



Original Research Article

Demographic factors affecting fetomaternal outcome in preeclamptic patients with and without transaminitis: A prospective analytical study

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ABSTRACT

Introduction: Hypertensive disorders are common medical problems encountered during pregnancy with reported incidence between 5-10%. They form one of deadly triad along with haemorrhage and infection that contribute to maternal and fetal morbidity and mortality.

Aim of the study was to evaluate demographic factors in preeclamptic patients with and without transaminitis and their impact on fetomaternal outcome.

The objective of the study was to evaluate demographic factors in pregnant women with preeclampsia in singleton pregnancies with gestational age >24 weeks with and without transaminitis and their impact on fetomaternal outcome.

Materials and Methods: Informed consent of patients was taken fulfilling the inclusion criteria. Demographic profile including age, socioeconomic status was noted. Detailed obstetric history was taken. Complete general, systemic and obstetric examination was done.

Statistical Analysis: Using a prevalence rate of transaminitis of 24% amongst preeclamptic mothers based upon a previous study with an alpha error of 5% and a 5% margin of error the minimum required sample size was 281 patients.

Discussion: Hypertensive disorders of pregnancy are one of the leading causes of maternal and perinatal morbidity and mortality. In Indian context, not many studies have been done to evaluate demographic factors influencing maternal and neonatal outcome amongst pregnant women with preeclampsia with and without deranged liver enzymes.

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1. Introduction

Hypertensive disorders are common medical problems encountered during pregnancy with reported incidence between 5-10%. They form one of deadly triad along with haemorrhage and infection that contribute to maternal and fetal morbidity and mortality. Many studies estimate that hypertension is responsible for 2.6% to 7.6% of maternal mortality.¹⁻⁴

Aim of the study was to evaluate demographic factors in preeclamptic patients with and without transaminitis and

their impact on fetomaternal outcome.

The objective of the study was to evaluate demographic factors in pregnant women with preeclampsia in singleton pregnancies with gestational age >24 weeks with and without transaminitis and their impact on fetomaternal outcome.

2. Materials and Methods

The present study was a prospective observational analytical study conducted on 281 preeclamptic patients presenting to department of obstetrics and gynaecology of Dr Baba Saheb Ambedkar Medical College and Hospital, Rohini,

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New Delhi, meeting exclusion and inclusion criteria.

Inclusion criteria was all preeclamptic women (BP >140/90 mm Hg and urine albumin one plus or more) with gestational age >24 weeks with singleton pregnancy. Exclusion criteria were obstetric complications other than preeclampsia like twin gestation, antepartum haemorrhage, preterm labour, rhesus negative pregnancy, previous lower segment cesarean section, liver diseases peculiar to pregnancy, intrahepatic cholestasis of pregnancy, acute fatty liver of pregnancy, liver diseases incidental to pregnancy like viral hepatitis, liver cirrhosis, portal hypertension with esophageal varices, hemochromatosis, wilson's disease, congenital liver disease, autoimmune hepatitis, hepatic adenomas, hepatocellular carcinomas, non alcoholic fatty liver disease. Systemic causes like known cardiac, biliary, gastrointestinal, pancreatic disease, diabetes, hypothyroidism, connective tissue disease, neurological disorder, psychiatric disorders.

Informed consent of patients was taken fulfilling the inclusion criteria. Demographic profile including age, socioeconomic status was noted. Detailed obstetric history was taken. Complete general, systemic and obstetric examination was done. All Patients were classified into mild, moderate and severe hypertension and managed as per standard guidelines. Investigations including complete blood count with platelets, liver function tests with serum proteins, kidney function tests with serum electrolytes, prothrombin time were sent. Fundus examination was done.

Clinical assessment was done during each visit and LFT was repeated at every two weeks interval. If during any visit AST >25 IU/l and/or ALT >32IU/L and/or ALP > 418 IU/L, patients were called again after a week and blood pressure and fetomaternal well-being was assessed. Termination of pregnancy was done as per the RCOG guideline.⁵

Platelet count and liver function tests in proteinuric and chronic hypertension in pregnancy was observed by Verhaeghe J, Anthony J, Davey DA. On the basis of the above mentioned study, prevalence of elevated transaminase levels was 24%. Taking this value as reference, the minimum required sample size with 5% margin of error and 5% level of significance is 281 patients. Formula used was:-

$$ME = z * \text{Sqrt}((p(1 - p))/N)$$

Where Z is value of Z at two-sided alpha error of 5%, ME is margin of error and p is prevalence rate.

2.1. Statistical analysis

Using a prevalence rate of transaminitis of 24% amongst preeclamptic mothers based upon a previous study with an alpha error of 5% and a 5% margin of error the minimum required sample size was 281 patients. Categorical variables were represented as numbers and percentages (%) and continuous variables as mean and SD or median with IQR. Normality of data was tested by Kolmogorov-Smirnov test. Unpaired t-test/Mann-Whitney U Test were used to compare

between two different groups and paired T test/Wilcoxon rank sum test was used to compare across follow up. Qualitative variables were correlated using Chi-Square test /Fisher's exact test as applicable. Pearson correlation coefficient/Spearsman rank correlation coefficient was used to assess the correlation between the variables as applicable. Receiver operating characteristic curve was used to find out the cut off point of BP and liver enzymes for predicting maternal and fetal complications. A p value of <0.05 has been considered statistically significant.

Table 1: Age distribution

	Frequency	Percentage
1) <=20	225	80.07%
2) 21-30	49	17.44%
3) >30	7	2.49%
Total	281	100.00%

In my study most of the patients (80%) belonged to age group < 20 years age, 17.44% belonged to 21 to 30 years age and 2.49% were more than 30 years age.

Table 2: Education status

	Frequency	Percentage
1) Illiterate	14	4.98%
2) 1st-5th	64	22.78%
3) 6th-9th	124	44.13%
4) 10th-12th	74	26.33%
5) Graduate	5	1.78%
Total	281	100.00%

44% patients studied between 6th and 9th standard, 22% between 1st and 5th standard, 26% between 10th and 12th, 4% patients were illiterate and 2% were graduates.

Table 3: Socioeconomic status

	Frequency	Percentage
L	126	44.84%
LM	43	15.30%
UL	112	39.86%
Total	281	100.00%

44.8% patients belonged to lower socioeconomic status, 15.3% belonged to lower middle socioeconomic status and 39.8% belonged to upper lower socioeconomic status.

72% patients were primigravida, 21% were second gravida and 1.3% patients were gravida five and above.

P value 0.006, hence age significantly influences maternal outcome. Conception before 20 years age or beyond 30 leads to poor maternal outcome in preeclamptic patients.

As P value is .0002 so education status significantly influences maternal outcome. Better education of women leads to increased awareness, timely antenatal visits,

Table 4: Gravid state of uterus

	Frequency	Percentage
G1	205	72.95%
G2	60	21.35%
G3	10	3.56%
G4	2	0.71%
G5	1	0.36%
G6	2	0.71%
G7	1	0.36%
Total	281	100.00%

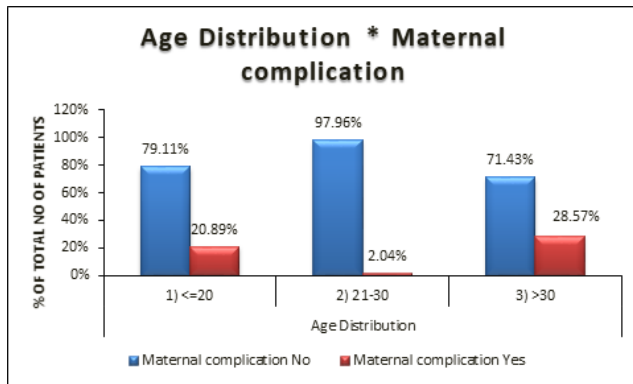


Fig. 1: Effect of age on maternal complications

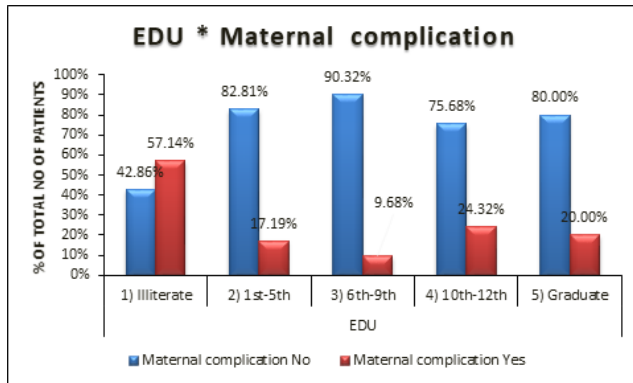


Fig. 2: Effect of education status on maternal complications

early diagnosis and management of preeclampsia and less maternal complications.

Higher Socioeconomic status can provide better diet and education, greater awareness hence significantly influences maternal outcome.

Parity significantly influences maternal outcome. More the parity, more are the maternal complications.

Age significantly influences fetal outcome. Conception before 20 years age or beyond 30 leads to poor fetal outcome in preeclamptic patients.

Education status significantly influences maternal outcome. Better education of women leads to higher awareness, more antenatal care, timely diagnosis and

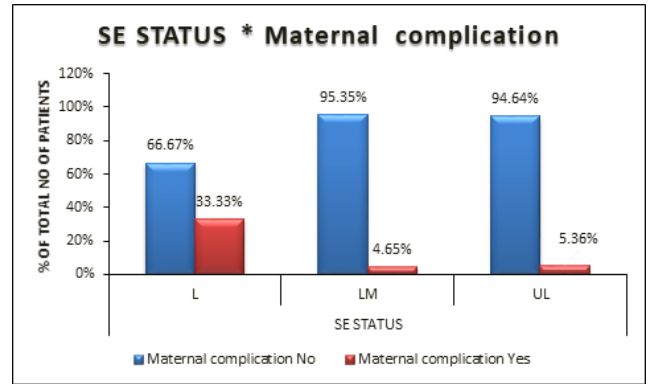


Fig. 3: Effect of socioeconomic status on maternal complications

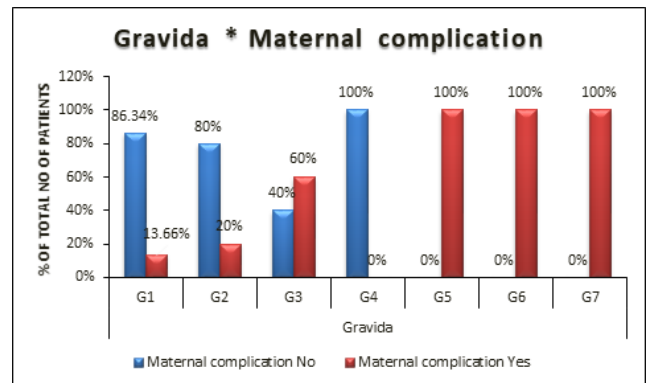


Fig. 4: Effect of gravid state of uterus on maternal complications

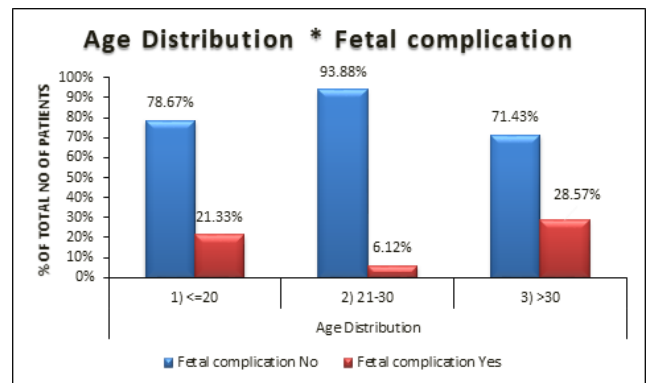


Fig. 5: Effect of age on fetal complications

management of preeclampsia and less fetal complications.

Higher socioeconomic status can provide better diet, education and greater awareness hence significantly influences fetal outcome.

Parity significantly influences fetal outcome. Higher the parity, more are the chances of fetal complications.

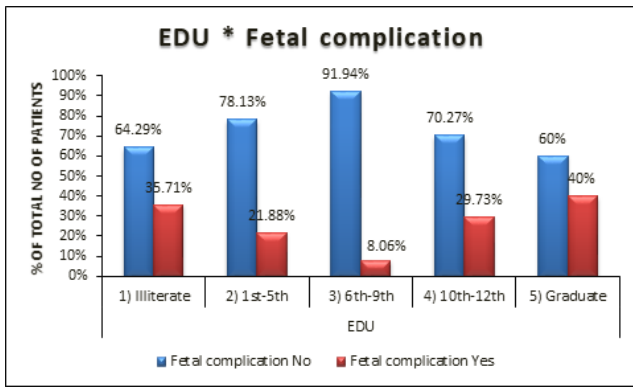


Fig. 6: Effect of education status on fetal complications

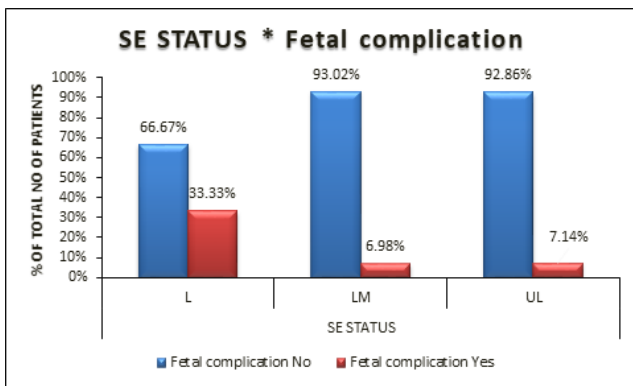


Fig. 7: Effect of socioeconomic status on fetal complications

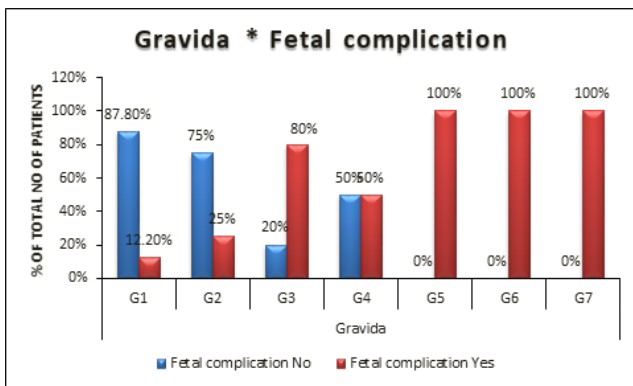


Fig. 8: Effect of gravid state of uterus on fetal complications

3. Discussion

Hypertensive disorders of pregnancy are one of the leading causes of maternal and perinatal morbidity and mortality. In Indian context, not many studies have been done to evaluate demographic factors influencing maternal and neonatal outcome amongst pregnant women with preeclampsia with and without deranged liver enzymes. Various significant findings of my study are mentioned below.

3.1. Age distribution

Age significantly influences fetomaternal outcome. In our study, 18% patients who belonged to <20 years age, 14% belonged to 21 to 30 years age and 17% more than 30 years age developed maternal complications. This shown in Figure 1. 21% patients who were less than 20 years age, 6% between 21 and 30 years age and 28% were more than 30 years age who developed fetal complications. This is illustrated in Figure 5.

A study by Loi K et al⁶ depicts average age for complicated severe preeclampsia patients to be 30.9 +/- 5.5 years which is similar to study.

Another study by Aali BS⁷ depicts average age for complicated severe preeclampsia patients to be 24.6 +/- 6.41 years which are almost similar to our study and the results are statistically significant.

3.2. Socioeconomic status

In our study, 33% patients who belonged to lower socioeconomic status developed maternal complications, 5% belonged to upper lower socioeconomic status and 4% belonged to lower middle socioeconomic status. This is shown in Figure 3.

In our study, 33% patients who belonged to lower socioeconomic status developed fetal complication, 6% belonged to lower middle socioeconomic status and 7% belonged to upper lower socioeconomic status as per modified kuppusway scale. This is illustrated in Figure 7.

P value is significant for both fetomaternal outcome Hence patients who belonged to lower socioeconomic status developed more fetomaternal complications comparatively.

3.3. Education status

In our study, 57% patients who were illiterate developed maternal complications, 17% who studied between 1st and 5th standard, 9% between 6th and 9th standard, 24% between 10th and 12th standard and 20% graduates developed maternal complications. This is shown in Figure 2.

35% patients who were illiterate developed fetal complications, 21% who studied between 1st and 5th standard, 8.06% between 6th and 9th standard, 29.73% between 10th and 12th standard developed fetal complications. This is shown in Figure 6.

P value was significant for fetomaternal outcome Hence poor education status favours more fetomaternal complications.

3.4. Obstetric score

Parity significantly influences maternal and fetal outcome as p value is 0.0001. This is shown in Figure 4 and Figure 8 respectively. 28 out of 281 total patients (9.96%) developed

maternal complications, they were primigravida. 4.27% 2nd gravida, 2.13% 3rd gravida, 0.35% 5th gravida, 0.71% 6th gravida, 0.35% 7th gravida patients developed maternal complications.

8.89% primigravida patients, 5.33% 2nd gravida, 2.84% 3rd gravida, 0.35% 4th gravida, 0.35% 5th gravida, 0.71% 6th gravida and 0.35% 7th gravida developed fetal complications.

A study by Aali BS⁷ supports the results where gravidity of 1.91+/- 1.42 in complicated severe preeclampsia group was noted and the results were statistically significant.

A study by Loi K et al⁶ depicts 50% nulliparous patients developing complicated severe preeclampsia.

4. Recommendations

1. Preconceptional counseling needs to be implemented for all women in reproductive age group.
2. All patients who are at high risk for developing preeclampsia need to be identified and booked at antenatal clinic in time. Regular opd visits should be encouraged.
3. Appropriate intervention in the form of antihypertensive therapy and termination of pregnancy at the desired time leads to markedly reduced fetomaternal morbidity and mortality. Hence this should be incorporated in the management of preeclamptic women. Early marriage, first conception before 20 years age or beyond the age of 30 should be avoided as it leads to poor fetomaternal outcome in preeclamptic patients.
4. Education status of women should be improved upon as it will help in increased awareness, timely antenatal visits, early diagnosis and management of preeclampsia. Fetomaternal prognosis will be improved with this step.
5. Socioeconomic status of women needs to be upgraded for more desirable maternal and fetal outcome.

5. Source of Funding

None.

6. Conflict of Interest

None.

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