of inadequate secondary trophoblastic invasion in decidua seems to be the main pathology leading to unfavorable endovascular changes and consequent increased vascular resistance, contrary to normal pregnancy. Termination of pregnancy after taking in to account various factors has shown improvement in maternal condition, thus confirming placenta being the origin of the disease.

Hypertensive disorders of pregnancy significantly increase maternal and perinatal morbidity and mortality worldwide. [9] Life threatening maternal complications like abruptio placenta, disseminated intravascular coagulation, eclampsia, HELLP syndrome, acute renal failure, liver hemorrhage, intracerebral hemorrhage, hypertensive encephalopathy, pulmonary oedema, coma, and even maternal

death are possible, apart from long-term sequelae like atherosclerosis, cardiovascular disease, stroke, retinopathy etc. [11] Fetal complications like severe intrauterine growth retardation (IUGR), pre-term delivery, hypoxia, neurologic injury, and fetal death are also reported. Early onset preeclampsia i.e. diagnosed before 34 weeks of gestation is associated with more severe maternal and fetal complications and poor outcomes as compared to late onset preeclampsia diagnosed after 34 weeks.

Eclampsia is the term used to describe convulsions in a patient with pre-eclampsia. In a study from a large population-based nationally representative sample of women in India, the incidence of eclampsia is about 3.2%. [12] The prevalence of eclampsia is from 1.6 to 10 per 10,000 pregnancies in wealthy nations, while it is between 5 and 15 times higher in underdeveloped nations, where it ranges from 50 to 151 per 10,000 deliveries.[13] According to WHO, eclampsia is responsible for 12% of maternal death. [4] In the Global burden of the disease, the hypertensive disorders of pregnancy ranked 75th in terms of DALYs and were responsible for 6% of the burden of all maternal comorbid conditions. [14]

Hypertension can be picked up early in pregnancy by regular antenatal visits, identifying risk factors, regular BP monitoring and clinical evaluation. According to weeks of gestation, appropriate measures should be taken to reduce maternal and perinatal morbidities and mortality and to optimize outcome. [15]

This research was performed at this institution, SBKS MI&RC (Shrimati Bhikhiben Kanjibhai Shah Medical Institute & Research Centre) Dhiraj general Hospital, to determine the prevalence of hypertensive disorders of pregnancy at the tertiary care center. The main aim of the study was to study fetal maternal outcome in singleton pregnancies complicated by PIH. Resultant maternal outcomes in form of mode of delivery, operative interventions, maternal complications such as PPH, abruptio placenta, DIC, HELLP syndrome, fetal outcomes and perinatal complications such as low birth weight babies, prematurity, need for NICU admissions, birth asphyxia, RDS, mortality, and other factors associated with hypertension were also studied.

Materials and Methods

The present study was conducted in the Obstetrics and gynecology department of SBKS MI&RC, Dhiraj General Hospital, Piparia, Waghodia, Vadodara, and Gujarat over a period of one and half years it was a cross-sectional observational study. All antenatal cases visiting the out-patient department were screened for blood pressure. As the study focused on the spectrum of pregnancy in-

duced hypertension, all cases with raised blood pressure were included which were then segregated under different diagnosis as pre-eclampsia, chronic hypertension, gestational hypertension etc.

Inclusion Criteria:

- Singleton pregnancy
- Patients with BP > 140/90mmHg after 20 weeks of gestation with or without proteinuria to label as preeclampsia
- Patients with above criteria with convulsion and/or coma
- Patients with chronic hypertension with superimposed Preeclampsia

Exclusion Criteria:

- Multiple gestation
- Known case of epilepsy
- Diabetes mellitus or renal disorders
- Women who had hydatidiform mole
- Ectopic pregnancy
- Not able to give consent

Sample size required for the present study was obtained by using the hypothesis testing method and the calculated minimum sample was 104, which was inflated to 10% of non-response rate. In the present study 170 Individuals were included in to the analysis. All eligible participants were acquired purposively. Data was collected with the help of pre formed case record form.

Operational Definitions:

Hypertensive disorder of pregnancy (HDP):

HDP includes chronic hypertension existing before the pregnancy, those which are induced by pregnancy viz., pre-eclampsia or eclampsia and gestational hypertension and those that are aggravated by pregnancy such as preeclampsia superimposed on chronic hypertension.

Chronic hypertension: When the blood pressures were recorded to be more than 140/90 mm Hg prior to the onset of pregnancy or before the 20th week of gestation. And persists beyond 12 weeks post-partum.

Pre-eclampsia: When the blood pressures was recorded to be more than 140/90 mm Hg, associated with proteinuria (>300 mg/24 hours or 300 mg/g creatinine) in previously normotensive women after 20 weeks of gestation.

Eclampsia: The occurrence of grand mal convulsions and/or coma in women with pre-eclampsia and not associated to other cerebral disorders.

Pre-eclampsia/eclampsia superimposed on chronic hypertension: This was defined as chronic hypertension accompanied by pre-eclampsia or eclampsia.

Gestational hypertension: was defined as blood

pressure > 140/90 mmhg diagnosed first time during pregnancy without proteinuria, returning to normal within 12 weeks post-partum.

Ethical issues:

All participants were given a participant information sheet (PIS) in their native language. Participants were told about the research's nature and aim, as well as the advantages and risks that might be incurred in course of the study. Confidentiality and privacy of the participants was ensured. Participants had the choice to dissent from participation without any compromise of treatment. If participants accepted to participate in the research, they signed an informed consent form.

After ethical approval from Institutional Ethical Committee (IEC) the data collection was started. Eligible 170 participants were enrolled purposively in the study. All selected patients were provided participant's information sheet in their vernacular language. Detailed history including menstrual history, obstetrics history, past history, personal history, marital history, family history of was taken. General and obstetrical examination were carried out. Transabdominal ultrasound was done. Routine laboratory investigations like CBC, serology, prothrombin time. Urine routine and microscopic examinations were carried out. Apart from that specific test for pregnancy induced hypertension like serum protein, serum uric acid, serum electrolytes, serum alkaline phosphatase, lactate dehydrogenase, APTT, INR were also done.

All these tests were done by the pathology and biochemistry department of the same hospital. According to the established departmental protocol, pregnant women were managed. For the treatment of hypertension, tab labetalol and tab nifedipine were used to maintain the diastolic blood pressure between 90 and 100 mmHg. Appropriate time and method of delivery was decided depending on based on the gestational age, severity of hypertension, favorability of cervix, prior obstetric history, etc. Details of labour whether it was spontaneous or induced, method of induction and mode of delivery were recorded. Maternal and perinatal complications were noted down. Method of induction employed was based on institutional protocol and consultants' discretion.

Statistical analysis:

Epi info CDC 7 version was used to enter and analyze data. Mean and standard deviation were used to represent continuous variables. Proportions were used for categorical variables. As this was an observational study, data was tabulated in excel format and rates, proportions and percentages were calculated.

Results

Total 4192 patients delivered during study duration among which 399 patients had pregnancy induced

hypertension which gives the incidence rate of PIH as 9.5%. Being a tertiary care hospital, referred cases from other hospitals were quite significant.

Table 1: Socio-demographic variable of study population

Variable	Number	Percentages
Age groups		
≤ 20 years	17	10
21-25 years	95	57.6
26-30 years	41	24.1
31-35 years	14	8.2
Parity		
Primipara	66	38.8
Second para	40	23.5
Multi para	64	37.7
Registration		
Registered cases	113	66.5
Emergency cases	57	33.5
Residence		
Urban	116	68.2
Rural	54	31.8
Socioeconomic status		
Lower	50	29.4
Middle	87	51.2
Upper	33	19.4
Past history of PIH		
Present	21	12.4
Absent	149	87.6
Weeks of Gestation		
21-24	15	8.8
25-30	20	11.8
31-35	75	44.1
>35	60	35.3

Table 1 depicts socio demographic variables of study population. The mean age of study participants was 24.51 years (SD 3.9 years). Majority proportion (57.6%) of the women with PIH was in 21 to 25 years of age group. The higher proportion of urban population might be due to more antenatal visits and more awareness than rural population. Socioeconomic status was calculated from modified prasad's classification. Preeclampsia and eclampsia are more commonly encountered in lower socio-economic class due to various factors such as illiteracy, lack of awareness, improper antenatal care, familial negligence, difficulty in accessibility of health care services etc. consequently increasing the incidence in unregistered or unbooked cases, however our study showed more cases in registered group (68.2%). This may indicate that the research population represents largely the patients regularly attending antenatal OPD. The sample can be considered representative of patients taking regular

ANC at our hospital. Sixty six out of 170 (38.8%) were primigravida. Which was comparable to study conducted by Gandhi MR et al. [16] 43.15% and Kolluru V et al. [17] 48.3%. However, a still higher incidence in nullipara was reported by Patel R et al. [18] 57.81%. Past history as well as family history of preeclampsia increases the probability of patient to have this disease. Recurrence risk of Preeclampsia is considered to be around 10-15%. However, most of our cases did not have similar past history. Earlier the presentation of Preeclampsia, greater the chances of complications and recurrence in subsequent pregnancies. Ninety five out of 170 i.e. 55.8% of patients in our study had PIH diagnosed between 25-35 weeks of gestation. From the spectrum of hypertensive disorders of pregnancy Preeclampsia is more prevalent than gestational hypertension. As shown in Table 2, in our study 46.5 % patients had pre-eclampsia while 38.8% had gestational hypertension.

Table 2: Categorization of Pregnancy Induced hypertension among study participants

PIH	Number	Percentages
Gestational Hypertension	66	38.8
Pre-eclampsia	79	46.5
Eclampsia	25	14.7
Total	170	100

Preeclampsia is usually a disease of signs, more than symptoms. Symptoms such as headache, blurring of vision, epigastric pain, are considered warning or pre monitory symptoms, indicating

worsening or impending eclampsia. Our study participants, presented more with complain of abdominal pain, 33% followed by edema, 17.6% and headache, and 11%. (Figure 1)

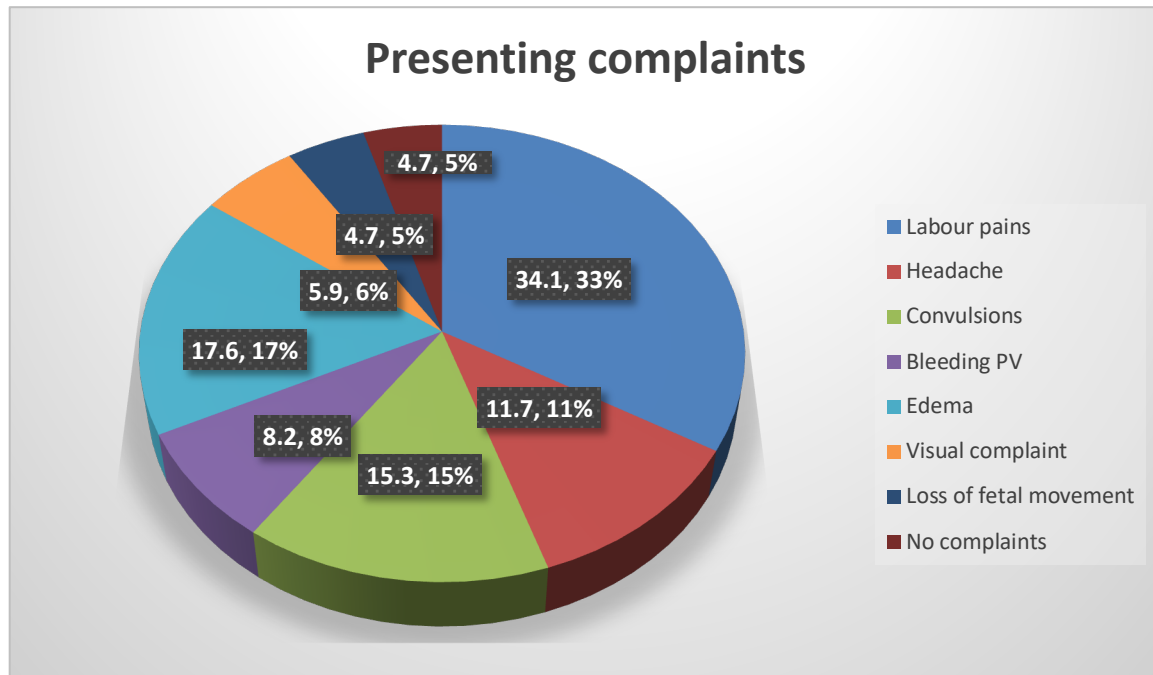


Figure 1: Presenting Complaints among study participants

Table 3. Depicts gestational age at which termination was carried out in study participants. Total 61 women had terminated before 35 weeks of gestation and out of them 57(93%) delivered baby with

birth weight less than 2.5kg. Reasons for termination were oligohydramnios with or without IUGR, failure of induction, development of severe features, eclampsia, non-reactive CTG.

Table 3: Gestational age at the time of termination of pregnancy among study participants

Weeks of Gestation	No. of Patients	Percentage
25-30	13	7.6
31-35	48	28.2
>35	109	64.1

Doppler ultrasound remains one of the most important tools for fetal wellbeing assessment and in deciding timing of intervention, especially in growth restricted fetuses. In our study, 70% of the women had normal USG Doppler while 30% had abnormal findings in which majority had elevated umbilical artery PI and CP ratio (cerebroplacental ratio) < 1. These findings are suggestive of abnormal placental perfusion and brain sparing effect in fetus. Some cases had absented or reversal of UA (umbilical artery) diastolic flow.

Anti-hypertensive drugs either as mono therapy or

in combination are employed for hypertensive disorders. Labetalol being the first drug of choice followed by calcium channel blockers. In our study 53.5% received labetalol as monotherapy, while 46.5% received combination therapy. Those were the patients with severe features. Table 4. Presents maternal outcome and complications. Ninety one out of 170 (53.5%) had labor induced with prostaglandin derivatives. Seventy eight out of 170 underwent LSCS while 54% delivered vaginally. Abruptio placenta, DIC, HELLP syndrome, pulmonary edema are some dreadful complications of pre-eclampsia.

In our study participants, the incidence of these were 4.7 %, 3.52%, 2.35% 2.35% respectively. This shows better and effective anti-hypertensive therapy instituted and regular monitoring in ANC visits. As shown in the table, maternal mortality was seen among 0.6% of the women with PIH. In this study period, total 4 maternal mortality were there. Out of

which one patient expired due to PIH. The case was unregistered, without any ANC visits or treatment anywhere, presented in emergency. After appropriate obstetric intervention, patient succumbed to pulmonary embolism on 1st post-operative day in ICU.

Table 4: Maternal Outcome and complications among study participants

Outcome	Number	Percentages
Mode of delivery		
Vaginal delivery	92	54.1
Caesarean section	78	45.9
MgSO4 therapy		
Required	36	21.2
Not required	134	78.8
Complications		
Eclampsia	25	14.70
Abruptio Placenta	8	4.70
PPH	4	2.35
Pulmonary Edema	04	2.35
Disseminated intravascular coagulation	06	3.52
HELLP syndrome	04	2.35
Mortality	01	0.6

Table 5 lists fetal outcome and perinatal complications of our study. The mean birth weight of the newborn was 2.36 kg (SD 0.45 kg). Proportion of LBW was 52.4% which includes both premature and IUGR babies.

Perinatal mortality and morbidities in hypertensive disorders of pregnancy are mainly due to premature delivery and growth restriction. According to a multi-country survey of WHO there is about 3- and

5-fold increased risk of perinatal death in women with preeclampsia and eclampsia, respectively, as compared to women with no preeclampsia/eclampsia [19]. Birth asphyxia (30/170) and septicemia (19/170) were most commonly encountered neonatal complication in our study.

HIE and RDS were seen in 4.7% and 5.9%, respectively. Meningitis was observed in 4.1%, while NNHB was seen in 5.95% of the babies.

Table 5: Fetal outcome and perinatal complications among study participants

Outcome	Number	Percentages
Birthweight		
Low birth weight (<2.5 kg)	89	52.4
Normal birth weight (\geq 2.5 kg)	81	47.6
NICU admission		
Required	89	52.4
Not required	81	47.6
Perinatal complications		
Birth asphyxia	30	17.6
Hypoxic ischemic Encephalopathy	08	4.7
Meningitis	07	4.1
NNHB	10	5.9
Respiratory distress syndrome	10	5.9
Still birth	12	7.1
Septicemia	19	11.2
Neonatal death	03	1.8

Discussion

Despite advances in medical practice, pre-eclampsia/eclampsia has remained a leading cause of maternal mortality throughout the world. The

incidence rate of PIH in the present study was 9.5% and out of 170 cases of PIH, 46.5% were of pre-eclampsia and 38.8% were gestational hypertension. Incidence of eclampsia in the present study was 14.7%. The incidence of PIH was 7.28% in the

research by Gavali S et al.,[20] with the proportions of gestational hypertension, non-severe pre-eclampsia, severe pre-eclampsia, and eclampsia being 42.13%, 30.56%, 19.44%, and 7.87%, respectively.

In research conducted by Gandhi MR et al. [16] on 738 patients the incidence of PIH was 12.8% (95/738), including pre-eclampsia in 11.4% of cases and eclampsia in 1.4% of cases. Out of 95 patients, 23 (24.2%) had severe PIH. Mengistu MD et al. [21] observed a higher frequency of PIH, with hypertensive disorders of pregnancy occurring in 25.4% of cases, with severe pre-eclampsia accounting for 52.5% of those cases and eclampsia accounting for 2.6%. According to FOGSI, [22] Hypertensive disorders are common complications of pregnancy, affecting 5% to 10% of all gestations and; approximately 1/3 of hypertensive disorders in pregnancy (HDP) are due to chronic hypertension and 2/3 are due to gestational hypertension–pre-eclampsia. Majority proportion (57.6%) of the cases with PIH were in the age group of 21 to 25 years in our study, followed by 26-30 yrs age group (24%) which was comparable with the study conducted by Gandhi MR et al. [16] 48.42% in 21–25 and 14.73%, 26–30 years. However, Bangal et al. [23] found higher incidence in patients less than 20 yrs of age (52.63%) followed by 21–25 years (31.59%). In the present study, 66.5% of cases were registered, and higher incidence was seen in urban sector patient belonging to middle class, similar to study conducted by Parmar MR et al.,[24] (67%), but contrary to most other studies and to commonly believed and observed scenario. The explanation could be the class of patients attending antenatal OPD and early pick up of such cases by effective screening at our center. Studies conducted by Gandhi MR et al. [16] (72.6%), Kolluru V et al. [17] (54.9%) showed that un booked or unregistered cases are more prone to get PIH and its complications due to poor antenatal care and lack of blood pressure screening. Primigravida are more commonly affected by pre-eclampsia as seen in many studies. Multiple variables, such as adolescent pregnancy, early marriage, illiteracy, social ignorance and lack of family planning methods adaption, contribute to the increased prevalence of PIH in primi gravida.

Pré eclampsia and eclampsia contribute significantly to the burden of prematurity and low birth weight babies with their attendant complications. In our study, 44.1% of the women had PIH diagnosed between 31 to 35 weeks and 35.8% (61/170) had to be terminated before 35 weeks. Of these patients, 97% (57/61) had baby birth weight less than 2.5

kgs. In the study by Gavali S et al.,[20] 41.2% of the women were diagnosed between 33 to 35 weeks, while 31.94% at more than or equal to 37 weeks, 8.33% of the women had gestational weeks less than or equal to 28 weeks which was around 20.6% in our study (21-23 weeks). In accordance, low birth weight was reported in 52.4% of babies in our study. Gandhi MR et al.[16] observed that 67.3% of the babies had low birth weight in his study, while Gavali et al. reported 27.31% low birth weight babies, which is lower than the present study. In the study by Parmar MR et al.,[24] low birth weight incidence was observed in 53% of cases. The rate of stillbirth and neonatal death was 7.1% and 1.8%, respectively, among study participants which was less as compared to the study by Bengal VB et al.,[23] 17.0% IUFD, 5.0% neonatal death. Perinatal mortality observed in the study on PIH done by Parmar MR et al., Kolluru V et al.,[17] and Gandhi MR et al. [16] was 15.2%, 23.1% and 23% respectively. NICU admission mostly due to low birth weight or other indications such as asphyxia, MSAF, RDS, etc. is common in PIH deliveries whatever the mode of delivery. In the present study, 52.4% of the newborns born to women with PIH required NICU admission. The corresponding figures in study done by Patel R et al. [18], Kolluru V et al. [17] Gandhi MR et al. [16] and Gavali S et al.,[20] were 18.75% 42.3% 29.4% and 20.83% respectively. The difference in figures may be due to the difference in availability of neonatal facilities and institutional protocols of NICU. In this research, the most common perinatal complication was birth asphyxia (17.6%), followed by septicemia (11.2%) among neonates. In the study done by Parmar MR et al., [24] 60.9% of the babies had IUGR, while the proportion of birth asphyxia and RDS was 8.7% and 4.3%, respectively. In the Gavali S et al.,[20] study, 9.72% of neonates had respiratory distress syndrome and 6.02% had Meconium aspiration.

Among the maternal complications known to preeclampsia, abruptio placenta, Post-partum hemorrhage, pulmonary edema, DIC and HELLP syndrome were seen in 4.7%, 2.35%, 2.35%, 3.52% and 2.35% patients in our study which was comparable to most of the studies. Table 6. Shows the comparison of maternal complications between our and few other studies. Higher incidence of PPH, DIC and HELLP was seen in study conducted by Meshram DP et al. [25] Eclampsia was seen in 14.7% of the study participants. Magnesium sulphate therapy being the specific treatment for eclampsia, also advantageous for neuroprotection, is also indicated sometimes in severe preeclampsia and in impending eclampsia.

Table 6: Comparison of maternal complications

Study/ Maternal complications	Present study	Gandhi MR et al	Kolluru V et al	Meshram DP et al
Abruptio Placenta	4.7%	5.26%	0.48%	2%

PPH	2.35%	5.26%	1.28%	8%
DIC	3.52%	2.1%	2%	3%
HELLP	2.35%	5.26%	3.4%	10%

Decision for termination of pregnancy in PIH cases is influenced by severity of disease, gestational age and fetal wellbeing. Mode of delivery is affected by cervical status. In this research, 54.1% of the women had normal vaginal deliveries, whereas 45.9% underwent cesarean sections. According to Kolluru V et al.,[17] 50% of the women required a caesarean section, while the other 50% had a vaginal birth. The LSCS rates in studies conducted by Bangal V et al. [23] and Parmar MR et al.,[24] was 35% and 37%, respectively. Induction of labor is more commonly employed method for termination of pregnancy except in cases having contraindication for vaginal delivery wherein direct cesarean section is performed. Prostaglandin analogues are commonly used for induction in various regimens according to institutional and departmental protocols. Prevention and prediction of hypertensive disorders still is not absolutely possible and as the cause of PE/E remains hugely poorly understood, screening and closer monitoring of women with risk factors may help in early detection and treatment. This is even much more important at the primary health care centres, general hospitals and private hospitals where majority of these women register and receive ANC.

Conclusion

Pre-eclampsia and Eclampsia still remain a big concern in pregnancy. Our study showed comparable results with many studies except an unexpected higher incidence in registered cases. Feto- maternal outcomes are susceptible to deterioration in the presence of PIH. It is important to expand and strengthen the focused antenatal surveillance to early pick up of the pregnant women with hypertensive disorders of pregnancy and providing them appropriate care and/or refer to the hospital with better care facilities. Specific goal-oriented training for lower and middle level health professionals at the health centers and in the Hospitals and updating them regularly can further increase their capacity for early detection of high-risk pregnancies, and timely referral to advanced tertiary health facilities. Recruiting only singleton pregnancy could be one limiting factor of the study as multiple pregnancy itself is high risk factor for preeclampsia.

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