

## Maternal and Fetal Outcomes in Hypertensive Disorders Of Pregnancy in a Tertiary Care Hospital- A Prospective Study

Sowmya.S<sup>1</sup>, Sukanya Seshasai<sup>2</sup>

<sup>1</sup>Post Graduate, <sup>2</sup>Associate professor

Department of OBG, Sri Venkateswara Medical College, Tirupati, Andhra Pradesh

Corresponding Author: Sowmya.S

---

### Abstract

**INTRODUCTION:** Hypertensive disorders complicate 5-10% of all pregnancies, often associated with maternal and fetal mortality and morbidity. This study is aimed at knowing the effect of hypertensive disorders of pregnancy on maternal and fetal outcome.

**METHODS:** Prospective observational study conducted at Government Maternity hospital Tirupati, from November 2017 to October 2018 among 302 subjects.

**RESULTS:** Incidence of hypertensive disorders in this institute was 8.91%. Out of 302 subjects with hypertensive disorders of pregnancy, 83(27.4%) had preterm delivery, 128(42.38%) low birth weight babies, 47(15.56%) babies with low APGAR, 75( 24.83%) were IUGR babies. There were 14(4.63%) neonatal deaths and 62(20.5%) NICU admissions. 12(3.97%) subjects had placental abruption, 4(1.32%) had HELLP syndrome, 1(0.33%) had Postpartum hemorrhage and 2(0.66%) had acute renal failure. There were no cases of pulmonary edema and no maternal deaths.

**CONCLUSION:** Early identification of hypertensive disorders of pregnancy, prompt and timely intervention, and fetal surveillance are needed to reduce adverse maternal and fetal outcomes.

---

Date of Submission: 25-02-2019

Date of acceptance: 11-03-2019

---

### I. Introduction

Hypertensive disorders complicate 5-10% of all pregnancies. Along with hemorrhage and infection, it forms a deadly triad- that contributes mainly to maternal morbidity and mortality [1]. Gestational Hypertension (PIH) is the occurrence of hypertension (2 readings of BP with a spacing of 4hrs >140/90mm of Hg) after 20 weeks of gestational age without proteinuria. When there is significant proteinuria it is termed preeclampsia; seizures or coma as a consequence of preeclampsia is termed as Eclampsia [2, 3]. Some potentially serious conditions such as disseminated intravascular coagulation, cerebral hemorrhage, pulmonary edema, hepatic insufficiency and acute renal failure are often associated with Hypertensive disorders of pregnancy, worsening the maternal prognosis. As a consequence of preeclampsia, spasm of the uteroplacental circulation occurs which leads to fetal distress, accidental haemorrhage, IUGR, IUD, low birth weight, low APGAR score, NICU admissions and early neonatal death.

### II. Aim

This study aims at analyzing the maternal and perinatal mortality and morbidity in hypertensive disorders of pregnancy in a tertiary care hospital.

### III. Objectives

1. To analyze the incidence of hypertensive disorders of pregnancy in Government maternity hospital, Tirupati.
2. To analyze maternal and neonatal mortality and morbidity attributed to hypertensive disorders of pregnancy in this institute.

### IV. Materials And Methods

#### Study Method

Study Design : Prospective Observational study  
Study Subjects : All diagnosed cases of hypertensive disorders of pregnancy admitted at Government Maternity Hospital, Tirupati  
Sample Size : 302

Study Setting : Department of Obstetrics and Gynaecology, Government Maternity Hospital, S.V. Medical College, Tirupati.

Study Period : From 1<sup>st</sup> November 2017 to 31<sup>st</sup> October 2018.

**INCLUSION CRITERIA:**

1. All women in whom hypertension was detected after 20 weeks of pregnancy who are admitted in hospital. Subjects who fulfil the diagnostic criteria of Hypertensive disorders of pregnancy
2. With or without eclampsia
3. Singleton pregnancies

**EXCLUSION CRITERIA:**

1. Patient having preexisting hypertension, cardiovascular disease, collagen vascular disease, before pregnancy.
2. Medical disorders complicating pregnancy, anemia.
3. Multiple gestation.
4. Patients who are not willing to give consent.

**V. Methodology**

302 women with hypertensive disorders of pregnancy were followed and the perinatal and neonatal outcome were recorded. Data was subsequently recorded in Microsoft Excel and results were calculated using Epi Info 7 software.

**VI. Results**

Out of 11242 women admitted in obstetric ward during the study period, 1002 had hypertensive disorder of pregnancy. On the basis of this data, the incidence of hypertensive disorders of pregnancy at study place is 8.91%. The study was conducted among 302 members fulfilling inclusion criteria.

**TABLE 1: DISTRIBUTION OF STUDY SUBJECTS BASED ON SEVERITY OF HYPERTENSIVE DISORDERS OF PREGNANCY**

SEVERITY	NUMBER	PERCENTAGE
Gestational Hypertension	30	9.93%
Mild preeclampsia	106	35.10%
Severe preeclampsia	73	24.17%
Imminent eclampsia	64	21.19%
Eclampsia	29	9.60%

Most of the subjects fall into mild preeclampsia category (35.10%)

**TABLE 2: SEVERITY OF PROTEINURIA IN SUBJECTS WITH HYPERTENSIVE DISORDERS OF PREGNANCY:**

Proteinuria	Total	Percentage
Nil	30	9.9%
Traces	31	10.26%
1+	65	21.52%
2+	113	37.41%
3+	53	17.5%
4+	10	9.9%

Majority of subjects had 2+ proteinuria

**TABLE 3: AGE DISTRIBUTION:**

AGE( in years)	TOTAL CASES WITH PIH	PERCENTAGE (%)
<20	77	25.49%
21-30	206	68.21%
>30	19	6.29%
TOTAL	302	100%

Majority of women 206(68.21%) were in the age group of 21-30years.

**TABLE 4: PARITY DISTRIBUTION:**

GRAVIDA	Total cases (n=302)	Percentage (%)
PRIMIGRAVIDA	180	59.6%
MULTIGRAVIDA	122	40.39%

180(59.6%) women were primigravidae, and 122(40.39%) women were multigravidae.

**FETAL OUTCOME**

**TABLE 5: FREQUENCY OF FETAL COMPLICATIONS IN WOMEN WITH HYPERTENSIVE DISORDERS OF PREGNANCY.**

Fetal outcome	Number	%
Gestational age < 37 weeks	83	27.48%
Birth weight less than 2.5 Kg	128	42.38%
1 min APGAR <5	47	15.56%
IUGR	75	24.83%
Neonatal deaths	14	4.63%
NICU admissions	62	20.5%

In the present study, out of 302 subjects with hypertensive disorders of pregnancy, 83(27.4%) had preterm delivery, 128(42.38%) low birth weight babies, 47(15.56%) babies were born with low APGAR, 75(24.83%) were IUGR babies. There were 14(4.63%) neonatal deaths and 62(20.5%) NICU admissions.

**TABLE 6: MODE OF TERMINATION OF PREGNANCY IN WOMEN WITH HYPERTENSIVE DISORDERS OF PREGNANCY:**

Mode of termination	Number	%
Spontaneous	79	26.16%
Induced	140	46.5%
LSCS	83	27.4%

Out of 302 , 79(26.16%) had spontaneous onset of labour. In 140(46.5%) labour was induced and 83(27.4%) underwent caesarean section.

**TABLE 7: FREQUENCY OF MATERNAL COMPLICATIONS IN WOMEN WITH HYPERTENSIVE DISORDERS OF PREGNANCY:**

Maternal complication	Number	%
Abruption	12	3.97%
HELLP	4	1.32%
Maternal death	0	0%
Pulmonary oedema	0	0%
PPH	1	0.33%
Renal	2	0.66%

In the present study, 12(3.97%) subjects had placental abruption, 4(1.32%) had HELLP syndrome, 1(0.33%) had Postpartum hemorrhage and 2(0.66%) had acute renal failure. There were no cases of pulmonary edema and no maternal deaths.

**VII. Discussion**

Incidence of hypertensive disorders of pregnancy at the study place is 1002 (2017). This prospective observational study was carried out in 302 patients with hypertensive disorders of pregnancy

**TABLE 8: COMPARISION OF FETAL OUTCOMES WITH OTHER STUDIES IN HYPERTENSIVE DISORERS OF PREGNANCY**

Fetal outcome	Present study(%)	Bramham study	Okanlawon study	Chappell et al study	Pairu J et al study	Saxena N et al study
Gestational age < 37 weeks	27.48%	59.82%	42.28%	51%	-	-
Birth weight less than 2.5 Kg	42.38%	54%	40.26%	44%	-	-
1 min APGAR <5	15.56%	-	33.55%	-	34.97%	-
IUD	10.59%	-	14.09%	3%	-	14%
Neonatal deaths	4.63%	-	-	1%	-	10%
Perinatal deaths	15%	5%	21.5%	3.8%	24.37%	30%
NICU admissions	20.5%	42%	-	35%	-	-

In the present study, preterm deliveries were 27.48%, which is lower when compared to studies done by Bramham[4](59.82%), Okanlawon[5](42.28%) and Chappell[6](51%).

The present study showed that 42.38% women gave birth to low birth weight babies which was comparable to that in studies conducted by Okanlawon[5](40.26%) Chappell[6](44%). and Bramham[4](54%).

The present study showed that 15.56% women with hypertensive disorders of pregnancy had the babies with 1 min APGAR less than 5 which was less when compared to other studies done by Okanlawon[5](33.55%) and Pairu J et al[7](34.97%)

The present study showed 10.59% IUDS in women having hypertensive disorders of pregnancy, which is comparable with studies done by Okanlawon[5](14.09%) and Saxena N et al.[8](14%) and far higher when compared with study done by Chappell et al[6](3%)

The present study showed 4.63% neonatal deaths of babies born to mothers with hypertensive disorders of pregnancy when compared with studies by Chappell et al[6] (1%) and Saxena N et al[8](10%)

The present study showed 15% perinatal deaths which is higher when compared to studies done by Bramham[4](5%) and Chappell et al[6](3.8%) and is comparable with studies done by Okanlawon[5](21.5%), Pairu J et al[7](24.37%) and Saxena N et al[8](30%)

20.5% babies born to mothers with hypertensive disorders of pregnancy needed NICU admission which is less when compared to studies done by Bramham[4](42%) and Chappell et al[6](35%).

**TABLE 9: COMPARISON OF MATERNAL OUTCOMES WITH VARIOUS STUDIES IN WOMEN WITH HYPERTENSIVE DISORDERS OF PREGNANCY**

Maternal complication	Present study (%)	Abalos et al study	Pannu D et al. study	Adinma study	Saxena N et al. Study	Pairu J et al. study
Abruption	3.97%	-	4.8%	-	6.6%	1.3%
HELLP	1.32%	35.56%	13.2%	2.2%	4%	1.3%
Pulmonary edema	0	27.57%	14.5%	13%	3.3%	0.45%
Renal	0.66%	17.52%	12%	8.2%	8%	0
Maternal death	0	0.007%	8.4%	17.4%	2.6%	-

In the present study placental abruption was seen in 3.97% subjects which is comparable to that of studies done Pannu D et al[9](4.8%), Saxena N et al[8](6.6%) and Pairu J et al[7](1.3%)

In the present study 1.32% women with hypertensive disorders of pregnancy developed HELLP syndrome comparable to that of study done Pairu J et al[7](1.3%), Adinma[10](2.2%), Saxena N et al[8](4%) and far less when compared to study done by Abalos et al[11](35.56%)

In the present study none of the subjects developed pulmonary edema whereas pulmonary edema was observed in studies done by Abalos et al[11](27.57%), Pannu D et al[9](14.5%), Adinma[10](13%), Saxena N et al[8](3.3%) and Pairu J et al[7](0.45%)

In the present study 0.66% subjects had acute renal failure which is far less when compared with studies done by Abalos et al[11](17.52%), Pannu D et al[9](12%), Adinma[10](8.2%) and Saxena N et al[8](8%).

In the present study there were no maternal mortalities in women with hypertensive disorders of pregnancy whereas other studies Abalos et al[11](0.007%), Pannu D et al[9](8.4%), Adinma[10](17.4%) and Saxena N et al[8](2.6%) showed maternal deaths.

### VIII. Conclusion

Though Hypertensive disorders affected lesser percentage of women admitted, their impact on maternal and fetal health was grave. Hypertensive disorders threaten maternal health and fetal viability. Prematurity, growth restriction and fetal death should be anticipated and strict fetal surveillance to be done and measures should be taken to prevent complications. Pediatrician and neonatal care unit aid should be promptly available to attend sick newborns. Maternal complications can be avoided by strict vitals monitoring, antihypertensive usage and giving MgSO<sub>4</sub> wherever necessary. Blood and blood components should be available. Intensive care facilities help in treating the women with complications. By taking the necessary measures promptly and timely, large burden of maternal and neonatal mortality and morbidity due to hypertensive disorders of pregnancy can be prevented.

### References

- [1]. Jain, L. (1997). Effects of pregnancy-induced and chronic hypertension on pregnancy outcome. *J Perinatol*, 17(6):425-427.
- [2]. Wuerzner, G., Bochud, M., Jaunin Stalder, N. and Pechere-Bertschi, A. (2010). Hypertension: is the actual definition adapted to women? *Rev Med Suisse*, 6(257):1448-1451.

- [3]. Brown, M.A., Lindheimer, M.D., de Swiet, M., Van Assche, A. and Moutquine, J.M.(2001). The classification and diagnosis of hypertensive disorders of pregnancy.*Hypertens Preg*, 20:9-14.
- [4]. Bramham K, Briley AL, Seed P, et al. Adverse maternal and perinatal outcomes in women with previous preeclampsia: a prospective study.*Am J Obstet Gynecol* 2011;204:512.e1-9.
- [5]. Abalos E, Cuesta C, Carroli G, Qureshi Z, Widmer M, Vogel JP, Souza JP, on behalf of the WHO Multicountry Survey on Maternal and Newborn Health Research Network. Pre-eclampsia, eclampsia and adverse maternal and perinatal outcomes: a secondary analysis of the World Health Organization Multicountry Survey on Maternal and Newborn Health. *BJOG* 2014; 121(Suppl. 1): 14–24.
- [6]. Chappell LC, Enye S, Seed P, Briley AL, Poston L, Shennan AH. Adverse perinatal outcomes and risk factors for preeclampsia in women with chronic hypertension: a prospective study. *Hypertension* 2008;51:1002-9
- [7]. Pairu J, Bharathi KN, George K. Maternal and perinatal outcome in pregnancy induced hypertension and preeclampsia. *Int J Reprod Contracept Obstet Gynecol* 2016;5:2166-70.
- [8]. Saxena N, Bava AM, Nandanwar Y. Maternal and perinatal outcome in severe preeclampsia and eclampsia. *Int J Reprod Contracept Obstet Gynecol* 2016;5: 2171-6.
- [9]. Pannu D, Das B, Hazari P, Shilpa. Maternal and perinatal outcome in eclampsia and factors affecting the outcome: a study in North Indian population. *Int J Reprod Contracept Obstet Gynecol* 2014;3:347-51.
- [10]. Echendu Dolly Adinma, Maternal and perinatal outcome of eclampsia in tertiary health institution in Southeast Nigeria. *The Journal of Maternal-fetal and Neonatal Medicine*, 2013; 26(2):211-214.
- [11]. Abalos E, Cuesta C, Carroli G, Qureshi Z, Widmer M, Vogel JP, Souza JP, on behalf of the WHO Multicountry Survey on Maternal and Newborn Health Research Network. Pre-eclampsia, eclampsia and adverse maternal and perinatal outcomes: a secondary analysis of the World Health Organization Multicountry Survey on Maternal and Newborn Health. *BJOG* 2014; 121(Suppl. 1): 14–24.

Sowmya.S. "Maternal and Fetal Outcomes in Hypertensive Disorders Of Pregnancy in a Tertiary Care Hospital- A Prospective Study." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 3, 2019, pp 25-29.