

Review on Comparison Study between Single Drug Therapy (Labetalol) and Combination Drug Therapy (Labetalol + Nifedipine) Used During Pregnancy

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ABSTRACT: Hypertension disorder during pregnancy is a major cause of morbidity and mortality worldwide. Around 4.4%-15% of all pregnancies are complicated due to HTN. The aim of the study is to compare, assess and analyse the safety & efficacy of the antihypertensive drug i.e. Labetalol as a single drug therapy and Labetalol + Nifedipine as a combination drug therapy in pregnancy. This is a prospective & retrospective observational case study. Various parameters reported that LABETALOL is highly prescribed to the patients compared to the combined therapy (LABETALOL + NIFEDIPINE) bearing Pregnancy Induced Hypertension (PIH), where it shows that both of the drug therapies gives better effectiveness towards the management of PIH with possible advantages without any disadvantages. Both of the drugs are suitable for the use in pregnancy where fetoplacental blood flow is already compromised before treatment of hypertension.

KEYWORDS: Hypertension, PIH, GHTN, Labetalol, Nifedipine.

I. INTRODUCTION

Hypertensive Disorders during pregnancy are a major cause of morbidity & mortality worldwide. During pregnancy, the body goes through numerous physical changes to accommodate foetal growth and development. Throughout these 9 months, it is ideal to have a normal blood pressure reading. High BP is common during pregnancy but can also be a serious concern to monitor. Hypertension is defined as BP greater than or equal to 130/80mmHg. When it is well managed, high BP during pregnancy is

not always dangerous. But it can sometimes cause severe health complications for both mother and developing baby. A normal BP reading according to AHA (American Heart Association) is 120/80mmHg & below. Reading below 90/60mmHg indicate low BP or hypotension. Reading above 140/90mmHg in pregnancy indicate high BP or hypertension. Hypertension is seen far more often in pregnancy than hypotension. The CDC (Centre for Disease Control & prevention) estimates that around 6 - 8% of pregnant woman between the ages of 20 and 44 in US have this condition. In India, the incidence of pre- Eclampsia is reported to be 8 - 10% among the pregnant woman and prevalence of hypertensive disorders of pregnancy was 7 - 8% with pre- Eclampsia in 5.4% of study population. Hypertension can be classified into 4 types: Gestation HTN, Chronic HTN, Chronic HTN with superimposed preeclampsia & Preeclampsia. Gestational HTN or Pregnancy - Induced Hypertension (PIH) is the development of new hypertension in a pregnant woman after 20 weeks gestation without any presence of protein in the urine. Chronic HTN is the hypertension before the 20th week of pregnancy beyond the 12 weeks after delivery. Women with CH are at low risk & have satisfactory maternal & fetal outcome without any hypertensive therapy by lifestyle modification. Preeclampsia usually begins after 20 weeks of pregnancy in women who have a normal BP. It can lead to serious, even fatal complications for both mother and baby. Eclampsia is the convulsive form of preeclampsia & affects 0.1% of all pregnancies. The BP reading is given in 2 numbers: (i) Systolic blood pressure (ii) Diastolic blood pressure. Systolic BP is the pressure against arteries when

heart pushes blood out. Diastolic BP is the pressure in the arteries when the heart rests between the beats. This is the time when the heart fills with blood and gets oxygen. The JNC classification of blood pressure:

1. Normal. BP is less than 120/80mmHg.
2. Prehypertension. This is when the systolic BP is between 120- 139 and diastolic pressure is between 80 – 90.
3. Stage 1 HTN. This is when systolic pressure is between 140- 159 or diastolic pressure is between 90 - 99.
4. Stage 2 HTN. This is when systolic pressure is ≥ 160 or diastolic is ≥ 100 .

Appropriate use of Antihypertensive drugs in specific pregnancy – associated hypertensive disorders are a major concern. The focus of treatment is 9 months of pregnancy during which untreated mild to moderate hypertension is unlikely to lead to unfavourable long term maternal outcomes. Antihypertensive agents are mainly used to prevent & treat severe hypertension; to prolong pregnancy for as long safety as possible, thereby maximizing the gestational age of infant & to minimize fetal exposure to medication that may have adverse effects. The drugs commonly used for Gestational Hypertension or chronic hypertension in pregnancy are - the preferred agent is Methyldopa [0.5 – 3.0g/d] in 2 divided doses and 2nd line agents are Labetalol [200 – 1200mg/d] in 2 or 3 divided doses, Nifedipine [30 – 120mg/d], Hydralazine [50 – 300mg/d]. The β receptor blockers such as Hydrochlorothiazide [12.5 – 25.0mg/d]. Apart from this, Labetalol is recommended as first line treatment in pregnancy based on limited evidence from randomized controlled trials and being the only antihypertensive drug that is licensed for use in pregnancy. Labetalol instrumentally causes a smooth and sustained fall in BP and is free of any grievous side effects. But, there are cases in which the patients are treated with the combination therapy of Labetalol & Nifedipine. Labetalol + Nifedipine are often given in chronic hypertension during pregnancy for the sudden reduction of the BP. Thus, the study aims to compare & assess the prompt treatment with rapid acting labetalol as single drug therapy and labetalol & Nifedipine as combination therapy during pregnancy. The prime concern is to contrast & analyse the safety, efficacy and rare side effects associated with single and combination drugs.

II. LITERATURE SURVEY

Hypertension (HTN) is the foremost commonly experienced disorder among pregnancy. High blood pressure includes a negative effect on the mother and the baby, which is why early determination and appropriate control are obligatory to maintain a strategic distance from complications. There are numerous shapes of HTN disorder among pregnancy. The edge for start of antihypertensive drugs varies for gestational and chronic HTN. Pre – Eclampsia/ Eclampsia disorder could be a serious frame of gestational HTN, which is as it was reparable by conveyance of the embryo. Administration of HTN among pregnancy is challenging and it requires collaboration between obstetricians and cardiologists. Hypertension (HTN) may be an around the world wellbeing issue that affects about 25-40% of people. It may be a major cardiovascular chance figure and it is related with numerous cardiovascular complications (e.g., stroke, heart disappointment). The predominance of raised blood pressure is most noteworthy in Africa, where it is 46% for both genders combined. HTN can affect individuals at any age; even women at early pregnancy are having no exception. HTN is the foremost common restorative disorder among pregnancy, with a predominance of 5-10% of all pregnancies around the world. HTN and antihypertensive drugs have unfavourable impacts on both the mother and the foetus. Management of HTN in pregnancy needs skill within the field of high-risk pregnancy and cardiovascular illnesses, which is why a combined group of obstetricians and cardiologists is a critical prerequisite. [1]

Pregnancy initiated hypertension may be a burning issue in terms of maternal mortality and morbidity not as it were in Bangladesh but moreover around the world. Really it is risk factor for both mother and child. This cross-sectional hospital-based study was conducted to evaluate predominance of pregnancy actuated hypertension and its determinants among pregnant ladies going to institute of medical centre in third trimester. Non probability purposive sampling was utilised to gather the samples. Organized survey was utilized to gather information. Face to face meeting was done as well as medical record was checked. Normal age of the respondent's 26.03 ± 5.77 a long time. More than half of the respondents completed SSC level instruction. Average income of the

respondent's was 33100.00±76135.29 BDT. Three-fourth of the respondents had family history of hypertension. More than half of the respondents (64%) endured from direct iron deficiency. Normal ANC visit was 4.43±1.58. Multipara, primipara and nullipara were 63%, 33%

and 4% individually. Underweight, ordinary, overweight and hefty were 4%, 28.50%, 26.50% and 41%. The predominance of pregnancy-initiated hypertension was 7.5%. Measurable critical affiliation was found between pregnancy-initiated hypertension and precise result. [2]

Fig 1: Educational status of the respondents (n=200).

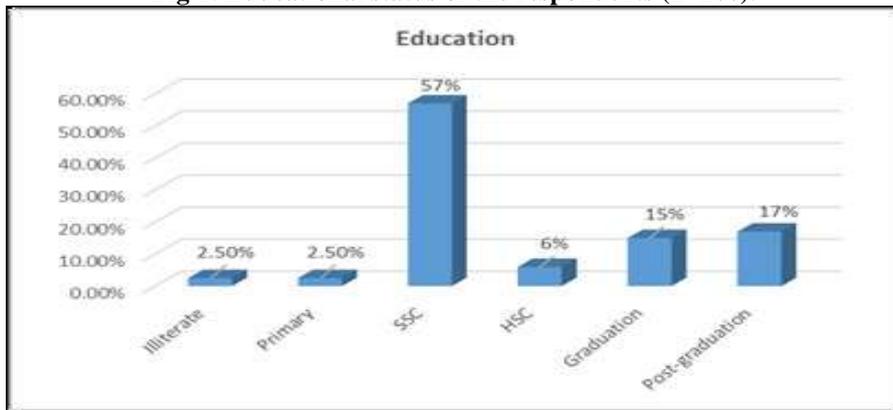
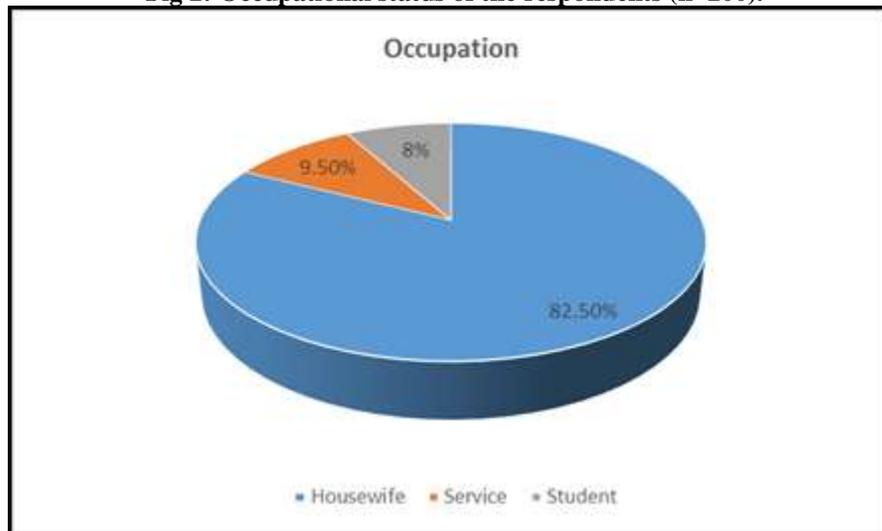


Fig 2: Occupational status of the respondents (n=200).



The National High Blood Pressure Education Program of the NHLBI classifies hypertensive disorders of pregnancy into taking after categories: Gestational Hypertension, Persistent HTN, Preeclampsia and Preeclampsia Superimposed on pre-existing HTN. Hypertension in pregnancy is characterized as a systolic of 140 mm Hg or more or a diastolic of 90 mm Hg or more. Blood pressure ought to be taken within the upper arm with the persistent situated utilizing a suitably measured sleeve. The persistent ought to be at rest for at slightest a few minutes. The blood pressure ought

to be affirmed with another perusing at slightest at a twenty-minute interim or indeed on an isolated event. The diastolic reading is decided by the vanishing of sound, not from alter in sounds. Contention remains as to the blood pressure criteria utilized to characterize preeclampsia. A few specialists of this specialized range of medication have contended that a fast rise in blood pressure of 30 mm Hg systolic or 15 mm Hg diastolic ought to be adequate to analyse preeclampsia. Be that as it may, the current suggestions of the 2000 working gather recommend that women who experienced as it

were this alter are not however preeclamptic but do warrant near perception, particularly in case this

finding is went with by port. [3]

Table 1: Classification of Hypertension in Pregnancy

| | |
|--|---|
| Chronic hypertension | (i) increased BP before week 20 (or known to exist prior to pregnancy) (ii) hypertension persistent for more than 12 weeks after pregnancy |
| Preeclampsia- Eclampsia | (i) de novo appearance of hypertension after mid-pregnancy (ii) proteinuria at least 300 mg/24 hr |
| Preeclampsia superimposed upon existing hypertension | (i) new onset proteinuria |
| Gestational hypertension | (i) transient hypertension appearing after mid-pregnancy (ii) confirmed by return to normal BP postpartum (iii) no proteinuria |

Hypertensive disorders in pregnancy carry dangers for the women and the child. Hypertension in pregnancy remains one of the driving causes of maternal deaths within the UK and Ireland, Europe and somewhere else (Abalos E et al., 2014; Khan KS et al., 2006). Points by point enquiries have inspected benchmarks of care and substandard care (where distinctive administration might have been anticipated to avoid death) has been recognized within the majority of cases. These disappointments of care happen all through pregnancy and not just within the basic care environment. Hypertension in pregnancy should be defined as:

- A systolic blood pressure ≥ 140 mmHg
- A diastolic blood pressure ≥ 90 mmHg

These estimations ought to be based on normal two estimations, taken as utilizing the same portion differentiating in few hours. Rises of both systolic and diastolic blood weights have been related with antagonistic fetal result so both are vital. Hypertension can be characterized as gentle, direct or severe. Mild Hypertension: Diastolic blood weight 90–99mmHg, systolic blood weight 140–149mmHg. Moderate Hypertension: Diastolic blood weight 100–109mmHg, systolic blood weight 150–159mmHg. Severe Hypertension: Diastolic blood weight 110mmHg or more prominent, systolic blood weight 160mmHg or more noteworthy. [4]

There's a wide variety in estimation strategies for recording blood pressure in pregnancy. Until 1998,

the suggestion of the International Society for the Consider of Hypertension in Pregnancy (ISSHP) was that K4, the muffling of sounds, ought to be taken as the cut-off point for diastolic blood pressure (DBP) in pregnancy. This proposal was likely based on the preface that due to the hyperdynamic circulation of pregnancy, Korotkoff 5 (K5), the disappearance of sounds, may be capable of being heard at cuff pressure down to zero indeed in spite of the fact that K5 had been appeared to be closer to intra-arterial DBP than K4 [i.e., K4 overestimates DBP by 11 mm Hg, while K5 overestimates DBP by 7 mm Hg. This was also the premise for the British Hypertension Society's suggestion concerning the use of K4 instead of K5. In ladies with extreme hypertension in pregnancy, K5 overestimates DBP by a comparative sum (6 mmHg). [5]

These proposals from the International Society for the study of Hypertension in Pregnancy (ISSHP) are based on literature and expert opinion. It is intended that this be a living report, to be upgraded when required as more investigate gets to be accessible to impact great clinical practice. Shockingly, there's a relative need of high-quality randomized trials within the field of hypertension in pregnancy compared with thinks about in basic hypertension exterior of pregnancy, and ISSHP energizes more noteworthy financing and uptake of collaborative inquire about in this field. In like manner, the quality of prove for the suggestions in this archive has not been evaluated in spite of the fact that pertinent references and clarifications are provided for each proposal. The report will be a live rule and we hope to be able to review

recommendation in the long run. Rules and proposals for administration of hypertension in pregnancy are ordinarily composed for implementation of hypertension in pregnancy is ordinarily composed for implementation in a perfect setting. It is recognized that in many parts of the world, it'll not be conceivable to receive all of these recommendations; for this reason, choices for administration less – resourced settings are examined independently in connection to diagnosis, assessment, and treatment. [6]

Pregnancy-induced hypertension (PIH) refers to high blood pressure (BP) in pregnancy. PIH influences 3–10% of all pregnancies and is associated with high levels of maternal, fetal, and neonatal morbidity and mortality. Moreover, the long-term forecast of women with a history of PIH incorporates expanded dangers of cerebrovascular disease, ischemic heart disease and renal disease. These data indicate that the early recognizable proof, and ensuing monitoring and administration of PIH are basic for maternal and fetal well-being. In normotensive ladies, BP in early pregnancy diminishes up to 20 weeks of development, and continuously increments to ordinary or higher than pre-pregnancy levels sometime recently delivery. A conclusion of PIH incorporates a BP > 140/90 mmHg within the late second or third trimester. Previous studies depicted successful screening for PIH improvement following a single estimation of maternal BP. [7]

Chronic hypertension in pregnancy is characterized by the American College of Obstetrics and Gynaecology (ACOG) as blood pressure ≥ 140 mm Hg systolic and/or 90 mm Hg diastolic before pregnancy or, in acknowledgment that numerous ladies look for medical care only once pregnancy, before 20 weeks of gestation, use of antihypertensive drugs in recent pregnancy, or determination of hypertension for >12 weeks after delivery. Chronic hypertension ought to be recognized from new-onset hypertensive complications of pregnancy such as preeclampsia (elevated blood pressure and proteinuria frequently went with by prove of maternal organ harm and fatal compromise from placental dysfunction) and gestational hypertension (elevated blood pressure alone after 20 weeks of gestation and most commonly within the mid to late third trimester without prove or history of hypertension sometime recently pregnancy. [8]

The predominance of chronic hypertension in pregnancy ranges from 1-3%. The rate depends on maternal age and ethnicity, age, and body mass file (BMI). Chance variables for persistent hypertension incorporate progressed maternal age (> 40 a long time), weight (BMI ≥ 30 kg/m²), type 2 DM, renal illness and gestational DM within the record pregnancy. Chronic hypertension can be essential (basic) or auxiliary to other aetiology. Primary hypertension is the foremost common cause of constant hypertension in young pregnant ladies (90%). Secondary hypertension can be due to one or more of the fundamental disorders. Chronic hypertension (CHTN) is sub – classified as either gentle or extreme, depending on the systolic and diastolic BP readings. Severe hypertension is characterized as a systolic BP of at slightest 160 mm Hg or a diastolic BP of at slightest 110 mm Hg. These heights ought to be on at slightest two occasions. For counselling and administration purposes, chronic hypertension in pregnancy is additionally categorized as either low-risk or high-risk. The understanding is considered to be at low hazard when patient has mellow fundamental hypertension without organ association, requiring as it were one antihypertensive sedate to control BP earlier to pregnancy, and without history of unfavourable results in past pregnancies. [9]

Gestational hypertension (GHTN), once in the past known as pregnancy initiated hypertension, is characterized as a unused rise in blood pressure (BP) $\geq 140/90$ mm Hg, displaying at or after 20 weeks incubation without critical proteinuria (≥ 300 mg/24 hour urine collection of urine, or 2 specimens of urine collected ≥ 4 hours separated with $\geq 2+$ on the protein reagent strip, or protein creatinine proportion (PCR) > 30mg/mmol) or other highlights of preeclampsia which usually resolves within 6-12 weeks of delivery. It is the most frequent cause of hypertension in pregnancy, constituting around 70%, and complicating about 6-17% pregnancies in healthy nulliparous women and 2- 4% in multiparous women. Its rate changes with the age and equality of the pregnant lady, being higher in younger nulliparous than more seasoned multiparous pregnant women. Not each lady who gets to be pregnant will develop GHTN. As it were those who have the predisposing risk factors (categorized into maternal and placental/fetal factors) will do so. The maternal

hazard components identified by, first pregnancy, new partner/paternity, age <18 years or >35 years, black race, weight (BMI \geq 30), inter-pregnancy interim <2 years or > 10 years and utilize of selective serotonin reuptake inhibitors (SSRIs) beyond the to begin with trimester; whereas placental/fetal hazard factors include numerous incubations, hydrosfetalis, gestational trophoblastic infection and triploidy. [10]

Eclampsia is characterized as the event of seizures in pregnancy or between 10 days of delivery, accompanied with the features such as hypertension, proteinuria, thrombocytopenia or raised aspartate amino transferase. Eclampsia complicates roughly one in 2000 pregnancies in the United Kingdom and it remains one of the most causes of maternal death. Up to 38% of cases of eclampsia can occur without premonitory signs or indications of pre-eclampsia—that is, hypertension, proteinuria, and oedema. Only 38% of eclamptic seizures happen antepartum; 18% happen during labour and a further 44% happen in postpartum. Uncommon cases of eclampsia have happened over a week after conveyance. The larger part of morbidity and mortality is related with pre-eclampsia and eclampsia. It is evaluated that the predominance of pre-eclampsia universally is 4.6% (95% CI 2.7% - 8.2%). The predominance of Eclampsia universally is detailed to be 0.3%. Usually based on secondary investigation of a World Health Organization (WHO) multi-country study that included 875 cases of eclampsia, collected over a brief term from as it were secondary or tertiary hospitals. Ladies beneath 20 years of age, ladies with low levels of education, and women with first pregnancy are all detailed to be at higher hazard. Reliable information announcing the predominance of maternal death related to eclampsia universally are rare. Measures from 16 datasets detailed the case casualty rate to be 8.3%, though the WHO overview detailed 32 maternal death, 3.7% of women with eclampsia. Information from individual countries proposes that predominance and mortality risk depend on region and socio-economic status. [11]

Pre-eclampsia (PE) may be a multisystem hypertensive disorder of unknown cause that's unique to human pregnancy. It is characterized by abnormal vascular reaction following

placentation that leads to utilitarian changes such as expanded systemic vascular resistance, upgraded platelet accumulation, enactment of coagulation framework and endothelial cell dysfunction. Side effects that go with pre-eclampsia are a result of generalized vasospasms, fibrin and platelet testimony and impediment of blood stream to imperative organs. In serious cases the liver is influenced where sub capsular haemorrhage, corruption and edema of the liver cell happens producing epigastric pain and impaired liver function. The brain gets to be oedematous and this in conjunction with vasospasm hypertension and dispersed intravascular coagulation (DIC) can create cerebral under perfusion, ischaemia, and necrosis of blood vessel resulting in cerebral pain, visual disturbance and cerebrovascular accident. The maternal mortality rate related with eclampsia ranges from 100 to 6000 per 100,000, and the perinatal mortality rate ranges from 150 to 400 per 1000. Both eclampsia and its preceding condition, pregnancy-induced hypertension, happen in shifting degrees in numerous parts of India. The caution signs of up-and-coming eclampsia are 1) systolic blood pressure of 160 mmHg or more on two events six hours separated when the persistent is on bed rest; 2) proteinuria of 5 g or more in 24 hours or 3 + or more by semiquantitative test; 3) oliguria or anuria; 4) cerebral or visual disturbances; 5) pneumonic edema or cyanosis; and 6) epigastric/right masochist torment, disabled liver work, and thrombocytopenia and coagulation disarranges. Eclampsia is classified as the intense blasting sort, which can happen without caution, and the guileful sort. Most cases (61%) appear onset of eclampsia amid the pre-birth period. Treatment of eclampsia includes:

- ✓ Control of convulsion (through an infusion of magnesium sulphate or diazepam or the intravenous organization of phenytoin).
- ✓ Adjustment of hypoxia and acidosis.
- ✓ A slow lowering down of blood pressure with hydralazine hydrochloride, Nifedipine, atenolol, labetalol, oxprenolol, or metoprolol).
- ✓ Steps to effect delivery. [12]

Preeclampsia complicates almost 5% of all pregnancies worldwide and is one of the leading causes of maternal and foetal morbidity and indeed mortality. The disorder is particular to pregnancy

characterized by new onset of hypertension and end-organ dysfunction including proteinuria after 20 weeks of development. Preeclampsia usually presents during pregnancy; however, it may vary some of the time within the postpartum period in an already normotensive lady. Hypertension in pregnancy is characterised as blood pressure of more prominent than 140 mmHg systolic or 90 mmHg diastolic, or both. Proteinuria is spillage of 300 mg or more of protein in a 24-hour urine collection or a protein to creatinine ratio of 0.3 mg/dL employing a spot urine protein and spot urine creatinine. Preeclampsia is assisting sub classified into various categories based on the seriousness of illness. The term “preeclampsia without extreme features” is defined as hypertension with proteinuria (once called as “mild preeclampsia”) without side effects and/or additional abnormalities within the research facility testing. The term “preeclampsia with extreme features” has been recently re-defined as blood pressure of more prominent than 160 mmHg systolic or diastolic more prominent than 110 mmHg, or both plus evidence of conclusion organ dysfunction. [13]

End organ dysfunction in preeclampsia –

- Thrombocytopenia Platelet count < 100,000/micro-L
- Liver dysfunction AST or ALT > 2 times the upper limit of normal
- Renal insufficiency Creatinine > 1.1 mg/dL or doubling of baseline creatinine
- Pulmonary edema
- Central nervous system disturbances
- Severe headache, scotomata, altered mental status

Risk factor of preeclampsia –

1. First pregnancy
2. Prior preeclampsia
3. Chronic hypertensions
4. Obesity
5. Chronic renal disease
6. History of thrombophilia
7. Multiple gestation
8. Assisted reproductive techniques
9. Family history of preeclampsia
10. Type I or Type II diabetes mellitus
11. Obesity
12. Age > 40
13. Prolonged pregnancy intervals
14. African American races
15. Molar pregnancy

In spite of its predominance, the hazard components that have been distinguished lack accuracy in predicting its onset and preventative treatments as it were tolerably decrease a woman’s risk of preeclampsia. Preeclampsia may be a major cause of maternal dismalness and is related with adverse fetal results counting intra-uterine development restriction, preterm birth, placental, abruption, foetal distress and foetal death in utero. At present, National guidelines for foetal surveillance in preeclamptic pregnancies are conflicting, due to the lack of evidence detailing the most appropriate assessment modalities as well as the timing and frequency at which appraisals ought to be conducted. Current administration of the foetus in preeclampsia includes timely delivery and prevention of adverse impacts of prematurity with antenatal corticosteroids and/or magnesium sulphate depending on development. Nearby the dangers to the foetus during pregnancy, there’s moreover developing evidence that preeclampsia has long-term antagonistic impacts on the offspring. In particular, preeclampsia has been related with cardiovascular sequelae in the offspring including hypertension and altered vascular function. [14]

Information and identification of risk factors for preeclampsia will help in estimating each woman’s individualized risk and conceivably decrease the repeat recurrence of preeclampsia. So, this study was conducted to survey and compare the socio-demographic profile of women with and without preeclampsia and to decide the risk factor related with preeclampsia. Bivariate investigation found that preeclampsia was significantly associated with rural residence (p=0.033), joint family type (p=0.025), low education of head of family (p=0.007), young age at menarche (11-12years) (p<0.001) Iron deficiency (P=0.034) and primiparity (p<0.001), Family history of preeclampsia (p<0.001) and hypertension (p=0.007) and Non veg. diet (p=0.042). Preeclampsia was not found to be essentially related with history of abortion, inter pregnancy period and sex of last child of multiparous women and ANC characteristics, TT immunization, IFA tablets, twin pregnancy or gestational diabetes. In the numerous relapse investigation, Age >30 years, Preobese

(BMI=25-29.9), obese (BMI \geq 30 Kg/ m²), Primiparity, age of menarche at 12 years and provincial home were found to be independent risk variables related with Preeclampsia. Age $>$ 30 a long time, Preobese, Obese, Primiparity, early age of menarche (12 a long time) and rural residence were found as noteworthy predictor for advancement of Preeclampsia. Most of these variables are non-modifiable, but can be used to screen women during antenatal visits to recognize those at higher risk of Preeclampsia. [15]

Hypertensive disarranges of pregnancy influence about 10% of all pregnant ladies around the world. This gather of maladies and conditions includes pre-eclampsia and eclampsia, gestational hypertension and incessant hypertension. Hypertensive disorders of pregnancy are an important cause of severe morbidity, long-term disability and death among both mothers and babies. In Asia and Africa, about one tenth of all maternal deaths are related with hypertensive disorders of pregnancy, whereas one quarter of all maternal deaths in Latin America have been related with those complications. The larger part of deaths related to hypertensive disorders can be moved by giving opportune and effective care to ladies showing with such complications. Hence, optimization of health care for ladies amid pregnancy to prevent and treat hypertensive disorders of pregnancy is a vital step towards achievement of the Millennium Development Goals. [16]

Labetalol is widely used these days. Labetalol is a combination of alpha and beta blocker; it has arteriolar vasodilator impact that comes about in lower peripheral vascular resistance with small or no decrease in cardiac output. The major objective of antihypertensive pharmaceutical in PIH is to anticipate or treat serious hypertension (for the most part defined as blood weight of \geq 160/110 mmHg) and its associated complications and to prolong pregnancy for as long as possible. [17]

The choice of the antihypertensive sedate is dependent on its adequacy when managed orally and its opportunity from fetal and maternal side effects. Numerous antihypertensive drugs are undesirable for utilize in pregnancy since of side-effects and a destitute hypotensive activity

(Michael, 1980a). The esteem of labetalol (Trandate) within the control of hypertension complicating pregnancy with resulting improved fetal survival has as of now been set up (Michael, 1979a). [18]

Labetalol hydrochloride is the model medication of another class of antihypertensive specialists that seriously and incidentally blocks both β - and α -adrenergic receptors. It has around one fourth of the β -blocking activity of propranolol hydrochloride and one portion of the α -blocking action of phentolamine. In human, the effective β - to α -blocking activity is around 7:1. It has been utilized effectively in oral form to treat patients with mild, moderate, and severe hypertension and in intravenous model to oversee hypertensive emergencies. Prominent side effects include orthostatic hypotension and gastrointestinal disturbances. Generally, the medication has several advantages over pure β -blocker medications in certain patients and ought to grow the armamentarium of the practising doctor in the management of the difficult hypertensive patient. [19]

Labetalol has been reported to decrease blood pressure in normotensive or hypertensive animals and human (Farmer, Kennedy, Levy & Marshall, 1972; Collier, Dawnay, Nacheu & Robinson, 1972; Brittain & Levy, 1976; Kane, Gregg & Richards, 1976). Its mechanism of action is not fully clear but has been accredited to concomitant peripheral α - and β -adrenoceptor antagonism (Brittain & Levy, 1976; Edwards & Raferty, 1976; Koch, 1976; Brogden, Heel Speight & Avery, 1978; Richards and Prichard, 1978). However, the hypotensive effectiveness of labetalol is more than would be predicted from its α - and β -adrenoceptor blocking potency (Farmer et al., 1972; Brittain & Levy, 1976; Dollery, 1976; Johnson, Labrooy & Munro-Faure, 1976; Brogden et al., 1978) suggesting an additional action. [20]

Within the current consider, the control of B.P. was superior with nifedipine than with labetalol. Preterm labour was less with nifedipine which may be due to tocolytic impact of nifedipine but generally perinatal result was great in both the groups. Nifedipine gave superior about in cases of hypertensive crisis. Both drugs had negligible side impacts and sedate compliance was superior. The control of blood pressure was way better with nifedipine than with labetalol. It was moreover watched that Nifedipine gave superior comes about in cases of

hypertensive crisis. Fetched adequacy was way better with nifedipine. In this way, Nifedipine is as secure and viable as labetalol for the administration of hypertensive disorder as well as in hypertensive emergency during pregnancy. [21]

Data from randomized managed trials to guide antihypertensive agent preference for chronic hypertension in pregnancy are limited; this study aimed to evaluate labetalol and nifedipine, moreover assessing the have an impact on of ethnicity on therapy efficacy. Pregnant women with chronic hypertension (12 + 0 + 27 + 6 gestational weeks) have been enrolled at 4 UK facilities (August 2014 to October 2015). Open label first – line antihypertensive remedy used to be randomly assigned: labetalol- (200–1800 mg/d) or nifedipine-modified release (20–80 mg/d). Analysis covered 112 female (98%) who accomplished the study (labetalol n=55, nifedipine n=57). Maximum blood pressure after randomization used to be 161/101 mm Hg with labetalol versus 163/105 mm Hg with nifedipine (mean distinction systolic: 1.2 mm Hg [-4.9 to 7.2 mm Hg], diastolic: 3.3 mm Hg [-0.6 to 7.3 mm Hg]). Mean blood pressure used to be 134/84 mm Hg with labetalol and 134/85 mm Hg with nifedipine (mean distinction systolic: 0.3 mm Hg [-2.8 to 3.4 mm Hg], and diastolic: -1.9 mm Hg [-4.1 to 0.3 mm Hg]). Nifedipine use was once related with a 7.4-mm Hg discount (-14.4 to -0.4 mm Hg) in central aortic pressure, measured via pulse wave analysis. No distinction in treatment impact used to be found in black female (n=63), however a mean four mm Hg discount (-6.6 to -0.8 mm Hg; P=0.015) in brachial diastolic blood pressure used to be observed with labetalol in contrast with nifedipine in non-black women (n=49). Labetalol and nifedipine control suggest blood pressure to goal in pregnant female with persistent hypertension. This finds out about a large definitive trial scrutinizing the advantages and facet effects of first-line antihypertensive treatment. [22]

Nifedipine is a dihydropyridine calcium channel blocker that is broadly used for the therapy of cardiovascular problems in nonpregnant individuals. Over the remaining 15 years its beneficial pharmacologic traits have resulted in its efficacy and security being assessed in pregnancy. Its utility both as a therapy for

acute extreme hypertension, as properly as for lengthy time period use for hypertension in pregnancy, has been explored. The drug has been proven to have a tocolytic impact on uterine clean muscle and subsequently its use in the prevention of preterm transport has been investigated. In this article, the mechanism of motion of the drug, as well as the current appreciation of its metabolism and pharmacokinetics in pregnancy, is reviewed, consisting of evaluation of the literature on the use of Nifedipine in the management of hypertension in being pregnant and its use in suppressing preterm labour. [23]

III. CONCLUSION

From the above provided information and various parameters report that LABETALOL is prescribed more to the patient than combination drug therapy (LABETALOL + NIFEDIPINE) who has pregnancy induced HTN, where it shows that the both of the single drug therapy and combination drug therapy gives good effectiveness towards the management of PIH with possible advantages without any disadvantages. Usually Nifedipine is prescribed with Labetalol for the sudden fall of BP. And these drugs are suitable for use in pregnancy where fetoplacental blood flows is already compromised before treatment of hypertension. Moreover it may not improve the fetoplacental blood flow, but it shows safe for prolongation of pregnancy without further deterioration of foetal hemodynamic, with increased foetal maturation before delivery.

CONFLICT OF INTEREST:

The authors declare that they have no conflict of interest.

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