Hypertension during pregnancy is a highly variable disorder unique to pregnancy and a leading cause of maternal and fetal/neonatal morbidity and mortality. Preeclampsia is a progressive disorder, in some conditions delivery is needed immediately for the benefit of mother and fetus. However, need for premature delivery has adverse effects on neonatal outcomes. Eclampsia still remains a significant risk factor for neonatal morbidities like preterm stillbirth, IUGR, hematological and cerebrovascular anomalies. Hence based on above findings the present study was conducted for Assessment of Neonatal Outcomes in Eclamptic Mothers Admitted to NMCH, Patna, Bihar. Reviewed is the current literature for neonatal outcomes and potential strategies to optimize fetal outcomes in pregnancies associated with eclampsia. The present study was planned in Department of Pediatrics, Nalanda Medical College and Hospital, Patna, Bihar, India. The study was planned from March 2019 to October 2019. In the present study 50 females admitted with eclampsia or with pre-eclampsia but subsequently developing eclampsia were enrolled. Also the control females were also evaluated for comparative evaluation. The mothers were selected after matching the socio-demographic and nutritional profile. Mothers less than 28 weeks of gestation or suffering from chronic illness, giving birth to twin babies or babies with gross congenital malformation were excluded. The data generated from the present study concludes that Prevention of prematurity, treatment of morbidities & prevention of infection among infants should be done to reduce the PMR and improve perinatal outcome. Thus High risk pregnancy should be identified prospectively and then given special care, perhaps a major impact on overall perinatal loss could be reduced.

INTRODUCTION:
Ten percent of all pregnancies are complicated by hypertension. Eclampsia and preeclampsia account for about half of these cases worldwide, and these conditions have been recognized and described for years [1]. It is a multisystem disorder in pregnancy and a leading cause of maternal and fetal morbidity and mortality. Neonatal and infant mortality rates are higher in preterm infants than in term infants. [2,3]

A study by Young and Colleagues determined the relative risk for mortality rate for each weekly estimated gestational age from 34-42 weeks using 40 weeks as the reference cohort [4,5]. There are many adverse effects of eclampsia on neonatal outcomes, the common ones being:

A) Risk of still birth - Still birth represents an important cause of fetal loss in neonates to eclamptic and preeclamptic mothers [6]. Although, greater than 90% of fetal deaths occur in the first 20 weeks of gestation, the rate of still birth is approximately 3 per 1000 live births beyond 28 weeks gestation. Evidence suggests that beginning at approximately 36 weeks, the risk of intrauterine fetal demise increases [7,8]. Eclampsia represents significant risk factor for intrauterine fetal demise, with estimated still birth rate of 21 per 1000[8,9]. In the setting of severe eclampsia, the risk of fetal death outweighs the benefits of pregnancy prolongation. However, in mild eclampsia, the fetal demise is more than 50% less than in severe eclampsia [10].

B) Intrauterine growth retardation - Preeclampsia, a condition with decreased uteroplacental blood flow and ischemia is a significant risk factor in development of IUGR and represents the most common cause of IUGR in nonanomalous infant. Data has shown that for any gestational age at birth, a weight below 10th percentile increases mortality [11,12]. Pregnancies complicated with severe eclampsia and preeclampsia shows birthweight 12% lower than expected while pregnancies with mild eclampsia and preeclampsia showed no change in weight gain than the normal ones [12,13].

C) Hematological effects - Maternal eclampsia or preeclampsia can result in neonatal thrombocytopenia. In pregnancies complicated by preeclampsia, thrombocytopenia is identified at birth or within first 2-3 days following delivery [14,15]. The pathogenesis is unknown [16]. One likely mechanism is that eclampsia and the resultant fetal hypoxia, has a direct depressant on megakaryocyte proliferation [17,18]. This is supported by studies showing that growth restricted neonates have significant megakaryocytopenic defects without evidence of increased platelet destruction [18].

D) Bronchopulmonary dysplasia - Evidence suggests that abnormal placentalation, characterized by shallow invasion of the maternal arteries, compromises uterine blood flow at expense of growing placenta and fetus [17]. The resulting hypoxia and ischemia may result in fetal angiogenesis [15,16], however, BPD occurs in infants of mothers with severe eclampsia.

E) Neurodevelopmental outcome - The neurodevelopmental outcomes of exposed infants are highly variable [13,14]. Some evidence suggests that preeclampsia and eclampsia is associated with a decreased risk of cerebral palsy [16,17]. Some data suggests infants born to mothers with eclampsia have lower MDI scores at 24 months of age as compared to infants without maternal eclampsia [14].

Therefore, it shows that both eclampsia and preeclampsia leads to a number of adverse neonatal outcomes and is one of the main public health problems. Hence based on above findings the present study was planned for Assessment of Neonatal Outcomes in Eclamptic Mothers Admitted to NMCH, Patna, Bihar.

METHODOLOGY:
The present study was planned in Department of Pediatrics, Nalanda Medical College and Hospital, Patna, Bihar, India. The study was planned from March 2019 to October 2019. In the present study 50 females admitted with eclampsia or with pre-eclampsia but subsequently developing eclampsia were enrolled. Also the control females were also evaluated for comparative evaluation.

All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion and exclusion criteria for the present study:

Inclusion Criteria: All pregnant women are at or beyond 28 weeks of gestation, with singleton pregnancy and in the age group between 20-40 years are included.

Exclusion Criteria: Women with chronic hypertension, renal disease, diabetes mellitus, chronic lung disease, pregnancy induced hypertension, eclampsia, previous history of fetal growth restriction, multiple pregnancy, polyhydramnios, placental abruption, fetal distress, congenital heart disease, chromosomal abnormality, maternal infection, history of smoking, drug addiction, previous Cesarean section, severe maternal malnutrition, or women who are known to be non-compliant with obstetrical management were excluded.
cardiovascular disease, thyroid disease, liver disease, diabetes mellitus, twin pregnancy, pregnancy with gross congenital malformation and molar pregnancy are excluded. Blood samples were collected with the consent of the patient and centrifuged and analysed immediately for serum calcium and magnesium levels.

RESULTS & DISCUSSION:
Hypertension is one of the most common medical complication of pregnancy. It contributes significantly to the cause of maternal and perinatal morbidity and mortality. Hypertensive disorders of pregnancy predispose women to acute or chronic uteroplacental insufficiency, resulting in antepartum asphyxia that may lead to fetal death, intrauterine growth retardation and/or preterm delivery.

Essential hypertension cases were less in this study, probably because majority of the mothers did not receive antenatal care and were asteroid as emergency admissions, hence no blood pressure record during the antenatal period was available. Seventy three per cent of the study cases were emergency admissions, the figures being similar to other studies. [15] The perinatal mortality was also higher in them as compared to the booked cases.

Table 1: Basic Details

| Group of Eclampsia Females | Control Females |
|-----------------------------|-----------------|
| Age: 20 – 30 years          |                 |
| Parity: 0                   |                 |
| Antenatal Care: Less than 2 visits |                     |
| Socio Economic Status:     |                 |
| Weight kg                   |                 |

Table 2: Neonatal Outcomes

| Group of Eclampsia Females | Group A | Group B |
|-----------------------------|---------|---------|
| Low Birth Weight            | 31      | 15      |
| Intrauterine Growth Retardation | 6        | 1        |
| Birth Asphyxia              | 17      | 6       |
| Hypoxic Ischemic encephalopathy | 5        | 0        |
| Early Onset Sepsis          | 5       | 2       |
| Still Birth                 | 4       | 2       |

Maternal morbidity includes severe bleeding from abruption placentae with its resulting coagulopathy, pulmonary edema, aspiration pneumonia, acute renal failure, cerebrovascular haemorrhage, retinal detachment and PRES. Perinatal mortality and morbidity is another impact factor in eclampsia patients, as the definitive treatment is the only termination of pregnancy irrespective of gestational age. The primary target in eclampsia is achieving control of convulsions, control of blood pressure and terminating pregnancy within optimal time frame. At all health providing levels appropriate use of anticonvulsants, anti-hypertensives along with safe culmination of pregnancy should be encouraged for these patients. If need is felt referral to a well-equipped higher center should be done promptly without wasting time along with appropriate emergency obstetric care.

The major cause of intra uterine death was placental insufficiency producing severe intra uterine growth retardation. The major cause of still birth also is placental insufficiency. Fetal heart rate is seen to be above 160 after 24 weeks of gestation. The diagnosis is confirmed through imaging and Doppler studies. Fetal distress syndrome was the major neonatal complication followed by sepsis and convulsions. All these complications were seen to decrease with increasing gestational age rather than the birth weight. Steroids when given were definitely seen to help reduce the neonatal respiratory distress syndrome. Expectant management can be undertaken by experienced team offering continuous monitoring and care. It is best that such patients be moved to a tertiary care centre with advanced neonatal care facility before the management is offered.

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