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Cross-sectional Retrospective Study on Prescription Pattern of Antihypertensive Medication in Pregnant Women with Gestational Hypertension

Essra Ali Safdar* and **Nida Ali Safdar**

Department of Pharmacy Practice, Anwarul Uloom College of Pharmacy, New Mallepally Hyderabad, Telangana 500001, India

ABSTRACT

Background: *The most common pregnancy-related condition that still significantly contributes to mother and fetal morbidity and mortality is pregnancy induced hypertension. Aim of the study was to evaluate prescription pattern of gestational hypertension in pregnant women attending antenatal care*

Methodology*: A retrospective cross-sectional study was carried out in hospital for a period of 6 months to analyze the data from the year 2022-2024.*

Result: *Labetalol was the most prescribed medication for pregnant women with hypertension followed by a combination of labetalol+ nifedipine.*

Conclusion: *Labetalol is a safe and effective medication that can be used more quickly to reduce blood pressure in pregnancy-induced hypertension. The excellent perinatal outcome in a disease usually associated with a high rate of maternal and fetal death and morbidity, together with the low incidence of maternal and fetal adverse effects, confirms its suitability for usage during pregnancy.*

Keywords: *Antihypertensive Medication, Pregnant Women, Gestational Hypertension, Developing Chronic Hypertension, Cardiovascular*

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Corresponding Author: ***Essra Ali Safdar***
Email Address: ***aliisra638@gmail.com***

Introduction

Gestational hypertension is a common pregnancy complication characterized by an elevation in blood pressure during pregnancy, typically defined as a systolic blood pressure (SBP) of 140 mmHg or higher and/or a diastolic blood pressure (DBP) of 90 mmHg or higher. It can also be diagnosed by a rise in SBP of 30 mmHg or more, or in DBP of 15 mmHg or more, from preconception or first trimester measurements, confirmed by two readings taken six hours apart. This condition is distinct from chronic hypertension, which predates pregnancy, and can develop after 20 weeks of gestation.

Hypertension during pregnancy is one of the most common and serious complications, affecting around 10% of pregnancies worldwide. It poses significant risks to both maternal and fetal health, contributing to a range of adverse outcomes such as preterm birth, intrauterine growth restriction (IUGR), perinatal death, and maternal complications like renal or hepatic failure, postpartum hemorrhage, and even maternal mortality. The prevalence of hypertensive disorders in pregnancy has been increasing, partially due to factors such as the rising age of women at childbirth, increased obesity rates, and the growing prevalence of chronic diseases like diabetes.

This condition remains a major public health issue globally, not only due to its immediate risks to maternal and fetal health but also because of its long-term health implications. Hypertension in pregnancy is a known risk factor for developing chronic hypertension and cardiovascular diseases later in life. Therefore, understanding the underlying causes, risks, and consequences of gestational hypertension, as well as improving early detection and management strategies, is crucial to mitigating its impact on maternal and child health.

Classification of hypertension in pregnancy

Chronic hypertension is defined as a blood pressure (BP) of 140/90 mmHg or more that is diagnosed before pregnancy or before the 20th week of pregnancy. It may persist throughout the pregnancy and can continue for up to 42 days postpartum. Women with chronic hypertension are at an increased risk of developing complications such as preeclampsia, placental abruption, and preterm birth. Chronic hypertension can also contribute to long-term cardiovascular risks for the mother.

Gestational hypertension, on the other hand, is characterized by elevated blood pressure (≥140/90 mmHg) that develops after the 20th week of pregnancy and is not associated with proteinuria. Unlike chronic hypertension, gestational hypertension is temporary, and blood pressure usually returns to normal after delivery. However, it still poses risks, including the potential progression to preeclampsia, fetal growth restrictions, or preterm delivery.

Both types of hypertensions have significant implications for maternal and fetal outcomes. Hypertension during pregnancy can lead to a range of adverse effects such as intrauterine growth restriction (IUGR), preterm birth, and maternal complications like renal failure, liver damage, and stroke. Additionally, gestational hypertension may increase the likelihood of developing chronic hypertension in future pregnancies or later in life.

Preeclampsia-eclampsia: After the twentieth week of pregnancy, edema, proteinuria (≥0.3g/24 hours), and hypertension is preeclampsia. Eclampsia is defined as the emergence of widespread convulsions within seven days of parturition that are not brought on by epilepsy or another convulsive disorder and are linked to pre-eclampsia symptoms. (2)

Preeclampsia is a multisystem disorder that typically manifests as new-onset hypertension (systolic blood pressure (SBP) >140 mmHg and/or diastolic blood pressure (DBP) >90 mmHg) in a previously normotensive woman after 20 weeks of pregnancy.

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The American College of Obstetricians and Gynecologists (ACOG) has updated the diagnostic criteria for preeclampsia, allowing for diagnosis without the presence of proteinuria. This condition can lead to serious complications for both the mother and fetus, including placental abruption, stroke, and fetal growth restriction.

To mitigate the risks associated with gestational hypertension, chronic hypertension, and preeclampsia, the use of antihypertensive medications is recommended to manage blood pressure and maximize gestational age at delivery. The goal is to lower the risk of preterm birth and minimize harmful feto-maternal complications. However, since all antihypertensive medications cross the placenta, it is crucial to carefully consider the potential fetal risks when prescribing these drugs.

Methyldopa, labetalol, and nifedipine are considered safe antihypertensive medications during pregnancy. These drugs are commonly used to control blood pressure in pregnant women without posing significant risks to the fetus. On the other hand, angiotensin-converting enzyme (ACE) inhibitors and angiotensin receptor blockers (ARBs) should be avoided during pregnancy, as their use has been associated with congenital abnormalities, particularly in the cardiovascular and central nervous systems. Additionally, diuretics should not be used to treat hypertension during pregnancy due to their potential to cause placental hypoperfusion and negatively impact fetal development.

The aim of this study is to evaluate the use of antihypertensive medications in pregnant women diagnosed with gestational hypertension. The study will assess the safety, efficacy, and potential risks of these treatments, with a focus on optimizing maternal and fetal health outcomes during pregnancy.

Methodology

A retrospective observational study was conducted after taking permission from ethics committee of Muslim Maternity and children's hospital, Hyderabad. Cases of gestational hypertension were collected from the medical record department from the year 2022-2024. A total of 150 pregnant women with preeclampsia in department of obstetrics and gynecology of age greater than 18 years were reviewed.

Inclusive criteria

Pregnant women with gestational hypertension of age 18 years and old were included in the study.

Exclusive criteria

Incomplete data of patients with gestational hypertension and whose age lesser than 18 years were not included in the study.

Study duration

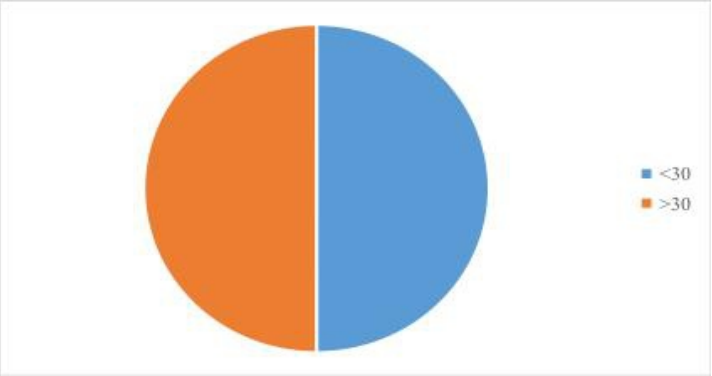
A study was conducted for 6 months in Muslim Maternity and children's hospital and 3 years data was collected retrospectively of Jan 2022- Aug 2024. A total of 150 cases in accordance with our inclusive criteria were collected from the medical record department.

Results

During the study, prescription of 150 pregnant women with Gestational hypertension were analyzed for a period of 6 months. 50% of the study population(n=75) were below 30 years and rest 50% were above 30 years of age of age.

Table 1.1 Demonstrates the Age of participants.

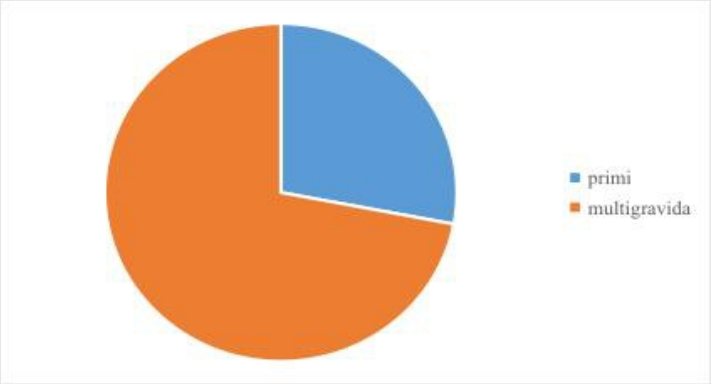
S. No	Age	Percentage
1	<30	50
2	>30	50



28 % of women with gestational hypertension were primigravida(n=42) and 72% were multigravida (n=108).

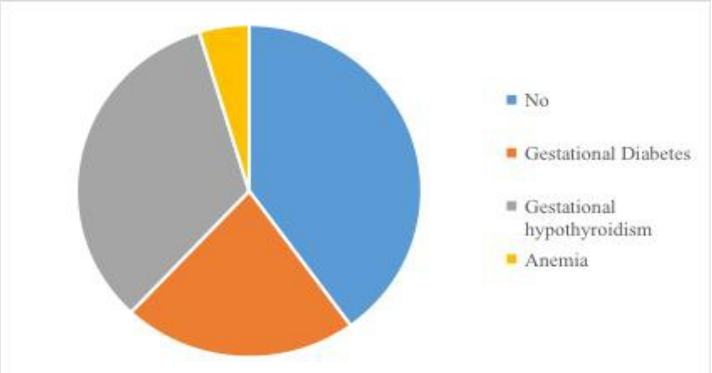
Table 1.2 Demonstrates the Gravida of study population.

S.No	Gravida	Percentage
1	primigravida	28
2	multigravida	72



40% of the participants were not having any comorbidity(n=60) .22% of the study participants were having Gestational diabetes (n=33). 33.33% of participants werehaving gestational hypothyroidism (n=50). 4.67% of study population were having anaemia (n=7).

S.No	Comorbidity	Percentage
1	No	40
2	Gestational Diabetes	22
3	Gestational hypothyroidism	33.33
4	Anemia	4.67



56% of participants blood pressure was in the range 140-160/90-110 mmHG(n=84).44% was in the range >160/110mmHG(n=66).

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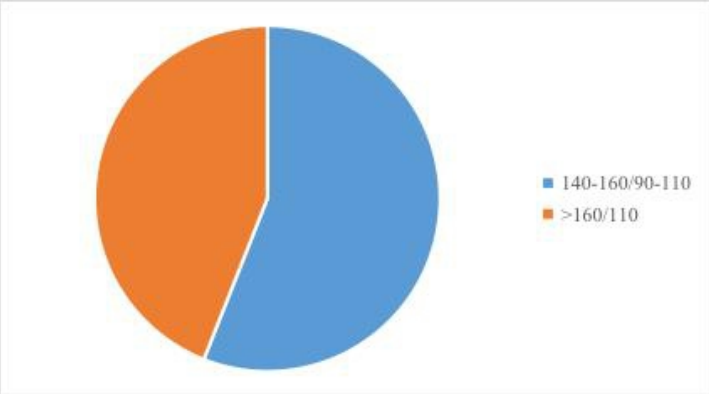
Table 1.4 Demonstrates the Range of Blood pressure in study population

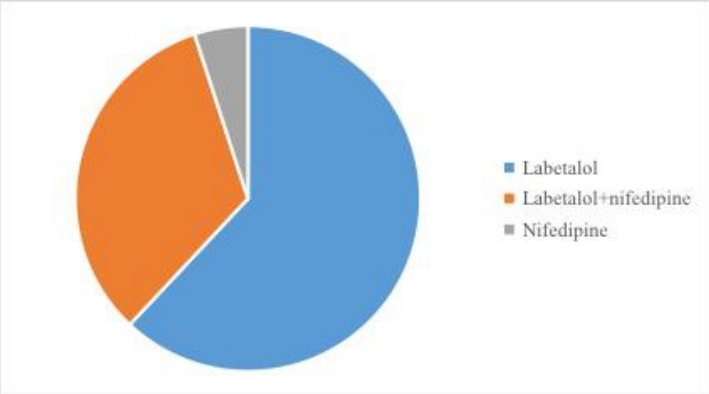
S.no	Blood Pressure Range mm Hg	Percentage
1	140-160/80-110	56
2	>160/110	44



62% of the participants was treated with only labetalol (n=92) while 33% was treated with a combination of labetalol and nifedipine (n=50) and 5% received only nifedipine as a treatment pattern. (n=8).

Table 1.5 Demonstrates the treatment pattern of study population

S. No	Medication	classification	Percentage
1	Labetalol	Alpha- beta blocker	62
2	Labetalol+Nifedipine	Alpha-beta blocker+Calcium channel blocker	33
3	Nifedipine	Calcium Channel Blocker	5



Discussion

One of the main global health issues that contributes to a higher risk of perinatal and fetal death is hypertension during pregnancy. In our study,Gestational Hypertension was equally seen in both the age groups whereas study Conducted by M. Sajith et al , where 41.3% of participants with gestational hypertension was in the age group 18-22 (4).In the present study 72% of the participants were multigravida in contrast study conducted by Soodabeh Kanafileskookalayeh et al only 5% were multigravida (5). The highest number of participants in our study were not having any comorbidity which is similar to the Study conducted by Mansi Nirajkumar Panchal et al where 88% participants were not having any problems associated with pregnancy. (6). In this study, the highest percentage of participants blood pressure was in the range 140-160/90-110 mmHG which is similar to the study conducted by Dr. Vyakaranam Hema et al where 85.7% participants were in the similar range. (7). 62% of population in our study received only labetalol for gestational hypertension as a treatment pattern and least was nifedipine Which is similar to the study conducted by pradnya deolekar et al where 52.8% received labetalol and 4.8% received nifedipine as treatment for pregnancy hypertension (8).

Conclusion

One of the most prevalent conditions during pregnancy is hypertension. Our study concluded that most of the pregnant women with hypertension were multigravida without any complications and labetalol was the most prescribed medication followed by combination of beta blocker + calcium channel blocker and Nifedipine, the least . In order to utilize medicines during pregnancy rationally, one must weigh the advantages of doing so against any possible risks.

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Availability of Data and Materials: The data and materials used in this study are available from the corresponding author upon reasonable request.

Consent for Publication: Written informed consent was obtained from the patient for the publication of this case report and any accompanying images. A copy of the signed consent is available for review with the Journal.

Competing Interests: The authors declare that they have no financial or non-financial competing interests.

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