Summary
we are almost there
The present study was conducted to evaluate and compare the antihypertensive efficacy, safety, maternal and perinatal outcome of nifedipine, alpha methyldopa, and labetalol in the treatment of pregnancy induced hypertension.

The Study design was a prospective, comparative clinical study in a tertiary care teaching hospital, Kempegowda Institute of Medical Sciences and Research Centre (KIMS) Hospital, K. R. Road, Vishveshwarapuram, Bangalore - 560004, Karnataka. The study group included 300 pregnant women with PIH, according to International Society for the Study of Hypertension in Pregnancy (ISSHP) and accomplice inclusion and exclusion criteria. All the patients were in-patients. Ethical clearance from the Institutional Human Ethics committee of KIMS Hospital was taken for the study. Each participant’s hospital identification number was recorded at the time of presentation, and mothers and infants data were subsequently abstracted from their hospital charts and entered into standard data collection form designed for the study.

Patients were randomly allotted to three treatment groups, based on antihypertensive received. In labetalol group, 96 randomly selected patients received oral labetalol 100 to 200 mg BID, in nifedipine group, 101 randomly selected patients received oral nifedipine in the dose 10 to 20 mg TID, and in methyldopa group, 103 randomly selected patients received methyldopa orally 250 to 500mg QID. Each group was further divided into two sub groups as mild and severe PIH patients based on severity blood pressure at presentation. BP 140/90 to 159/109mm Hg was considered as mild PIH, whereas BP ≥ 160/110 mm Hg was considered as severe PIH. Lower doses of antihypertensive drugs were used in mild PIH and higher doses for severe PIH.

Baseline characters and pre-treatment risk factors of PIH patients were noted down at admission. Complete blood count, liver function tests, and renal function tests was estimated at admission and alternate days during treatment period for diagnosis and prognosis of PIH. Urine examination for proteins, sugar and microscopy was done. Beside these laboratory tests, foetal kick count chart,
ultrasound, fundoscopy, NST, and Doppler ultrasound were also done. Blood pressure was recorded using mercury sphygmomanometer with patient in 15 degrees left lateral recumbent position. Korotkoff V sound was used for determining diastolic blood pressure.

Efficacy of antihypertensive agents was assessed based on measurement of blood pressure for control of hypertension and estimation of proteinuria. Blood pressure was assessment at 0, 6, 24, 48 and 72 hours of initiation of antihypertensive treatment and at the time of discharge. Antihypertensive efficacy was assessed in each treatment group separately for systolic BP, diastolic BP, mean arterial pressure (MAP) and control achieved in percentage of patients and compared between groups in mild and severe PIH. Side effects of the drugs were recorded during the treatment period.

Maternal outcome was recorded based on development of maternal complications in treatment groups. Obstetric outcome was noted based on extra days added to pregnancy, indications for delivery and mode of delivery. Perinatal outcome in treatment groups were assessed, by recording the following parameters. Apgar score at ‘0’ minute and 5th minute of birth, gestational age at birth, perinatal mortality, birth weight, birth weight based on gestational age, IUGR, NICU admissions, neonatal mortality and morbidity. After discharge, patients were called for follow up at 6 weeks and 12 weeks for assessment of BP.

Results of the study were subjected to statistical analysis. All continuous variables were expressed as mean ± standard error of mean (SEM) and analysed using repeated measures ANOVA followed by Tukey Kramer multiple comparison tests, Fried Man test followed by Dunnett’s test and paired ‘t’ test. Categorical data were expressed as percentage and analysed by either Fisher’s exact test, or test for proportions. All p-values were two sided. Significance was set at $p \leq 0.05$.

When base line characters of PIH patients were analysed, incidence of PIH was found to be high in the age group of 21 to 25 years, primigravida, nulliparous women with middle/low socioeconomic status. In one fourth of patients, there was significant family and past history. Consanguineous marriage was not a risk factor for
development of PIH. Significant proteinuria, DBP more than 110 mm of Hg, early gestational age and partial HELLP syndrome were major risk factors. Biochemical parameters of PIH were mainly affected in severe PIH patients.

From the study results, oral labetalol appears to be an effective agent in the management of mild and severe PIH. Antihypertensive efficacy of nifedipine was similar to methyldopa in mild PIH; in terms of safety, methyldopa was better since incidence of side effects was less. But nifedipine was more effective than methyldopa in severe PIH with respect to antihypertensive efficacy.

There were no maternal adverse events, which resulted in need for discontinuation of medication. No maternal mortality was recorded in the study. There were no significant differences between use of labetalol, nifedipine and methyldopa with respect to maternal outcome, perinatal outcome, additional drugs used and biomarkers of PIH in the treatment of mild and severe PIH.

Result of the study recommends the use of oral methyldopa, nifedipine and labetalol in the management of mild PIH and oral labetalol and nifedipine as monotherapy in severe PIH. Outcome of the study can be utilized in developing guidelines for management of PIH in India. Further, well designed randomized control trials are desired to identify long term effects of these agents in prenatally exposed children.