

# Prevalence of Low Birth Weight in Maternal Pregnancy Induced Hypertension in Patients of Kashmiri Origin

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**Abstract:** Pregnancy induced hypertension is one of the common conditions of unknown aetiology which increases the risk of maternal and perinatal morbidity and mortality. The aim of the study was to determine the prevalence of low birth weight in maternal pregnancy induced hypertension in patients of Kashmiri origin. An observational study was carried out in the Postgraduate Department of Gynaecology and Obstetrics, Lalla Ded Hospital, Government Medical College Srinagar w.e.f September 2014 to February 2015. **Methods:** The study included all patients of PIH BP $\geq$ 140/90 mm Hg after 20 weeks of gestation. Necessary information was collected such as detailed history, clinical examination, investigation performed, mode of delivery and neonatal birth weight. **Results:** 37.5% had systolic blood pressure > 160 mmHg and 42.10% had a DBP > 110 mmHg. The frequency of caesarean section was 53% and 42% for normal birth. Low birth weight (<2.5 kg) was seen in (42.10%) when associated with severe diastolic hypertension and (37.5%) when severe systolic hypertension was taken into account. **Conclusion:** DBP i.e. 110 mmHg or more was associated with low birth weight.

**Keywords:** Hypertension; Pregnancy complications; Pregnancy outcome; LBW; Infant, newborn.

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## I. INTRODUCTION

Pregnancy is a physiological phenomenon for most women. However, some develop problems during its evolution, putting both the mother's and the conceptus's health at stake. Pregnancy-induced hypertension is one of the maternal diseases that cause the most detrimental effects to the mother, foetus and neonates. Pregnancy induced hypertension (PIH) is a hypertensive disorder in pregnancy that occurs after 20 weeks of pregnancy in the absence of other causes of elevated blood pressure (BP) ( $\geq$ 140/90 mm of Hg measured 2 times with at least of 6 h interval). When PIH is associated with significant proteinuria (protein in urine  $\geq$ 0.3 g/in 24 h) it is termed as preeclampsia. When preeclampsia is associated with seizures, it is defined as eclampsia. (1)

This disease is responsible for high maternal and perinatal morbidity and mortality rates, and is one of the main public health problems. (2, 3)

For the conceptus, the most common consequences associated with hypertension diseases are the restriction of intra-uterine growth, **low birth weight**, and prematurity. (3, 5)

Pre-eclampsia is unpredictable in its onset and the only cure is delivery of the baby. The most crucial step in identifying pre-eclampsia is the early detection of elevated blood pressure (4). Maternal mortality in PIH is primarily due to low standard of care and delay in referral services. One of the most important functions of antenatal care (ANC) is to detect high risk pregnancies and to give them the necessary care. Early detection of pre-eclampsia and eclampsia are important in reducing the maternal and neonatal morbidity and mortality. PIH has been confirmed to **increase the risk of low birth weight** and reduce foetal growth (5, 6).

Birth weight is the first weight of the fetus or newborn obtained soon after the birth. Low birth weight (LBW) is defined as weight at birth of less than 2500 gram while very low birth weight (VLBW) is defined as birth weight of less than 1500 grams. According to the UNICEF, in the developing world 15% of infants or more than 1 in 7 weigh less than 2500 g at birth. South Asia has the highest incidence of low birth weight i.e., 27% accounting for more than half of LBW infants born in the world. India has highest number of low birth weight babies each year i.e. 7.4 million and percentage of infants with low birth weight is 28% (7). The present study focuses on the relationship between **PIH** and **BIRTH WEIGHT** of the new born, as this type of study has not been done previously in Kashmir region.

#### **Objective of the study:**

Prevalence of Low Birth Weight in Maternal Pregnancy Induced Hypertension in Patients of Kashmiri Origin.

## **II. METHODS AND MATERIAL**

This study was conducted in the Postgraduate Department of Gynaecology and Obstetrics, Lalla Ded Hospital, Government Medical College Srinagar W.E.F September 2014 to February 2015. All the patients fulfilling the inclusion criteria were taken for study

**Study Design:** Observational study

#### **Study Group:**

All patients admitted to the obstetrics ward with the diagnosis of PIH of Kashmiri origin and willing to participate were included in this study. Patients who had pre-existing Diabetes, Hypertension, Hydatidiform mole, Twin pregnancy, Renal disease and Non Kashmiri origin were excluded from the study

The records were initially identified by referring to the admission file book of the obstetric unit, which holds information about the hospital record, the notes on the pregnant women's blood pressure and the type of delivery.

**Standardization of the measurement of blood pressure** Blood pressure was measured in the sitting position, with the cuff at the level of the heart. Inferior vena caval compression by the gravid uterus while the patient is supine can alter readings substantially, leading to an underestimation of the blood pressure. Blood pressures measured in the left lateral position similarly may yield falsely low values if the blood pressure is measured in the higher arm, unless the cuff is carefully maintained at the level of the heart. Korotkoff sounds I (the first sound) and V (the disappearance of sound) were used to denote the systolic blood pressure (SBP) and DBP, respectively.

Patients enrolled were divided into three groups as per Nice Guideline Development Group (GDG).

**Mild hypertension** diastolic blood pressure 90–99 mmHg, systolic blood pressure 140–149 mmHg

**Moderate hypertension** diastolic blood pressure 100–109 mmHg, systolic blood pressure 150–159 mmHg

**Severe hypertension** diastolic blood pressure 110 mmHg or greater, systolic blood pressure 160 mmHg or greater

The mothers were examined clinically along with recording of their medical history (history of past illness, history of previous child birth etc). Their investigation reports were noted (haemoglobin, blood sugar, blood group, urea, creatinine, urine for albumin and pus cells, uric acid). The birth weight of baby was obtained soon after the birth.

The data were stored in an Excel data bank. Descriptive analysis was performed, of which data are presented in the tables.. The Student's t test was used to compare the quantitative variable means. The adopted level of significance was 5% alpha error.

## **III. OBSERVATION AND RESULTS**

Total cases enrolled in the study was 400 antenatal women. Out of total 400 women admitted for pregnancy induced hypertension maximum 356(89%) in the age group of 20-35 years followed by 28(7%) in teen age group while, 16(4%) were of age more than 35 years. The average age of the admitted patient was  $25.51 \pm 3.79$  Years. The average gestational age of the patient was  $38.4 \pm 3.6$  weeks. Maximum 289 (72.25%) patients were of primigravida, 68(17%) is of second gravida while, 43 (10.75%) of gravida three and above as shown in table 1.

Among the 400 patients admitted 42% women delivered normally. 53% undergone caesarean section, 5% were terminated to prevent further complications as shown in table 2. An Association was found with severe Pregnancy Induced Hypertension and low birth weight, Mothers with severe systolic PIH had 37.5% LBW babies while mothers with mild and moderate systolic Hypertension had 21.96% and 34.01% respectively as shown in table no 3. Similarly relationship of low birth weight with Diastolic Hypertension grading of the study population as shown in table 4 .A significant associations was found with severe Pregnancy Induced Hypertension and low birth weight. Mothers with severe Diastolic PIH had 42.10 % LBW babies while mothers with mild and moderate Diastolic Hypertension had 27.67%and 28.98% respectively. It is apparent that in our study (table 5) mild and moderate hypertensions were identified after 34 weeks and there were nearly 35.2patients were with severe hypertension when corresponds to gestational age less than 34 wks.

**Table 1: Epidemiological profile of pregnancy induced hypertensive (PIH) Cases**

Parameters	Number	Percentage (%)
<b>Cases Age (Yrs) of the women &lt;19</b>	28	7
20-35	356	89
>35	16	4
<b>Gestational age of the women 20-24 Weeks</b>	20	5
> 24 Weeks	380	95
<b>Gravida Primigravida</b>	289	72.25
Second gravid	68	17
Third gravida and above	43	10.75

**Table 2: Outcome of PIH cases**

OUTCOME OF PIH CASES	Number	Percentage
Normal vaginal delivery	168	42%
Lower section caesarean section (LSCS)	212	53%
Therapeutic termination of pregnancy	20	5%

**Table 3: Relationship of low birth weight with systolic Hypertension grading of the study population**

Grading of systolic hypertension(mm hg)	No. of patients	Low birth weight Number and (%)
Mild systolic Hypertension(140-149)	173	38(21.96%)
Moderate systolic Hypertension(150-159)	147	50(34.01%)
Severe systolic Hypertension(>160)	80	30(37.5%)

**Table 4: Relationship of low birth weight with Diastolic Hypertension grading of the study population**

Grading of Diastolic hypertension(mm hg)	No. of patients	Low birth weight Number and (%)
Mild diastolic Hypertension	224	62(27.67%)
Moderate diastolic Hypertension	138	40(28.98%)
Severe diastolic Hypertension	38	16(42.10%)

**Table 5: Severity of PIH by POG in weeks Period of Gestational age (weeks)**

Severity of PIH by Period of Gestational age (weeks)	PIH CATEGORY					
	MILD		MODERATE		SEVERE	
	%	NO.	%	NO.	%	NO.
20 - 33.9	23.5	32	41.1	56	35.2	48
34 – 37.9	44	88	31	62	25	50
38 or later	68.75	44	15.6	10	15.6	10

#### IV. DISCUSSION

In the present study maximum women 356(89%) were in the age group of 20-35 years followed by 28(7%) in teen age group while, 16(4%) were of age more than 35 years. Similarly **Ebeigbe PN** et al (8) in their study in Nigeria found 82.5% women of PIH were in the age group 20-35 years. 95% of patients in the present study were of gestational age more than 24 weeks with average  $38.4 \pm 3.6$  weeks gestational age was. Similar finding was observed by **Ebeigbe PN** et al (10) where 91.3% patients of PIH were of gestational age more than 24 weeks. In the present study 72.25% PIH cases were primi gravida. This was also agreed by **Bangal VB** et al (8). A study by **Bhattacharya SM** (9) which found 65% and 65.5% PIH patients were primigravida, thus reinstating the fact that PIH is **most common in first Pregnancy**.

About 42% of the PIH cases delivered normally while caesarean section was done in 57% cases. Similarly **Ebeigbe PN** et al (10) (58.7%) and **Miguel M** et al (11) (71%) found the percentage of caesarean section.

In the present study low birth weight was seen in (42.10%) when associated with severe diastolic hypertension and (37.5%) when severe systolic hypertension was taken into account. The percentage of low birth weight noted by **Lawoyin TO** et al (12) was (46.7%) and **Wadgave Hanmant v** et al showed (47.06) respectively.

#### V. CONCLUSION

1. Low birth weight remains a challenging problem for clinicians.
2. Birth weight is determined by severity of PIH.
3. The present study results highlighted low birth weight as the consequences of PIH and with increase in severity of PIH birth weight falls down.
4. Early detection of high risk individual by well trained personnel and timely referral to advanced tertiary centres, early and timely treatment of Pregnancy induced hypertension may lead to improved perinatal outcome.

#### VI. RECOMMENDATION

1. Information, education and communication (IEC) strategies should be strengthened to increase the enrolment of women for regular antenatal check-up particularly mothers having pre-existing high risk factors of PIH.
2. Most of the Kashmir women have poor access to basic health services which lead to late detection and treatment of PIH. There is lack of proper referral services in our setup. Establishing a proper referral system can improve the outcome of these patients.
3. Kashmiri population is a meat eating population with high BMI and hypercholesterolemia. Bringing a change in the basic lifestyle of the population can modify the risk factors of PIH and bring an overall improvement in its outcome.
4. Focus on strengthening of quality of antenatal services for early diagnosis of PIH like blood pressure, urine albumin as early recognition and prompt treatment reduces the complications.

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