

# Oral Labetalol Verses Oral Nifedipine in Hypertensive Disorders of Pregnancy- A Comparative Study

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## Abstract

**Background:** Hypertensive disorders of pregnancy are the common medical disorders in pregnancy. The present study was conducted to compare oral labetalol and oral nifedipine in hypertensive disorders of pregnancy. **Subjects and Methods:** The present study was conducted on 60 pregnant women. Preterm or term pregnant women with severe preeclampsia/ eclampsia and BP  $\geq$ 160/100 mm Hg were included in the study. Patients were divided into 2 groups of 30 each. Group I patients were given oral labetalol and group II were given oral 10 mg Nifedipine. **Results:** Primi was seen in 18 in group I and 17 in group II, G2 6 in group I and 5 in group II, G3 4 in group I and 5 in group II and G4 2 in group I and 3 in group II. The difference was non- significant ( $P > 0.05$ ). In group I, SBP was 174.2 mm Hg in group I and 166.4 mm Hg in group II, DBP was 112.6 mmHg in group I and 110.8 mm Hg in group II. The difference was significant ( $P < 0.05$ ). **Conclusion:** The study concluded that oral Nifedipine better in terms of lowering blood pressure in pregnant ladies, although the difference was non-significant.

**Keywords:** Blood pressure, Nifedipine, labetalol.

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## Introduction

Hypertensive disorders of pregnancy are the common medical disorders in pregnancy. The prevalence of hypertension in reproductive-aged women is estimated to be 7.7%.<sup>[1]</sup> Hypertensive disorders of pregnancy, an umbrella term that includes preexisting and gestational hypertension, preeclampsia, and eclampsia, complicate up to 10% of pregnancies and represent a significant cause of maternal and perinatal morbidity and mortality. It has effects both on expectant mother and fetus. The impact due to hypertensive disorders in pregnancy on maternal and neonatal mortality and morbidity is very high in India and other developing countries.<sup>[2]</sup>

Severe forms of hypertensive disorders of pregnancy like eclampsia is a major cause of maternal mortality. Preeclampsia is a disease of multiple organ system that is unique to pregnancy can cause maternal complications like Eclampsia, HELLP syndrome, acute renal failure, cerebrovascular accidents etc. It has effect on the fetus like fetal growth restriction, oligohydranios, and fetal distress.<sup>[3]</sup>

Nifedipine has the advantage of being cost effective, rapid onset of action, long duration of action and can be administered orally, however it is known to cause sudden maternal hypotension and fetal distress caused by placental hypo perfusion, palpitation and transient neuromuscular

weakness when used concomitant with magnesium sulphate. Intravenous Labetalol is considered to control severe hypertension in pregnancy. Both intravenous labetalol and nifedipine have been compared directly with many other antihypertensive agents for hypertensive crises during pregnancy.<sup>[4]</sup> The present study was conducted to compare oral labetalol and oral nifedipine in hypertensive disorders of pregnancy.

## Subjects and Methods

The present study was conducted in the department of Obstetrics & Gynaecology. It comprised of 60 pregnant women. Preterm or term pregnant women with severe preeclampsia/ eclampsia and BP  $\geq$ 160/100 mm Hg were included in the study. The study protocol was approved from institutional ethical committee. Written consent was obtained prior to the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 30 each. Group I patients were given oral labetalol and group II were given oral 10 mg Nifedipine.

Maternal blood pressure was recorded at every fifteen minutes interval till first 30 minutes after achieving target blood pressure equal to or less than 140/90 mmhg, then every 30 minutes for next 2 hours followed by hourly for next 24 hours. Continuous maternal vital parameters and

fetal heart sounds via fetal Doppler was taken at the beginning and after every 30 minutes after achieving target blood pressure equal to or less than 140/90 mmHg. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

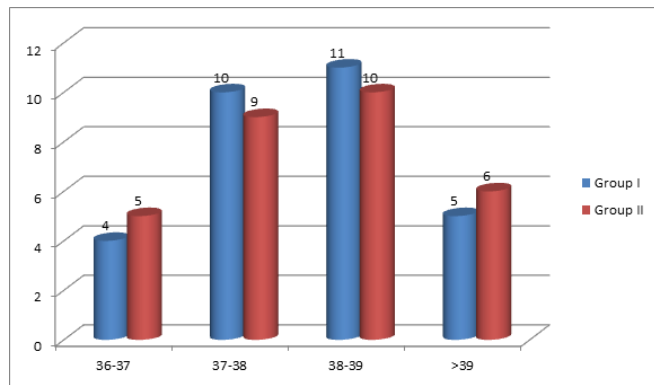
**Results**

**Table 1: Distribution of patients**

Gravida	Group I	Group II	P value
Primi	18	17	0.51
G2	6	5	
G3	4	5	
G4	2	3	

**Table 2: Gestational age in both groups**

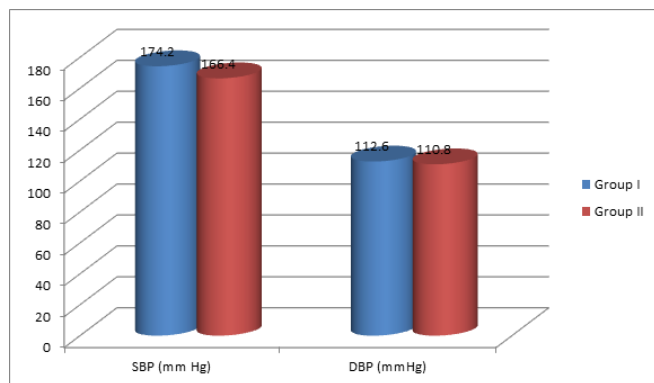
Gestational age (Weeks)	Group I	Group II	P value
36-37	4	5	0.05
37-38	10	9	
38-39	11	10	
>39	5	6	



**Figure 1: Gestational age**

**Table 3: Comparison of blood pressure in both groups**

Blood pressure	Group I	Group II	P value
SBP (mm Hg)	174.2	166.4	0.05
DBP (mmHg)	112.6	110.8	0.21



**Figure 2: Systolic and diastolic blood pressure between two groups.**

[Table 1] shows that primi was seen in 18 in group I and 17 in group II, G2 6 in group I and 5 in group II, G3 4 in group I and 5 in group II and G4 2 in group and 3 in group II. The

difference was non- significant (P> 0.05).

[Table 2] shows that gestational age in group I patients was 36-37 weeks seen 4 in group I and 5 in group II, 37-38 weeks seen 10 in group I and 9 in group II, 38-39 weeks 11 in group I and 10 in group II and >39 weeks 5 in group I and 6 in group II. The difference was significant (P< 0.01).

[Table 3] shows that in group I, SBP was 174.2 mm Hg in group I and 166.4 mm Hg in group II, DBP was 112.6 mmHg in group I and 110.8 mm Hg in group II. The difference was significant (P< 0.05).

**Discussion**

Antihypertensive agents are mainly used to prevent and treat severe hypertension. The antihypertensive agents have a role in controlling hypertension and there by maternal and fetal complications can be avoided.<sup>[5]</sup> The commonly used antihypertensive drugs in pregnancy induced hypertension are Methyldopa, Labetalol, other beta blockers (Acebutolol, Metoprolol, Pindolol and Propranolol) and calcium channel blockers Nifedipine. There are few studies evaluating the efficacy of antihypertensive agents in pregnancy. The efficacy of the drug in controlling the high blood pressure is important in preventing complications both to women and fetus.<sup>[6]</sup> The present study was conducted to compare oral labetalol and oral nifedipine in hypertensive disorders of pregnancy.

In this study, primi was seen in 18 in group I and 17 in group II, G2 6 in group I and 5 in group II, G3 4 in group I and 5 in group II and G4 2 in group and 3 in group II. Shekhar et al,<sup>[7]</sup> determined the efficacy and safety of oral nifedipine for treatment of severe hypertension of pregnancy compared with intravenous labetalol. The pooled analysis of seven trials (four from developing countries) consisting of 363 woman–infant pairs showed that oral nifedipine was associated with less risk of persistent hypertension and reported maternal side effects. However, on sensitivity analysis the outcome ‘persistent hypertension’ was no longer significant.

We observed that in group I, SBP was 174.2 mm Hg in group I and 166.4 mm Hg in group II, DBP was 112.6 mmHg in group I and 110.8 mm Hg in group II. Gestational age in group I patients was 36-37 weeks seen 4 in group I and 5 in group II, 37-38 weeks seen 10 in group I and 9 in group II, 38-39 weeks 11 in group I and 10 in group II and >39 weeks 5 in group I and 6 in group II.

Gavit et al,<sup>[8]</sup> compared oral Nifedipine and intravenous Labetalol in control of acute hypertension in severe pre-eclampsia and eclampsia. In this study, 40 sample size treated with intravenous Labetalol and other 40 sample size treated with oral Nifedipine. The maternal and perinatal outcome in two groups sample size with oral Nifedipine and intravenous Labetalol compared and found that nevertheless these results do establish oral Nifedipine as an alternative to IV Labetalol in lowering BP in acute severe hypertension. In the present study oral Nifedipine as an alternative to IV Labetalol in lowering BP in acute severe hypertension. In summary oral Nifedipine may be preferable as it has a

convenient dosing pattern orally.

Five trials (323 woman–infant pairs) were included for analyses of intrauterine fetal death and four trials were included for the analysis of neonatal mortality. The analyses did not show a significant difference of risk for intrauterine death between nifedipine and labetalol (RR 0.66, 95% CI 0.35–1.27); however, the risk of neonatal death was significantly reduced with nifedipine compared with labetalol. There was no heterogeneity amongst trials. Sensitivity analysis did not change the significance of the results.<sup>[9]</sup>

The most extensively used antihypertensive drugs in pregnancy are  $\beta$  adrenoceptor antagonists, Nifedipine, methyldopa and Labetalol. These drugs are used alone or in combinations in routine obstetric practice in our country. Each of these drugs have different mode of action. Nifedipine is vasodilator and calcium channel blocker. Methyl dopa is centrally acting antihypertensive. Labetalol is both  $\alpha$  and  $\beta$  blocker. There were few clinical studies in which these drugs were compared in the same setting, when used orally with respect to their antihypertensive efficacy, side effects, maternal and neonatal outcome both in mild and severe PIH.<sup>[10]</sup>

## Conclusion

Authors found oral nifedipine better in terms of lowering blood pressure in pregnant ladies. However difference was non- significant.

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