

# Study of factors affecting pregnancy induced hypertension among women seeking maternity services in PDU Medical college, Rajkot

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## Abstract

**Background:** Hypertensive disorders of pregnancy and their complications are one of the most common cause of maternal morbidity in world. In India the incidence of hypertension is reported to be 8-10% of the pregnancies. The World Health Organization estimates that at least one woman dies every seven minutes from complications of hypertensive disorders of pregnancy. The objective of this study is to assess pregnancy induced hypertension and its associated factors among women attending delivery service at Zanana Hospital, P.D.U. Medical College, Rajkot. **Materials and Methods:** Prospective study of 70 cases of hypertension in pregnancy during the period from July 2015 to July 2017. **Aims of study:** To study the incidence of hypertension, its complication in pregnancy, factors affecting pregnancy induced hypertension and see how early management can decrease maternal morbidity and mortality. **Results** – Regular ANC visits and follow up in patients of pregnancy with hypertension will reduce the morbidity and mortality in nearly 70-75%.

**Key Word:** Pregnancy, Hypertension, Pregnancy Induced Hypertension (PIH), associated factors.

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## INTRODUCTION

Hypertensive disorders of pregnancy and their complications ranks as one of the major cause of maternal morbidity in the world. It occurs in the women with pre-existing primary or secondary chronic Hypertension. Hypertension in pregnancy is a systolic blood pressure  $\geq 140$  mmHg or diastolic blood pressure  $\geq 90$  mmHg or both. Both systolic and diastolic blood pressure raises are

important in the identification of Pregnancy induced hypertension. Pregnancy induced hypertension (PIH) is hypertension that occurs after 20 weeks of gestation in women with previously normal blood pressure. The broad classification of pregnancy-induced hypertension during pregnancy is gestational hypertension, pre-eclampsia and eclampsia. Severe preeclampsia in pregnancy is a systolic blood pressure  $\geq 160$  mmHg or diastolic blood pressure  $\geq 110$  mmHg or both. Eclampsia is a severe type of pregnancy induced hypertension, and it happens in about one in 1,600 pregnancies and develops near the end of pregnancy. The three primary characteristics of pregnancy induced hypertension conditions are high blood pressure, protein in the urine and pathologic edema. Pregnancy induced hypertension is a major contributors to maternal and perinatal morbidity and mortality. In the United States, about 15% of maternal deaths are attributable to hypertension, making it the second leading cause of maternal mortality. Severe hypertension increases the mother's risk of cardiac failure, heart attack,

renal failure and cerebral vascular accidents. In addition, the fetus is at increased risk from complications like poor placental transfer of oxygen, growth restriction, preterm birth, placental abruption, stillbirth and neonatal death. Hypertensive disorders represent the most common medical complications of pregnancy with a reported incidence of 5–10%. Globally, preeclampsia is a leading cause of maternal and neonatal mortality and morbidity, predominantly in developing countries. The disorder is usually diagnosed in late pregnancy by the presence of high blood pressure with proteinuria and/or edema. Prevention of any disease process needs awareness of its prevalence, etiology and pathogenesis. The World Health Organization estimates that at least one woman dies every seven minutes from complications of pregnancy induced hypertension disorders. Pregnancy complicated with hypertensive disorder is related with increased risk of adverse fetal, neonatal and maternal outcome. Null parity, multiple pregnancies, history of chronic hypertension, gestational diabetes, fetal malformation, obesity, extreme maternal age (less than 20 or over 40 years), history of PIH in previous pregnancies and chronic diseases like renal disease, diabetes mellitus, cardiac disease, unrecognized chronic hypertension, positive family history of PIH which shows genetic susceptibility, psychological stress, alcohol use, rheumatic arthritis, extreme underweight and overweight, asthma and low level of socioeconomic status are the risk factors for PIH. According to a study in South Africa, the incidence of hypertensive disorders of pregnancy was 12%, and it was the commonest cause of maternal death which contributed 20.7% of maternal deaths. The Federal Ministry of Health has applied multi-pronged approaches to reducing maternal and newborn morbidity and mortality by improving access to and strengthening facility-based maternal and newborn services but the maternal morbidity and mortality due to pregnancy induced hypertension was in an increasing trend. Despite the fact that pregnancy induced hypertension is a leading causes of maternal morbidity and mortality during pregnancy, little is known about the current magnitude of PIH, its associated factors among women attending delivery service in India and specifically in study areas. Therefore, the objective of this study was to assess pregnancy induced hypertension and its associated factors among women attending delivery service at zanana hospital, civil hospital and p.d.u. medical college, Rajkot, Gujarat.

## MATERIALS AND METHODS

- The present study was conducted in indoor patients at Zanana Hospital at P.D.U. Medical college, Rajkot.

- Study carried out in pregnant patient with hypertension.
- All the patients presented with hypertension in pregnancy/Eclampsia were included in this study.
- Hypertension controlled by antihypertensive drugs like Nifedipine(10mg),Methyldopa(250mg) and Labetalol (100mg)and convulsion by Mgso4, Heart failure by diuretics monthly.
- Follow up was done in all patients with Hypertension in pregnancy.
- A detailed history with clinical symptoms and signs, vitals, laboratory investigation and diagnosis were recorded in performa. USG findings of increased cortical echogenecity was considered significant.
- In some patients serum electrolytes were done in this study.
- All the patients are examined in detail including clinical medical history and detail cardiovascular and medical examination and they are subjected to necessary investigations available in government set up.

### Inclusion Criteria

1. All the patient who come to outdoor antenatal clinics and indoor patients of civil and Zanana hospital, and pregnant patient visiting to medical OPD are included in this study
2. The pregnant patient > 20 weeks and BP >140mmHg, minimum for 2 frequent time or visit.
3. Patient with past history of gestational hypertension, pre-eclampsia and eclampsia.
4. Pregnant patient who are already on antihypertensive.
5. Patient with hypertension and pre-existing medical illness.

### Exclusion Criteria

1. Gestational age <20weeks
2. Pregnancy at the age >42 years

## OBSERVATION AND RESULTS

Table 1: Age Distribution In Hypertension In Pregnancy

Sr. no	Age group	No of cases
1	<20	3 (5%)
2	20-25	40(57%)
3	26-30	15(21%)
4	>30	12(17%)
TOTAL		70

Table shows the age distribution in pregnant females patients.

- 40(57%) of patients are between the age group of 20-25 years.
- 15(21%) patients are between 26-30 years.
- So, 55(78%) of patients are between 20-30 years.
- It shows that more than 3/4<sup>th</sup> of the young pregnant hypertensive females are between 20 and 30 years.
- Whereas, 12(17%) patients are above 30 years.
- This indicates the incidence of hypertension remarkably decrease above the age of 30 years.
- Late Pregnancy above 30 years, do not usually are having much risk of developing hypertension.

**Table 2: Socioeconomic class in relation to HTN in pregnancy**

Socioeconomic class	No of cases
L-Lower	46(65%)
M-Middle	20(28%)
U-Upper	4(7%)
Total	70

Table shows the Socioeconomic class of patients of hypertension in pregnancy. The Socioeconomic classification is decided according to educational, status, income and percapita Space. 46(65%) of patients are of lower Socioeconomic group. 20(28%) of patients are of middle Socioeconomic class. Whereas 4(7%) of patients are belonging to upper SC group. This shows that the incidence of hypertension in pregnancy is highest in lower socioeconomic group to the extent of 46(65%) followed by 20 (28%) from middle Socioeconomic group. This shows that incidence of hypertension in pregnancy in lower SE group is double than that of middle SE group. Only 4(7%) of upper SE group had hypertension during pregnancy. This shows that the incidence of hypertension in pregnancy in upper SE group is very less 4(7%) that is < 10% of patients. This is because of increased awareness and better antenatal care taken during pregnancy.

**Table 3: Residence Of the Patient**

Sr. no	Residence	No of cases
1	R-Rural	50 (71%)
2	U-Urban	20(29%)
Total		70

Table shows the area or residential locality of the patient. 50(71%) of the patient are from the rural areas and 20(29%) patients are coming from urban areas. This indicates that occurrence of hypertension during pregnancy is approx. 70% in rural areas which is very less in urban area. This may be due to better health facilities available at urban region.

**Table 4: Literacy In Relation To Htn In Pregnancy**

Sr no	Literacy	No of cases
1	L-Literate	28(40%)
2	I-Illiterate	42(60%)
Total		70

Table-04 shows the literacy status of pregnant patient, 42(60%) patient were illiterate and 28(40%) patients were literate. This shows that illiteracy in female is a major cause of complications occurring because of hypertension during pregnancy. This reflects high maternal mortality or development of post-partum complications.

**Table 5: Parity In Relation To Hypertension In Pregnancy**

Sr no	Parity	No of cases
1	PRIMI	37(52%)
2	SECOND	17(24%)
3	MULTI	16(24%)
TOTAL		70

Table -05 shows the parity in relation to development of hypertension in pregnancy. 37(52%) young hypertensive pregnant patient were primipara and 17(24%) patients were second para and multipara who develop hypertension. Above finding concludes that development of hypertension is almost double in primipara than multipara (or second para). So judicious screening for hypertension is required to prevent maternal complication during pregnancy. The incidence of hypertension decreases as the parity increases.

**Table 6: Gestational Age In Relation To Hypertension In Pregnancy**

Sr no	Gestational age (in weeks)	No of cases
1	PRE-TERM(<37WKS)	20(30%)
2	TERM(37-42WKS)	48(69%)
3	POST-TERM(>42WKS)	02(1%)
TOTAL		70

Table 06-shows that the incidence of hypertension in term pregnancy are 48(69%) of the young hypertensive pregnant patients. That is almost double than the incidence in pre term and post term pregnancy, which is only 22(31%) of the young hypertensive patients.

**Figure 7: Antenatal Visits In Relation To Hypertension In Pregnancy.**

Sr no	No of anc visit	No of cases
1	<3 VISIT	53(76%)
2	>3 VISIT	17(24%)
TOTAL		70

Table -07 shows the development of occurrence of hypertension in relation to visits to antenatal clinic. If patient is irregular in ANC visit of less than 3,53(76%) develops hypertension during any stage of their pregnancy and if patient is regularly visiting to ANC 17(24%) patients had developed hypertension. This shows that the development of hypertension almost approximately 2.5-3 times higher in pregnant patients those who are not regularly visiting to ANC. This also shows that regular visit to ANC, will held early screening of hypertension and maternal mortality in young pregnant hypertensive patients.

**Figure 8: Presenting Complain In Cases Of Hypertension In Pregnancy**

Sr no	Presenting complain	No of cases
1	HEADACHE	44(31%)
2	SWELLING OF FEET	28(20%)
3	GIDDINESS	21(15%)
4	EPIGASTRIC PAIN	18(12%)
5	VOMITTING	16(12%)
6	BRETHLESSNESS	05(4%)
7	DECREASED URINE OUTPUT	05(4%)
8	BLURRING OF VISION	04(2%)
9	CONVULSION	01
10	BLEEDING	01

Table -08 shows the clinical presentation of the patient of hypertension in pregnancy. 44(31%) patients complain of headache 28(20%) patients complain of swelling of feet Whereas giddiness occurs in 21(15%) of the patients The most common presentation is headache and swelling of feet in pregnant hypertensive patients.

**Table 9: Severity Of Hypertension**

Sr no	Severity of htn	No of cases
1	SBP-140-159mmHg DBP-90-109mmHg	43(62%)
2	SBP->160mmHg DBP->110mmHg	27(38%)
TOTAL		70

Table 09-shows mild hypertension (SBP-140 to 159mmhg) and (DBP 90 to 109 mmhg). It occurs in 43(62%) of the patients,it is more common and almost 1.5 times more common than severe hypertension.

**Table 10: Relation Of Albuminuria With Htn In Pregnancy**

Sr no	Urine albumin	No of cases
1	NIL	14(20%)
2	TRACE	07(10%)
3	+1	21(30%)
4	+2	15(21%)
5	+3	13(19%)
TOTAL		70

Table 10-shows almost 2/3<sup>rd</sup> patients of young hypertensive pregnancy 42(60%) had non-significant

albuminuria. And only 28(40%) patients had significant albuminuria.

**Table 11: Relation Of Maternal Complication To Htn**

Sr no	Maternal complication	No of cases
1	SEPTICEMIA	07(10%)
2	ACUTE RENAL FAILURE	06(8.5%)
3	ECLAMPSIA	04(5.7%)
4	HEART FAILURE	02
5	HTN RETIOPATHY	02
6	DIC	01
7	NO COMPLICATION	49
TOTAL		70

Table 11-shows the complications of hypertension came across are: Septicemia 07(10%). Acute renal failure 06 (8.5%). Eclampsia 04(5.7%). The other complications like heart failure, hypertensive retinopathy and DIC are rare. But majority of the young hypertensive pregnant patients 49(70%) cases usually do not have any maternal complications.

**Table 12: Effect Of Follow Up On Htn In Pregnancy**

Sr no	Follow up	No of cases
1	R-REGULAR	27(38%)
2	I-IRREGULAR	43(62%)
TOTAL		70

Table 12-shows those who are under regular follow up 27(38%) has good antenatal and peri partum period.

## DISCUSSION

The present clinical study of “Study of factors affecting Pregnancy Induced Hypertension among women seeking maternity services in P.D.U.Medical College, Rajkot.” 70 Cases was carried out at P.D.U. Medical College and Civil Hospital, Rajkot during period of July 2015 to July 2017 with following discussion.

1)A Similar clinical study to determine the incidence of hypertension related to parity, in BMC-RI AT Bangalore by proff. Bharathi K.N.

Total women of hypertension in pregnancy:-904; Primigravida:-20.9% had hypertension; Multigravida:-15.4% had hypertension

In our clinical study, the incidence of primigravida is 52% and 24% in muligravida. Here in our clinical study, both the incidence are increased as compared to study conducted in south, this could be explained on the basis of increased salt intake, relative less health awareness and less awareness regarding hypertension in ANC period. And our patient are selected randomly, irrespective of their socioeconomic status.

2) A case control study was carried out in the dept. of OBGY in King George Hospital, Andhra Pradesh.

Table shows that study carried out in hospital Andhra Pradesh, the literacy rate is 26% and in our study literacy

rate is 40%. The incidence of hypertension during pregnancy in literate person is higher in present clinical study than in King George Hospital, it is 26% of literate patient, whereas the present study 40% in literate patient. Whereas incidence in illiterate patient is 74% in King George hospital, whereas it is 60% in our study. All over incidence of hypertension is higher in illiterate patients in both studies. In same region socioeconomic status in patient of hypertension in pregnancy was carried out. The incidence of pregnancy induced hypertension is 22% in upper SEC and 68% in lower SEC group in King George Hospital, Andhra Pradesh. Whereas in our study incidence is 35% in upper SEC and 65% in lower SEC group. In both studies, the incidence of pregnancy induced hypertension is higher in lower SEC group of patients.

3) A study by Zenebe Wolbe (2010) residential area of the mothers (rural/urban) was found to have statistically significant association with occurrence of hypertension in pregnancy.

In Zenebe Wolbe study, the incidence of hypertension in rural patient was 74.7%, whereas in present clinical study 71% which is almost comparable. Also in urban 20% in Zenebe Wolbe study, whereas in present study it is 29%, which is also almost comparable. So incidence of PIH is higher in rural area as compared to urban area.

4) A study by Teklu S Gayus *et al* (2006) in Addis (Tinkur hospital) showed that more than 78% cases had mild hypertension and 22% cases had severe hypertension and 1.99% patient had complication like eclampsia and 40% patients had other complication.

The study carried out in Tinkur *et al*, the mild hypertension occur in 78%, whereas in present clinical study it is 62%, whereas severe hypertension occurred in 22% in Tinkur *et al* and in present study it is 38% which is explained on the basis of high occurrence of hypertension in this region. The complication in Teklu study, eclampsia occurred in 1.99% of patients, whereas in present clinical study it is 5.71% of patients. This is high because of

- 1) taking less care during antenatal period
- 2) defaulter in taking medications
- 3) less care in dietary modification because of dietary taboos during pregnancy (routinely advised more ghee and salt during pregnancy), which may be one of the major factor that increases the complications. The other complications like hypertensive retinopathy, acute renal failure and heart failure occurred in 40% in Teklu study and 30% in present study, it is almost comparable.

## CONCLUSION

We have done a prospective observation study of "Study of factors affecting Pregnancy Induced Hypertension among women seeking maternity services in P.D.U. Medical College, Rajkot" at civil Hospital and Zanana Hospital, P.D.U. Medical College, Rajkot during the period of March-2014 to April-2016.

Clinical profile of hypertension in pregnancy can be affected by factors as follow:-

1. Age group:-Hypertension common in younger age group between 20-25 years of age, which is about 57% of total cases
2. Socioeconomic class:-Hypertension common in the women belonging to lower socioeconomic class, which is 65% of total cases.
3. Residence:-Hypertension is common in the women belonging to rural area, which is 71% of total cases.
4. Literacy:-Hypertension is common in illiterate women, which is 60% of total cases
5. Parity:-Incidence of hypertension common in primigravida group, which is 52% of total cases
6. Gestational age:- Incidence of hypertension was more in term pregnancy than preterm and post-term, which is 69% in term pregnancy.
7. Antenatal visits:-Incidence of hypertension was more in the women who had less antenatal follow up, 76% of cases had less than 3 antenatal visits.
8. Severity of Hypertension:- Majority of women were suffering from mild hypertension, which is 62% of total cases.
9. Maternal complication:-Maternal complications were less in the women who had adequate, regular treatment and follow up, about 70% cases had no any maternal complication related to hypertension.

From our study, we concluded that, with early detection of Hypertension, timely treatment and regular follow up can improve maternal morbidity and decrease the incidence of hypertension and prevention of complication related to Hypertension.

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