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# Analysis of prescription pattern of antihypertensive drugs in pregnancy in a tertiary care Hospital

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**ABSTRACT**

*Aim: Pregnancy-induced hypertension is associated with various adverse fetal and maternal outcomes. It is the most common of all complications of pregnancy. The use of anti-hypertensive drugs in pregnancy is controversial. Method: A prospective study was conducted to assess the drug utilization pattern of antihypertensive drugs in pregnancy. Patients diagnosed as hypertensive disorder of pregnancy were taken for primary evaluation. The data regarding demographic details, presenting complaints, gestational age, obstetric history, diagnosis, blood pressure monitoring, current medications, antihypertensive drugs prescribed were collected and the utilization of antihypertensive drugs in pregnancy was evaluated. Result: A total of 890 pregnant women visited the OBG department, out of which 70 patients were diagnosed with hypertension. The overall prevalence of hypertensive disorders in pregnancy was 7.8%. The mean maternal age was 25.8 years in the study population. The prevalence of Preeclampsia, gestational hypertension, chronic hypertension, and eclampsia were 6.6 %, 1.5%, 0.15 %, and 0.60 % respectively. Highest incidence of hypertension was occurred in age group of 23-27 years (54.2%). A majority of patients (64.4%) were on combination therapy whereas (35.6%) were on monotherapy. Labetalol was the commonest prescribed antihypertensive as monotherapy (72 %) as well as in combination therapy with methyldopa and Nifedipine. Conclusion: Our study concluded that the incidence of hypertensive disorders in pregnancy was high. Labetalol was the commonest prescribed antihypertensive in monotherapy and combination, as it is highly efficacious during pregnancy.*

**KEYWORDS : Antihypertensive, Pre- eclampsia, Methyldopa, Labetalol,Nifedipine**

## INTRODUCTION

Hypertension is the most common medical problem encountered in pregnancy and remains an important cause of maternal and fetal morbidity and mortality [1]. It complicates almost 10% of all pregnancies [2]. Pregnancies complicated by hypertension are associated with increased risk of adverse fetal, neonatal and maternal outcomes, including preterm birth, intrauterine growth restriction (IUGR), Perinatal death, acute renal or hepatic failure, ante partum hemorrhage, post-partum hemorrhage and maternal death.[3]

Hypertensive disorders during pregnancy are classified into 4 categories, as recommended by the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy: 1) chronic hypertension, 2) preeclampsia-eclampsia, 3) preeclampsia superimposed on chronic hypertension, and 4) gestational hypertension (transient hypertension of pregnancy or chronic hypertension identified in the latter half of pregnancy) [4]. In a multicenter study, approximately 30% of hypertensive disorders of pregnancy were due to chronic hypertension while 70% of the cases were diagnosed as gestational hypertension/preeclampsia [5].

Treating the hypertension does not alter the progression of disease. However it has been shown that early treatment decreases not only the frequency of hypertensive crisis, but also the rate of neonatal complications. Antihypertensive medications are mainly used to prevent or treat severe hypertension, to prolong pregnancy for as long as safely possible thereby maximizing the gestational age of the infant, and to minimize fetal exposure to medications that may have adverse effects. During pregnancy, the challenge is in deciding when to use antihypertensive medications, and what level of blood pressure to target. The antihypertensive drugs that may be used in pregnancy are methyldopa, beta blockers, calcium channel blockers. Methyldopa has been available for many years and is widely used. Literature supports the safety and efficacy of Nifedipine and Atenolol used in essential hypertension in pregnancy [6].

Antihypertensive use during pregnancy is relatively common and increasing. The wide range of agents used during pregnancy includes medications considered contraindicated during pregnancy. The choice of antihypertensive agents is less complex because only a small proportion of currently available drugs have been evaluated adequately in pregnant women and many are contraindicated [7]. The present study focused on the antihypertensive drug utilization pattern in women attending the antenatal clinic of obstetrics and gynecology department at a tertiary care teaching hospital.

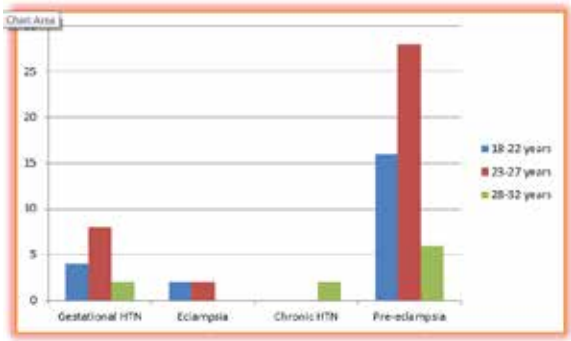
## MATERIALS AND METHODS

This was an observational, crossectional; nonrandomized study conducted over a period of six months in inpatients of Gynecology and Obstetrics Department at SKNMC Pune.. After the Approval of Institutional Ethics Committee and OBGY Department all pregnant women attending the antenatal clinic were screened for hypertension and prescriptions of patients diagnosed as hypertensive disorder of pregnancy were taken for primary evaluation. The data regarding demographic details, presenting complaints, gestational age, obstetrics history, diagnosis, blood pressure monitoring, current medications, antihypertensive drugs prescribed were gathered from medical record files. The utilization of antihypertensive drugs in pregnancy was evaluated.

## RESULTS

During six month study, 890 pregnant women visited the OGD, out of which 70 patients were diagnosed with hypertension. The prevalence of Hypertensive Disorders of Pregnancy was 7.8 % The mean maternal age at delivery was 25.8 years. Total distributions of patients with respect to age group shows that highest number of patients was found in the age group of 23-25 years (54.2%). Graph 1 provides various hypertensive disorders in the age groups of patients.

**Graph 1: Age wise Distribution of Participants**




Preeclampsia was the most common cause of hypertension during pregnancy (71.42%). This was followed by Gestational Hypertension (20 %) population. Results are summarized in Graph 1.

**TABLE 1: SUBJECT CHARACTERISTICS OF STUDY POPULATION**

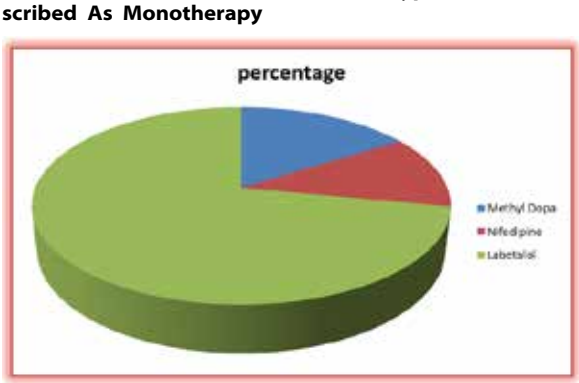
| PARAMETERS | Mean | S.D |
|---|---|---|
| Weight at time of admission (kg) | 63.2 | 10.6 |
| Systolic Blood Pressure ( mmHg) | 156.6 | 22.2 |
| Diastolic Blood Pressure (mmHg) | 101.4 | 11.5 |
| Mean Arterial Pressure | 105.7 | 7.8 |
| Gestational age at enrolment (weeks ) | 32.7 | 4.6 |

The Subject characteristic of woman who were diagnosed as a hypertensive having an average weight of 63.2 kg and a mean gestational age 32.7 weeks at the time of admission. The mean Systolic Blood Pressure was 156.6 mmHg, while the mean Diastolic Blood Pressure was 101.4 mmHg (Table 1).

Overall 45 (64.4%) patients were treated with combinations of antihypertensive drug, and 25(35.6%) patients were treated with single antihypertensive drug as represented in Graph 2 & Graph 3.

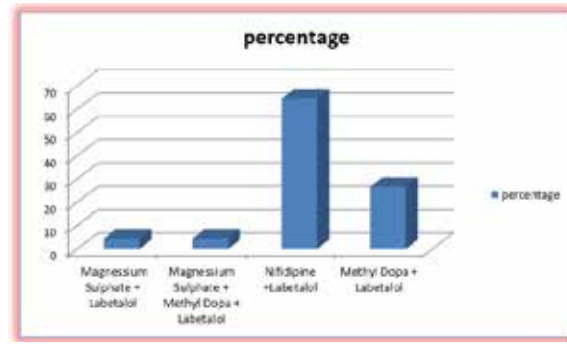
**Graph 2** shows the details of patients, who were treated with a single antihypertensive drug. 4(16%) patients were treated with centrally acting anti adrenergic drugs and 3 (12 %) patients were treated with Calcium Channel blocker, & 18 (72%) patients were treated with Labetalol.

**GRAPH 2: Different Classes Of Antihypertensive Prescribed As Monotherapy**




**Graph 3** shows details of patients treated with combination therapy, out o1f 70 patients, 45 patients (64.28%) were treated with combination therapy. In 45 patients 43 were prescribed with two drugs and 2 (4.5%) were prescribed with three drugs .Among the 43 patients prescribed with 2 drugs the calcium channel blockers and β-blocker (64.4%) was the most frequently prescribed two-drug combinations. In 2 (4.5% ) patients Magnesium Sulphate + Labetalol was used, In 2 (4.5% ) patients Magnesium Sulphate + Methyl Dopa + Labetalol was used.

**GRAPH 3: Different Classes Of Antihypertensive Prescribed As Combination Therapy**




## DISCUSSION

Hypertensive disorders of pregnancy are considered to be a major worldwide health problem running an increased risk of Perinatal and maternal mortality[1]. The prevalence of Hypertensive Disorder in Pregnancy varies according to geographic regions of world and ranges from 1.5% in Sweden's to 7.5% in Brazil[8]. According to our study, the frequency of hypertensive disorders of pregnancy was 7.8%. The variations can be attributed to racial differences, socioeconomic status and some other parameters like parity and age.

The distribution of different hypertensive disorders of pregnancy was that, Gestational hypertension of pregnancy was diagnosed in 14 (20%) cases. 50 patients (71.1%) and 4 (7.7%) patients appeared to be pre-eclamptic and eclamptic respectively. In India, the incidence of preeclampsia is reported to be 8-10% of the pregnancies[9]. The reported incidence of eclampsia from India is 0.71 %. These figures are comparable with our study. Chronic hypertension was found 2 (3.7 %) patients in our study. The frequency of chronic hypertension in Iran was 3.4% which is similar to our study (3.7 %) [10] .

Age has an important influence on the incidence of hypertensive disorders of pregnancy. In our study highest incidence of the hypertensive disorders occurred among those aged 23 to 27 years. This could be because the majority of conceptions take place in this age group in our country. The age distribution of eclampsia patients in our study is similar to other reports and suggests that eclampsia is, probably, a disease of young women[11].. In our study majority of preeclampsia patients were between the ages of 23-27years. Preeclampsia and eclampsia were apparently higher in younger pregnant women (less than 30 years) as Yucesoy et al, showed in their recent investigation. The frequency of chronic hypertension appears to be higher in woman aged ≥30.years & same is indicating in our study also.

The incidence of PIH is distributed unevenly throughout late gestation, increasing with advancing gestation. Approximately half of PIH cases occur at term (≥37 weeks' gestation), including most cases of gestational hypertension. Early-onset PIH is often associated with severe preeclampsia [12]. The mean gestational age at presentation was 32.7 weeks which is comparable with other study (i.e. 37 weeks) [13]. The reported gestational age of onset of preeclampsia is more than 20th week of pregnancy in vast majority of patients, but recently a case was reported from Japan with typical features of preeclampsia occurring at less than 20th weeks of gestation[13].

Antihypertensive are agents that lower blood pressure. The aim of antihypertensive therapy in the management of pregnancy induced hypertension is to prevent complications due to hypertension while prolonging the course of pregnancy. Monotherapy and combination therapy were used in our hospital for treating hypertension during pregnancies. The use of combination antihypertensive pharmacotherapy suggests increased Severity of illness where optimal BP control cannot be achieved on monotherapy. In the present study most of the cases of PIH were treated using Labetalol. In contrast to a study by Cvijic M et.al[14], Methyldopa was most commonly prescribed antihypertensive drugs in 27.8% of patients, studies from Ray JG et.al-[15]showed that Nifedipine (47.7%) was prescribed more frequently than Methyldopa (27.7%).This shows that utilization pattern differs from hospitals, prescribers and among countries also.

In our study, calcium supplements, iron preparations, nutritional supplement, folic-acid and Vitamins, the most frequently used drugs in pregnancy. Periconceptional folic-acid supplementation can prevent most neural-tube defects and other congenital abnormalities of the cardiovascular system, urinary tract and limb deficiencies. This shows that utilization pattern differs from hospitals, prescribers and among countries also. Moreover, folic-acid supplementation in pregnancy is associated with the decreased incidence of habitual spontaneous abortion and pregnancy complications (e.g., placental abruption and preeclampsia) [16]

## CONCLUSION :

Our study concluded that the incidence of hypertensive disorders in pregnancy was high. Early diagnosis and treatment through regular antenatal checkup is a key factor to prevent PIH and its complications. Labetalol was the commonest prescribed antihypertensive in monotherapy and in combination, as it is highly effective during pregnancy.

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