

Early Childbearing a Risk Factor for Gestational Hypertension in Rural Population in Chhattisgarh

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Abstract

Hypertension is the most common medical condition during pregnancy and is classified into four types: chronic hypertension, gestational hypertension, pre-eclampsia, and pre-eclampsia superimposed on chronic hypertension. Pre-eclampsia and gestational hypertension are major causes of maternal and perinatal morbidity and mortality.

Pre-eclampsia (PE) is a pregnancy-specific multisystem disorder, typically developing after 20 weeks of gestation. It is characterized by hypertension, proteinuria, and symptoms such as sudden weight gain. Although inadequate placentation begins early in pregnancy, clinical signs often appear later. If unmanaged, PE may progress to eclampsia, a severe complication involving seizures.

This 5-year retrospective study (2014–2018) assessed the prevalence of PE and eclampsia in rural Chhattisgarh. Among 991 pregnant women, 3.73% had pre-eclampsia and 4.33% had eclampsia. The highest prevalence occurred in women aged 19-23 years-72.9% for PE and 65.1% for eclampsia.

The high incidence in younger age groups is likely due to early marriage and childbearing, common in rural areas. Urbanization-related lifestyle changes may also contribute to the increasing risk of hypertensive disorders in pregnancy.

Keywords: *Pre-eclampsia, urbanization, childbearing, life style, age.*

Introduction

Hypertension is the most common medical problem encountered during pregnancy. Increased risk of adverse fetal, neonatal and maternal outcomes, including pre-term birth, intrauterine growth restriction (IUGR), perinatal death, acute renal or hepatic failure, and maternal death,^[1] and longterm disability among both mothers and their babies ^[2-4] are the major complications associated with hypertension related pregnancies. Hypertensive disorders during pregnancy are classified into 4 categories, pre-eclampsia, Gestational hypertension, Chronic hypertension and pre-eclampsia superimposed on chronic hypertension ^[5]. Out of these hypertensive conditions pre-eclampsia and/or gestational hypertension stands out as a major cause of maternal and perinatal mortality and morbidity ^[3,10, 12].

Pre-eclampsia (PE) is a pregnancy specific, multisystem syndrome characterized by reduced organ perfusion secondary to vasospasm and activation of the coagulation cascade ^[6]. The pathogenesis of PE is only partially understood. It is generally accepted that the onset of a new episode of hypertension during pregnancy (with persistent diastolic blood pressure >90 mm Hg) with the occurrence of substantial proteinuria (>0.3 g/24h) can be used as criteria for identifying PE. Usually patho-physiological changes (e.g. inadequate placentation) exist from very early stages of the pregnancy, hypertension and proteinuria usually become

apparent in the second half of pregnancy and are present in 2%–8% of all pregnancies overall ^[3]. It develops usually after 20 weeks of gestation with symptoms of hypertension, proteinuria along with Oedema, sudden weight gain (more than five pounds in a week), Headache, Nausea or vomiting, especially suddenly, after mid pregnancy, Abdominal pain (epigastric or in upper right quadrant region, Changes in vision, difficulty in breathing and hyperreflexia^[5,7].

The world wide incidence of PE ranges between 2% and 10% of pregnancies. According to WHO reports the incidence of PE is seven times higher in developing countries (2.8% of live births) than in developed countries (0.4%) ^[17]. In India, the incidence is reported to be 8-10% ^[7] and in hospital practice varies from 5-15% ^[8]. In a semi urban block Hazratbal of Srinagar the incidence of PE was 5.5% which is even slightly higher than the pooled incidence of developing countries (3.4%) ^[13].

Pre-eclampsia has several known risk factors, including type I diabetes, HIV, obesity, chronic hypertension, renal and autoimmune diseases, nulliparity, adolescent pregnancy, and conditions associated with large placentas, such as twin pregnancies ^[3,23]. Maternal age also plays a role. An Iranian study reported a higher incidence of pre-eclampsia in women under 30 (65.7%) compared to those 30 and above (34.3%) ^[9]. In China, the lowest risk was observed in women aged 25-29, while the highest was in those aged ≥40 and teenagers ^[10]. Sheraz et al. and Zibaenezhad et

al. similarly reported increased risk in primigravidae under 20 and women over 30–35 years [9,11]. Increasing urbanization and exposure to air pollution are also emerging as potential risk factors [15,16].

The aim of the present study was to assess the prevalence of Pre-eclampsia and Eclampsia in the rural populations of Chhattisgarh.

Materials and methods

This retrospective study was carried out during a 5 year period from 2014 to 2018. The age of women included in this study ranged between 19-33. The pregnant women with pre-eclampsia comprised those with hypertension after the 20th week of gestation with associated proteinuria. A careful diagnosis of induced hypertension of pregnancy and pre-eclampsia had been carried out.

The combination of clinical data: mean arterial pressure, oedema of the face and hands, fundus oculi examination, deep tendinous reflexes, as well as the laboratory test results: proteinuria, plasma urea, creatinine, platelet count, total protein, plasma fibrinogen had been used to assess the condition.

The records of the mothers who delivered in the hospital from January 2014 to August 2018 were scrutinized for completeness of history and case write-up. In the first step, the records with pre-eclampsia were scrutinized and separated. Information relating to maternal and obstetric factors was obtained from the case records, which included age, body mass index (BMI), multiple pregnancy, history of chronic hypertension, history of diabetes, history of renal disease, family history of hypertension, and history of Pregnancy Induced Hypertension (PIH) in earlier pregnancy. Data was tabulated and analyzed using Ubuntu Libre Office Calc version-14.0.

Results and Discussion

The study sample included 991 pregnant women from five years 2014-2018. Of the 80, 99, 131, 223 and 458 pregnant women from the year 2014, 2015, 2016, 2017 and 2018, 10%, 12.1%, 3.81%, 2.42% and 1.52% were PE cases respectively. While 3.75%, 4.04%, 5.34%, 3.58% and 5.02% were Eclampsia cases respectively (Figure 1).

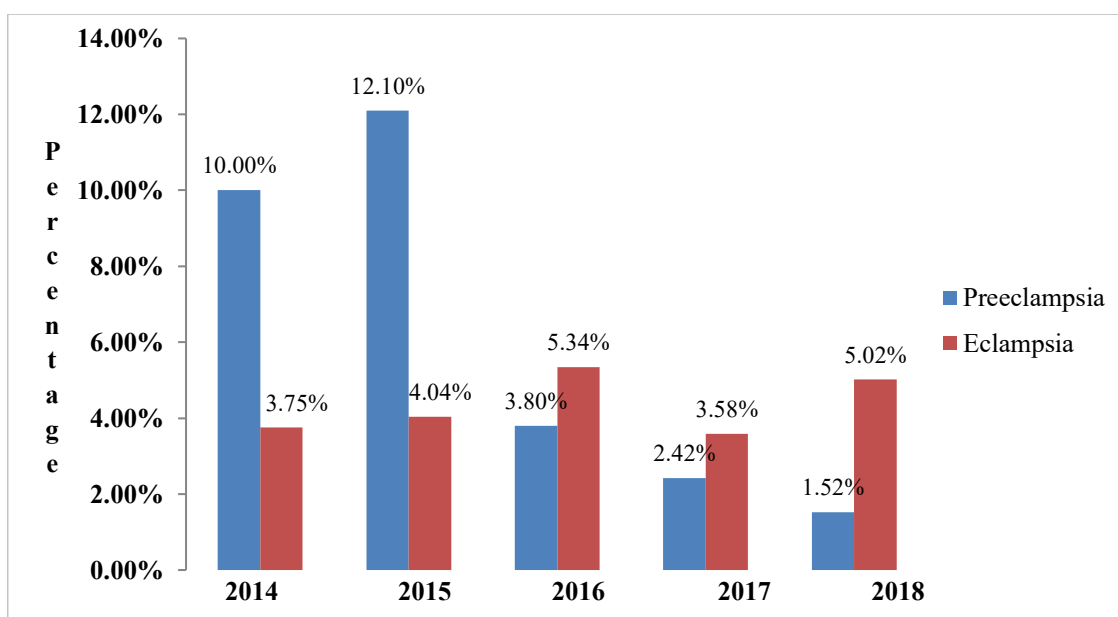


Fig. 1. Percentage of Preeclampsia and Eclampsia cases from the year 2014-2018

Over the study period of 5 years, we report an overall 3.73% (37) of PE cases and 4.33% (43) of Eclampsia (Figure 2).

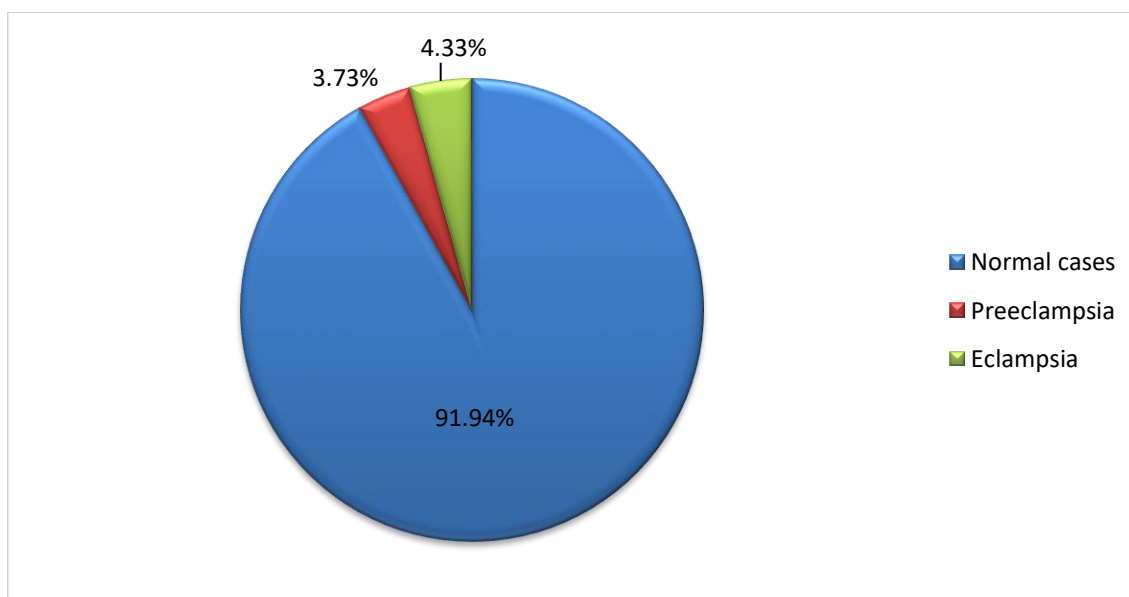


Fig. 2. Percentage of Preeclampsia and Eclampsia cases

We observe that the occurrences of PE and Eclampsia is higher i.e., 72.9% and 65.1% in the age group of 19-23, and the PE and Eclampsia cases demonstrate a decreasing trend in the later age groups of 24-28 (18.9%, PE, 30.23% Eclampsia) and 29-33 (8.1% PE, 4.65% Eclampsia (**Figure 3**).

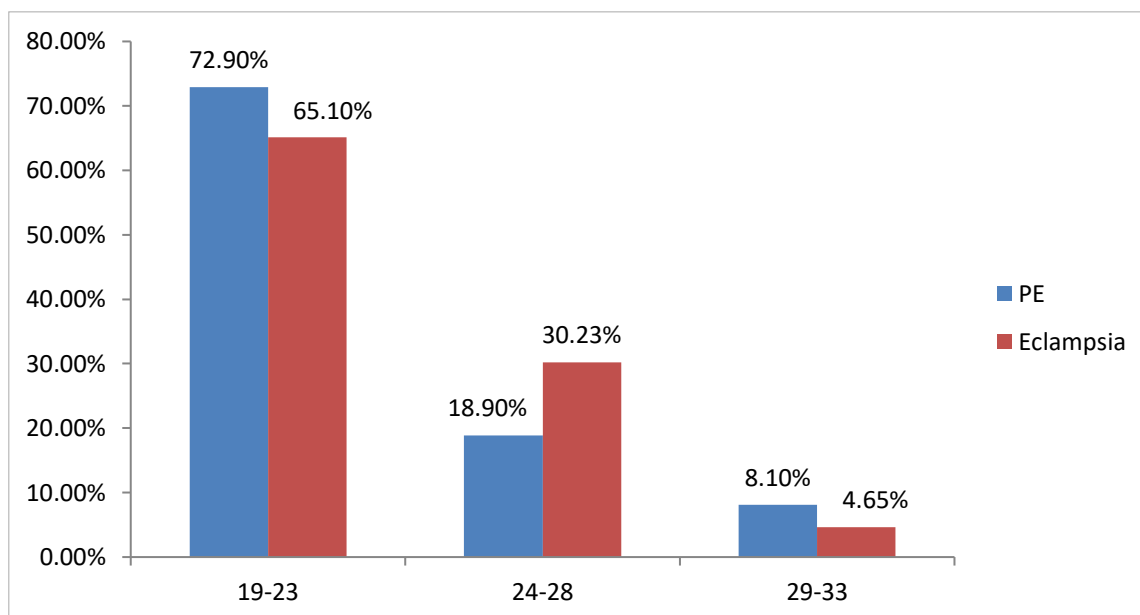


Fig. 3: Age-wise percentage distribution of Preeclampsia and Eclampsia

At the same time we also observe an increasing trend in the cases of Eclampsia over the period of 5 years (**Figure 4**).

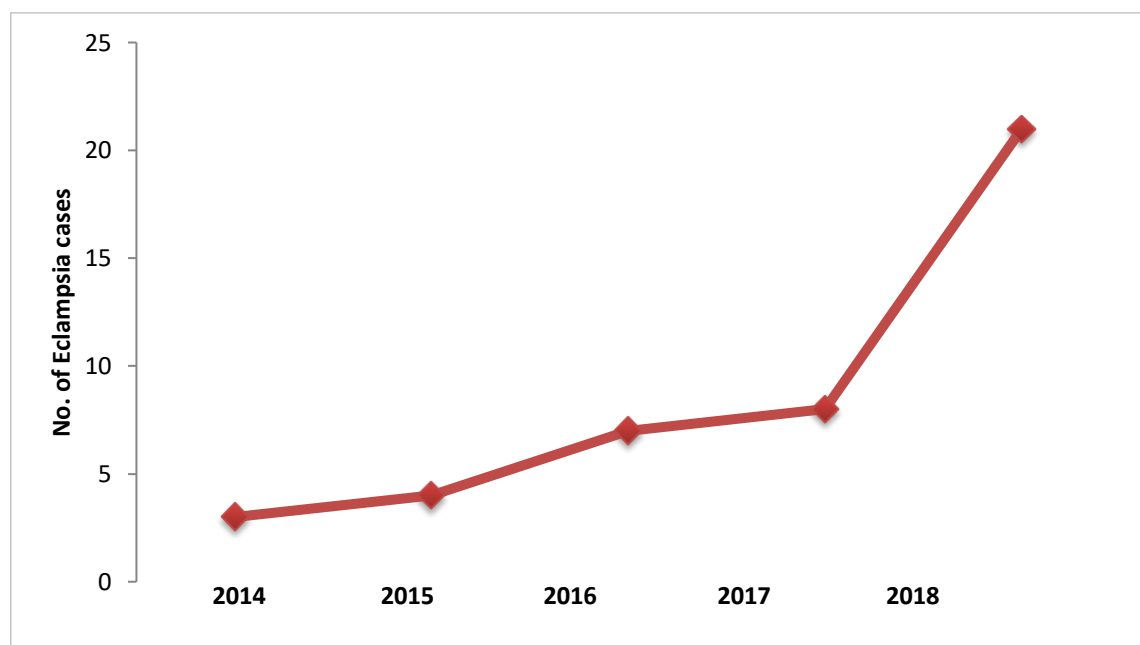


Fig. 4. Increasing trend in the number of cases of Eclampsia over the period of 5 years

The higher occurrences of PE and Eclampsia cases in our study was observed in the age group of 19-23 and this could be attributed to the prevalence of early marriages and early child bearing in these populations [18]. Other studies have reported pregnancy at adolescence (17-19 years) as a burden compared to adults due to physical immaturity and overlapping maternal growth, nutritional status, socioeconomic factors, partner abuse and emotional overload [19-22], however in our case the burden of PE and Eclampsia was observed above 19 years of age. A study reports that the percentage of mother's who receive full antenatal care and who have at least 4 antenatal visits to hospitals are very low in the rural populations of Chhattisgarh, i.e. 19.6 and 55.7 respectively, which can be considered as a major reason for the high incidence of PE and Eclampsia in these populations [18]. Due to lack of antenatal care regular monitoring for

symptoms of PE in the early stages of pregnancy are not possible, hence remain controlled and this could manifest as cases of Eclampsia in the later stages.

Recent studies have also shown an association between exposures to Traffic related air pollution (TRAP), local air pollution and increase risk of PE [16]. In the last decade there has been drastic urbanization in these regions of Raipur, Chhattisgarh resulting in the exposure to more air pollution which could also be one of the factors contributing to the increase PE cases. If the relation between air pollution and increase risk of PE is significant for these populations it would have a profound effect on public health and would require regular antenatal visits and care.

Further recent studies suggest that before 11 weeks of gestation, several interventions can be initiated based on first-trimester maternal characteristics to reduce the risk of preeclampsia. These may include medication adjustments, lifestyle modifications, and timely referral to specialist care when appropriate ^[24].

Declarations

Conflict of interest

None

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