



AN OBSERVATIONAL STUDY OF MATERNAL AND FETAL OUTCOMES OF 150 CASES OF PREGNANCY-INDUCED HYPERTENSION AT A TERTIARY CARE CENTER IN MUMBAI, INDIA

Obstetrics & Gynaecology

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ABSTRACT

Background- This study aimed to evaluate the epidemiological determinants and various pregnancy and perinatal outcomes in 150 pregnancies complicated with hypertensive disorders in a tertiary care center. **Methods-** A prospective observational hospital-based study was planned for 150 mothers with pregnancy-induced hypertension conducted in JJ Hospital, Mumbai from January 2022- December 2022, and various maternal and perinatal outcomes were noted. **Results-** Out of 150 mothers, we experienced death in 6 (4%) cases and renal dysfunction in 17(42.5%) cases. 44.6% of the cases were in the age group of 26-30 years and 51% of the cases were nulligravida. 133 (88.7%) of them were registered at a health center and 65.3% of the females belonged to lower socio-economic class. 29 mothers (19.3%) revealed signs of fetal growth restriction on the ultrasound. 74 mothers (49.3%) underwent induction of labor but the rate of cesarean section, overall was 69.3%. The perinatal mortality rate was 351/1000 live births and 23 fetuses were diagnosed with intrauterine death before the intrapartum period. **Conclusions-** Early diagnosis and timely management is the key to preventing morbidity/mortality in these cases. Education and empowerment of women and accessible health care especially to the socioeconomically deprived and rural populations are the need of the hour.

KEYWORDS

Hypertension, PIH, outcome, pre-eclampsia, eclampsia

INTRODUCTION

Hypertensive disorders of pregnancy complicate nearly 5–10% of pregnancies all over the world. For every woman who dies of this disorder, another estimated 20 more mothers suffer a life-altering morbidity.¹

The World Health Organization estimates that at least one woman dies every seven minutes from complications of pregnancy-induced hypertension disorders. Pregnancy complicated with hypertensive disorders is related to an increased risk of adverse fetal, neonatal, and maternal outcomes.²

The incidence of hypertensive disorders in India is 10.08% as per data from National Eclampsia Registry (NER). The prevalence of eclampsia is 1.9% among the registered patients.³

This study aimed to evaluate the sociodemographic parameters, and maternal and fetal complications of this potentially devastating condition associated with pregnancy in a tertiary care hospital along with other factors like induction of labor, cesarean rates and hospital stay.

METHODS

The present prospective study was conducted in the Department of Obstetrics and Gynaecology, Grant Government College, Mumbai, from January 2022 to December 2022, 150 pregnant females were selected who were admitted to the ward with two separate blood pressure readings of more than 140/90 mmHg after 20 weeks of gestation. Any females with previously diagnosed or other associated medical conditions were excluded from the study population.

Procedure

After the patient was admitted to the ward, detailed history including socio-demographic parameters and family history was noted and a complete physical and obstetric examination was done. All routine investigations including Ultrasound Obstetrics, and Doppler study at appropriate weeks of gestation done for all patients and were then followed up till their postpartum hospital stay irrespective of their outcome.

Maternal complications, neurological complications, Intensive Care

Unit (ICU) admissions, and maternal death were studied.

Perinatal complications were recorded in terms of Neonatal Intensive Care Unit (NICU) admission, and incidence of low-birth-weight neonates. A pre-structured proforma containing information about the patient's age, obstetric history, expected date of confinement, and period of gestation, investigations performed were noted along with the outcome of the pregnancy.

Statistical Analysis:

Data compiled in the Excel sheet will be analyzed statistically to calculate the mean and standard deviation.

RESULTS

The mean age was 26.9 years, with a range of 19 years – 34 years.

Table: 1 Distribution of cases as per the age of the patient

Sr. No.	Age group (years)	Number of cases (n)	Percentage (%)
1	<20	7	4.7
2	21-25	49	32.7
3	26-30	67	44.6
4	31-35	27	18.0
	Total	150	100.0

Of 150 cases, 80 (53%) women were multigravida, whereas the remaining 70 (46%) were primigravida.

Table 2- Distribution of cases according to gravida

Sr. No.	Gravida score	Number of cases (N)	Percentage of cases (%)
1	Primigravida	76	50.7
2	Multigravida	72	49.3
	Total	150	100.0

50 (33.3%) women out of the study population were educated beyond the 8th grade, showing the relationship between the level of education, most likely linked with better awareness and compliance with treatment.

Table 3- Distribution of cases according to the maternal level of

education

Sr No.	Education	Number of cases (N)	Percentage of cases (%)
1	Illiterate	22	14.7
2	Upto Primary (4th)	46	30.7
3	Upto Secondary (8th)	32	21.3
4	Beyond secondary	50	33.3
	Total	150	100.0

133 women were booked, making up 88% of the study population. But still, 17 (11%) women were unregistered which shows the need for awareness among the mother regarding the importance of antenatal registration.

Table 4- Distribution of cases according to antenatal care registration

Sr. no.	ANC registration	Number of cases (N)	Percentage of cases (%)
1	Registered	133	88.7
2	Unregistered	17	11.3
	Total	150	100.0

The table clearly depicts that 98 (65%) mothers of the study population belong to the lower economic strata (SES IV & V). In my study 48 (32%) mothers belonged to the middle class and only 4 (2.7%) mothers belonged to the upper middle class as per the modified B.J Prasad socioeconomic status classification.

Table 5 - Distribution of cases according to socioeconomic status (SES)

Sr No.	Socio-economic status	Number of cases (N)	Percentage of cases (%)
1	I (Upper)	0	0
2	II (Upper middle)	4	2.7
3	III (Middle)	48	32.0
4	IV (Lower middle)	65	43.3
5	V (Lower)	33	22.0
	Total	150	100.0

106 (70.7%) mothers had a cesarean section as the mode of delivery, the most common indication being non-progress of labor, followed by fetal distress. 44 (26.7%) mothers had a vaginal delivery, either preterm or at full term.

Table 6- Distribution of cases according to the mode of delivery

Sr. No.	Mode of delivery	Number of cases (N)	Percentage of cases (%)
1	Lower-segment cesarean section	104	69.3
2	Vaginal delivery	37	24.7
3	Instrumental – vacuum	06	4.0
4	Instrumental – forceps	03	2.0
	Total	150	100.0

A total of 52 babies were shifted to the neonatal intensive care unit, out of which low birth weight and prematurity were the most common reason, seen in 19 (36.5%) babies. The next in line was respiratory distress for which 14 (26.9%) babies were shifted for monitoring.

Table 7- Distribution of cases according to the reason for neonatal intensive care unit (NICU) admission (N=52)

Sr. No.	Reason for NICU admission	Number of cases (N)	Percentage of cases (%)
1	Birth asphyxia	3	5.7
2	Congenital anomaly	2	3.8
3	Low birth weight/prematurity	19	36.5
4	Meconium aspiration syndrome	3	5.7
5	Respiratory distress	14	26.9
6	Ventilator support	11	21.4
	Total	52	100

111 babies (74%) were eventually discharged with a healthy status, but

16 (10.7%) babies succumbed in the first month of life. 23 (15.3%) mothers had a stillbirth, a maximum of them in the late third trimester. The perinatal mortality rate in my study comes out to be 351/1000 live births.

Table 8- Distribution of cases according to the outcome of the baby

Sr. No.	Distribution of cases according to the outcome of the baby	Number of cases (N)	Percentage of cases (%)
1	Healthy	111	74.0
2	Intrauterine death	23	15.3
3	Neonatal death	16	10.7
	Total	150	100.0

The worst outcome in mothers with pregnancy-induced hypertension is mortality, the cause may be directly and indirectly related to the primary disease. Out of the 150 mothers in our study population, we lost 6 (4%) mothers. Strict monitoring and blood pressure control in the antenatal period combined with increased awareness among mothers may be a way of reducing mortality in mothers.

Table 9- Distribution of cases according to the maternal outcome

Sr. No.	Maternal outcome	Number of cases (N)	Percentage of cases (%)
1	Healthy mother	144	96.0
2	Maternal death	6	4.0
	Total	150	100.0

DISCUSSION

The prevalence of PIH among hospitalizations increased from about 13% in 2017 to 16% in 2019, affecting at least 1 in 7 hospitalizations during this period, according to a CDC report in 2022. A third of those who died during hospital delivery had a hypertensive disorder of pregnancy documented.^[4]

As per a prospective population-level analysis performed in South-Asian countries (2019), the incidence of hypertensive disease in pregnancy in India stands at 10.3%.⁵

Primiparous, young women with low socioeconomic status are the typical characteristics of pre-eclamptic cases, as quoted in studies by Shobhapillai et al⁶ and Savitharani et al⁷ Our study revealed similar sociodemographic data in the population.

In our study, 33% of our study population was educated beyond the secondary level i.e., middle school. Silva et al,⁸ in their study revealed that women with high educational levels (32.6%) had highest blood pressure values at the time of antenatal registration, most likely due to the positive association of age, alcohol consumption at the time of conception.

As per a community trial in South-Asian countries⁹ where antenatal contact with ANC mothers was increased at a community level with healthcare workers, this intervention was likely to be cost-effective for women receiving ≥8 contacts in Mozambique and India, supporting WHO guidance on antenatal contact frequency. The detection rate of pregnancy-induced hypertension was also increased in this trial. 88% of our study population are registered in a tertiary care center/healthcare center.

In a retrospective review done by Gofton et. Al, the length of labor, the incidence of postpartum hemorrhage, and the length of postpartum stay were greater for women with gestational hypertension than for control subjects. Failure to progress, malpresentation, and fetal distress were noted as the 3 most common indications for cesarean delivery for the hypertensive groups.¹⁰

In our study, 106 (70.7%) mothers were delivered by cesarean section, the most common indication being non-progress of labor and Shobhapillai et al⁶, in their study, reported a similar cesarean rate of 64.5%.

A similar neonatal intensive unit admission rate was seen between my study and the study done by Shobhapillai et al⁶ at 36.4% and 39% respectively.

Perinatal mortality can be attributed to maternal systemic diseases or congenital anomalies and a variable factor of level of neonatal care

available at the health care setup. Indian authors like Shobhapillai et al⁶ and Savitharani et al⁷, in their studies, have reported a stillbirth rate of 9% and 28% and a similar neonatal death rate of 9% and 8.16% respectively. The perinatal mortality rate in my study was 351/1000 live births, a stillbirth rate of 15.3% and neonatal deaths at 10.7%.

The goal in the management of mothers with pregnancy-induced hypertension is the safety of the mother primarily and the delivery of the baby with a good neonatal outcome. Our study had maternal mortality of 4%, which was higher than the general maternal mortality of the hospital.

CONCLUSION

Considering this disorder to be one of the most devastating disorders of pregnancy leading to maternal and perinatal morbidity and mortality, it is of utmost importance to identify risk factors and warning signs at the earliest. Emphasizing on regular antenatal checkups and accessible healthcare services with appropriate referral centers availability is important at all levels of healthcare.

Prolongation of pregnancy is advisable only if there is no absolute indication for termination of pregnancy. The provision of quality antenatal health care services, increasing patient awareness about warning symptoms, investigations, timely delivery, and intensive care monitoring in the intrapartum and postpartum period have the potential to improve maternal and perinatal outcomes.

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