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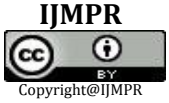

Clinical Study of Socio-Demographic Factors, Risk Factors and Feto-Maternal Outcome in Early And Late Onset Pre-Eclampsia

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ABSTRACT

Objectives: To study socio-demographic factors and risk factors of women with preeclampsia and to study complications and feto-maternal outcome in early and late onset preeclampsia. **Methods**: This is a prospective observational study conducted over a period of 2 years. Statistical analysis of data was then done by using SPSS (version 22) for windows and is presented as percentages. **Results**: In the study, majority of the mothers belonged to the age group of 21 to 25 years (46.2%). Majority had studied till secondary education (56.6%), residing in rural areas (59.4%), and belonging to lower middle class (57.5%). Majority were unbooked cases (72.6%), primigravida (50.0%), with gestational age more than 34 weeks (67.9%), and normal BMI (75.5%).In this study majority were late onset preeclampsia(71.7%).In the study, the condition was severe in majority of the mothers with early onset preeclampsia (60.0%), while the condition of mothers with late onset preeclampsia was non severe in majority (55.3%). In the study, majority of the mothers with early onset pre-eclampsia delivered spontaneously (53.3%), whereas majority with late onset pre-eclampsia required induction for delivering the child (53.9%). The proportion of subjects with complications such as eclampsia, HELLP syndrome, AKI, DIC, PPH, and abruption was more in case of early onset preeclampsia, while the PRES syndrome was present more in case of late onset preeclampsia. Maternal and Fetal mortality and need for resuscitation was more in early onset preeclampsia. **Conclusion**: Maternal and fetal complications, morbidities and mortality was more in early onset preeclampsia. Thus Preeclampsia must be diagnosed in early pregnancy to prevent its complications. Preventive screening of women for high risk in preeclampsia must be done and existing preventive measures should be applied

Key Words: *EOPE-Early onset preeclampsia LOPE-Late onset preeclampsia APGAR Resuscitation.*

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INTRODUCTION:

Pre-eclampsia is a multi-system disorder occurring in pregnancy and puerperium which is characterised by development of hypertension of 140/90 mmHg and above after 20th week in a previously normotensive patient[1]. It is a global problem and complicates approximately 10-17% of pregnancies. The incidence of preeclampsia is 2 to 10% of all pregnancies in the world. According to WHO the incidence is 7 times greater in developing countries compared to developed countries[2]. Currently there has been a change in the definition and understanding of Preeclampsia, known as Early Onset Preeclampsia (EOPE) and Late Onset Preeclampsia (LOPE). Early onset where preeclampsia occurs at <34 weeks gestational age and late onset occurring at >34 weeks of gestation. Even though the presenting features overlap, there are differences in maternal and perinatal outcome, prognosis and complications. Early and late onset preeclampsia have different aetiologies and should be considered as different disease[3]. Early onset preeclampsia is the most severe clinical variant of disease occurring 5-20% of all cases of preeclampsia and is associatedwith neonatal morbidity and mortality. Late onset preeclampsia occurring about 75-80% of all cases of preeclampsia; which are associated with maternal morbidity (metabolic syndrome, impaired glucose tolerance, obesity, dyslipidemia, chronic hypertension), normal birth weight and normal placental volume[4]. Although most of the maternal dysfunctions resolved gradually in postpartum, these women were at higher risk of developing chronic hypertension, recurrent preeclampsia in the next pregnancy, and later-life cardiovascular diseases[5].

Furthermore, the end-organ dysfunction of preeclampsia, referred to as adverse conditions and severe complications, has been distinguished. Adverse conditions consist of maternal symptoms andabnormal laboratory and foetal monitoring results that may herald the development of severe maternal or foetal complications. In turn, severe maternal or foetal complications of preeclampsia are the features that warrant delivery. Depending on time, the condition is classified as early-onset preeclampsia (EOP), which requires delivery before 34 weeks' gestation, or late-onset preeclampsia (LOP),

with delivery at or after 34 weeks or later[6-8]. Although the diagnostic criteria for EOP and LOP are the same, there are some uncertainties about the maternal and foetal outcomes[9,10]. It is thought that EOP poses a high risk to both mother and foetus[11,12], whereas LOP may present with less severe clinical symptoms[13].

As pre-eclampsia is one of the important cause of maternal mortality and ours being tertiary care centre catering 20,000 deliveries per year and huge number of referrals from in and around the city and from peripheries to our centre for pre-eclampsia and complications of pre-eclampsia. This studyis being conducted to know the different risk factors and feto-maternal outcome of Pre-eclampsia.

METHODOLOGY:

Study Design: Prospective observational study

Study Time: 1st October 2020 to 31st October 2022

Study Population: All the pregnant women with pre-eclampsia delivering at our tertiary carecentre.

Sample Size:

2 2

Sample size=Z PQ/L

Where, Z=1.96, P=Prevalence, Q= 1-P, L= allowable error=5% Prevalence of pre-eclampsia inIndia is 5.4%
Sample size=78
Sample study for this study is 106.

INCLUSION CRITERIA

1. Patients diagnosed as early and late onset Preeclampsia
2. Patients with >20 weeks gestation
3. Patients delivered in this institute
4. Patients who are willing for participation and follow up.

EXCLUSION CRITERIA

1. Eclampsia patients
2. Patients with <20 weeks gestation
3. Patients not delivering in this institution
4. Patients who don't give consent and fail to give follow up
5. Patients with Gestational hypertension
6. Patients with HELLP syndrome

After obtaining the permission from the institution ethics committee this study will be conducted in the dept. of Obstetrics and gynaecology from October 2020 to October 2022. After applying the inclusion and exclusion criteria and taking valid consent women are selected for the study.

Detailed history taking and examination will be done. Data will be documented in case Performa and data collection sheets will be prepared.

STATISTICAL ANALYSIS

Data was entered into Microsoft excel data sheet and was analyzed using SPSS 22 version software.

RESULTS

Table 1: Socio-Demographic Characteristics of the Study Subjects

Subjects (N=106)		Frequency (N)	Percentage (%)
Age group	18 to 20 years	24	22.6%
	21 to 25 years	49	46.2%
	26 to 30 years	23	21.7%

	31 to 35 years	5	4.7%
	>35 years	5	4.7%
Education	Primary	9	8.5%
	Secondary	60	56.6%
	PU or Diploma	33	31.1%
	Graduation	4	3.8%
Residence	Rural	63	59.4%
	Urban	43	40.6%
Socio-economicStatus	Upper Middle	8	7.5%
	Middle Class	15	14.2%
	Lower Middle	61	57.5%
	Lower Class	22	20.8%
Registration	Unbooked	77	72.6%
	Booked	29	27.4%
Gravida	G1	53	50.0%
	G2	26	24.5%
	G3	20	18.9%
	≥G4	7	6.6%
Gestational Age	<34 weeks	34	32.1%
	>34 weeks	72	67.9%
BMI (in kg/m^2)	Normal (18.5 to 24.9)	80	75.5%
	Pre-Obesity (25.0 to 29.9)	16	15.1%
	Obesity (>30.0)	10	9.4%

In the study, majority of the mothers belonged to the age group of 21 to 25 years (46.2%). Majority had studied till secondary education (56.6%), residing in rural areas (59.4%), and belonging tolower middle class (57.5%). Majority were unbooked cases (72.6%), primigravida (50.0%), with gestational age more than 34 weeks (67.9%), and normal BMI (75.5%).

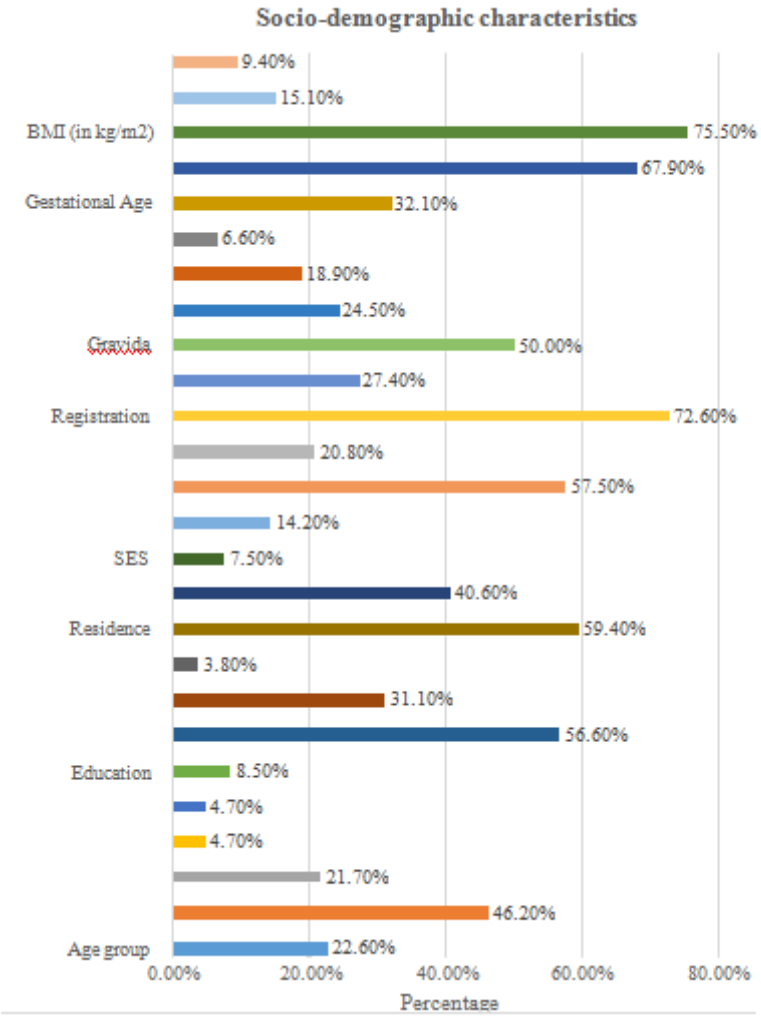

Figure 1: Bar Diagram Showing Socio-Demographic Characteristics of the Study Subjects

Table 2: Observation Of Maternal Complications With Respect ToOnset Of Preeclampsia:

Subjects (N=106)		**Preeclampsia**				**p-value#**
		rly Onset(N=30)		**te Onset(N=76)**		
		N	**%**	**N**	**%**	
Eclampsia	**No**	28	93.3%	74	97.4%	0.326
	Yes	2	6.7%	2	2.6%	
HELLP Syndrome	**No**	26	86.7%	74	97.4%	0.031*
	Yes	4	13.3%	2	2.6%	
te KidneyInjury	**No**	27	90.0%	75	98.7%	0.034*
	Yes	3	10.0%	1	1.3%	
PRES Syndrome	**No**	30	100.0%	75	98.7%	0.527
	Yes	0	0.0%	1	1.3%	

DIC	**No**	28	93.3%	75	98.7%	0.134
	Yes	2	6.7%	1	1.3%	
PostpartumHemorrhage	**No**	28	93.3%	72	94.7%	0.778
	Yes	2	6.7%	4	5.3%	
Abruption	**No**	29	96.7%	75	98.7%	0.491
	Yes	1	3.3%	1	1.3%	

Chi-square test
* Statistically significant

The proportion of subjects with complications such as eclampsia, HELLP syndrome, AKI, DIC, PPH, and abruption was more in case of early onset preeclampsia, while the PRES syndrome was present more in case of late onset preeclampsia. On analysing the association between the onset of pre-eclampsia and maternal complications, the study found statistically significant association only in terms of HELLP syndrome and AKI.

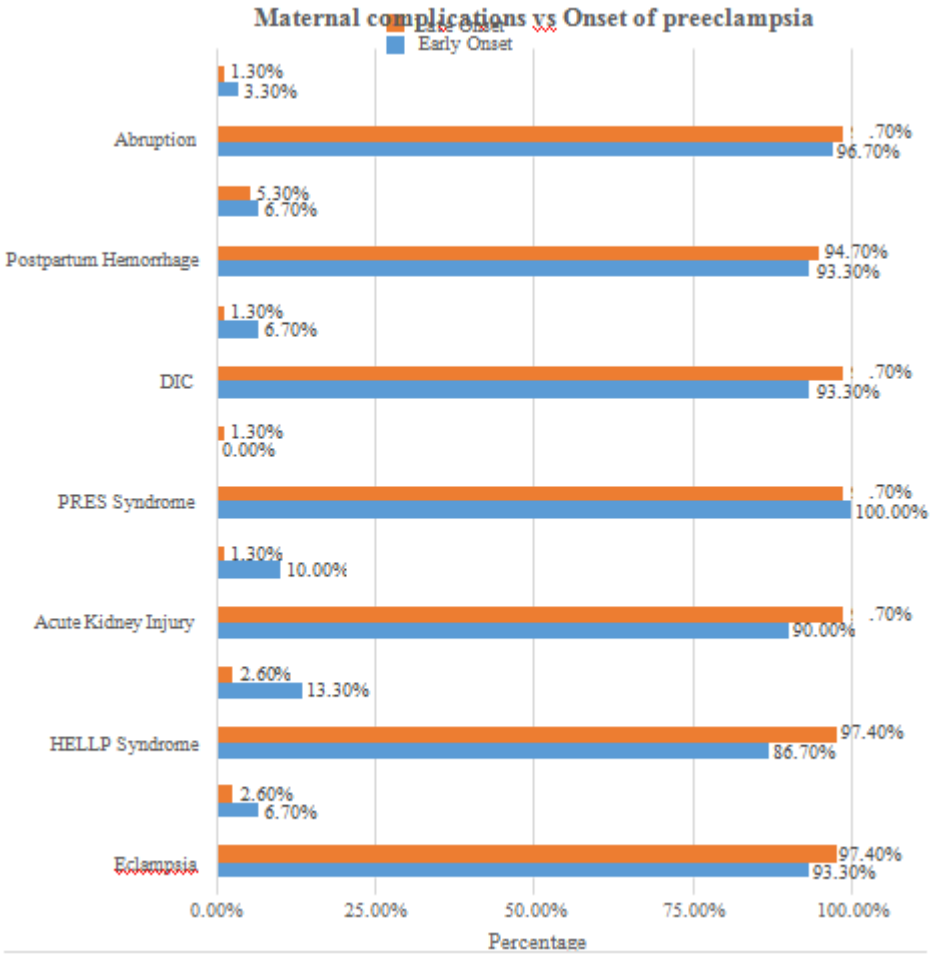

Figure 2 : Bar Diagram Showing Observation Of Maternal Complications With Respect To Onset Of Preeclampsia:

Table 3: Maternal Outcome With Respect to Onset of Preeclampsia

Subjects (N=106)		Preeclampsia				p-value#
		Early Onset (N=30)		Late Onset (N=76)		
		N	%	N	%	
Maternal Outcome	Stable	28	93.3%	66	86.8%	0.280
	Recovered	0	0.0%	6	7.9%	
	Dead	2	6.7%	4	5.3%	

Chi-square test

In the study, the proportion of mortality was more among the mothers with early onset pre- eclampsia comparatively. However, the study found no significant association between the onset of pre-eclampsia and maternal outcome.

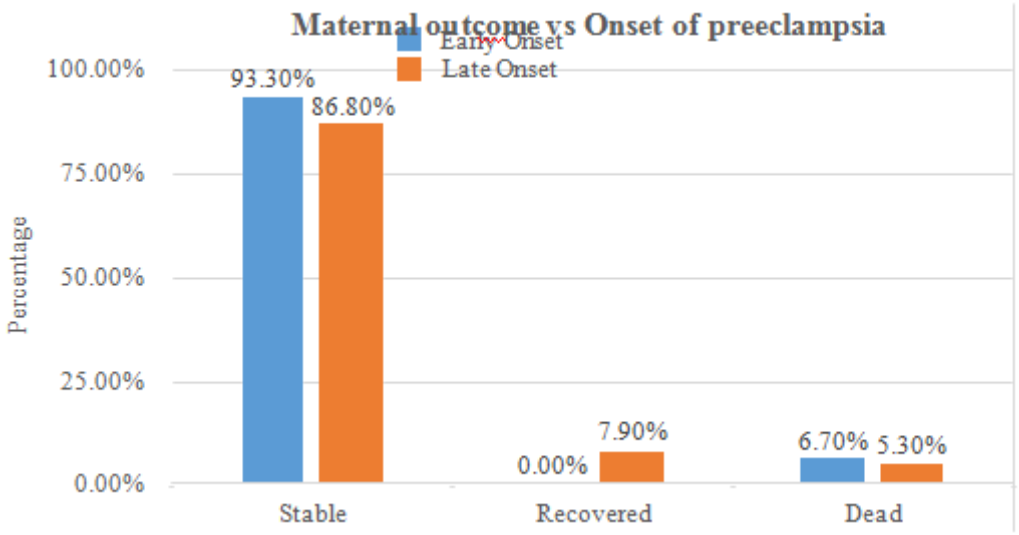

Figure 3: Bar Diagram Showing Maternal Outcome with Respect to Onset of Preeclampsia

Table 4: Fetal Outcome With Respect to Onset of Preeclampsia

Subjects (N=106)		**Preeclampsia**				**p-value#**
		rly Onset(N=30)		**te Onset(N=76)**		
		N	**%**	**N**	**%**	
Fetal Outcome	**Alive**	20	66.7%	61	80.3%	0.257
	IUD	4	13.3%	8	10.5%	
	erinatalDeath	6	20.0%	7	9.2%	

Chi-square test

In the study, the proportion of children alive was lower in majority of the mothers with early onset pre-eclampsia comparatively. However, the study found statistically significant association between the onset of pre-eclampsia and overall fetal outcome.

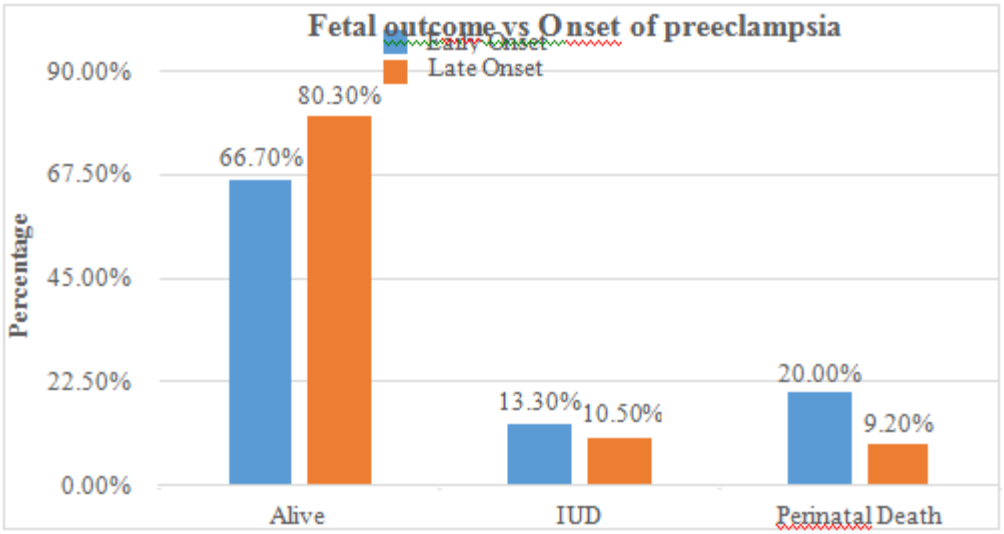

Figure 4: Bar Diagram Showing Fetal Outcome with Respect to Onset of Preeclampsia

Table 5: Fetal Morbidity With Respect to Onset of Preeclampsia among the Subjects with Live Born Children

Subjects (N=94)		**Preeclampsia**				**p-value#**
		rly Onset(N=26)		**te Onset(N=68)**		
		N	**%**	**N**	**%**	
Fetal Resuscitation	**No**	7	26.9%	48	70.6%	<0.001*
	Yes	19	73.1%	20	29.4%	
NICU	**No**	4	15.4%	37	54.4%	<0.001*
	Yes	22	84.6%	31	45.6%	

Chi-square test
* Statistically significant

In the study, resuscitation was required in majority of children born alive to the mothers with early onset pre-eclampsia (73.1%), whereas the resuscitation was not required in majority children born alive to the mother with late onset pre-eclampsia (70.6%). Thus, the study found statistically significant association between the onset of pre-eclampsia and requirement of fetal resuscitation. Also, NICU was required for management in majority of children born alive to the mothers with early onset pre-eclampsia (84.6%), whereas the NICU was not required in majority children born alive to the mother with late onset pre-eclampsia (54.4%). Thus, the study found statisticallysignificant association between the onset of pre-eclampsia and requirement of NICU for management.

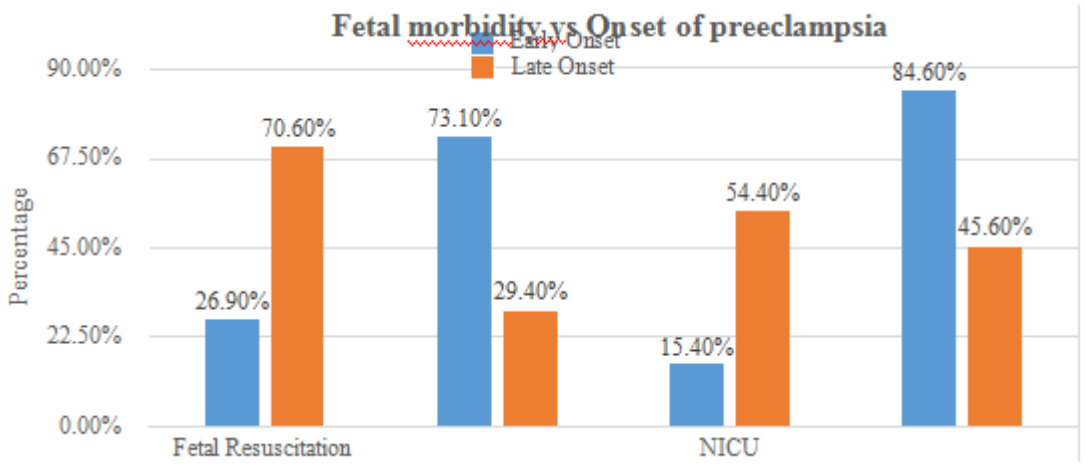

Figure 5: Bar Diagram Showing Fetal Morbidity with Respect to Onset of Preeclampsia among the Subjects with Live Born Children

DISCUSSION

In the study, majority of the mothers belonged to the age group of 21 to 25 years (46.2%). Majority had studied till secondary education (56.6%), residing in rural areas (59.4%), and belonging tolower middle class (57.5%). Majority were unbooked cases (72.6%), primigravida (50.0%), with gestational age more than 34 weeks (67.9%), and normal BMI (75.5%).

In the study, majority of the mothers were diagnosed with pre-eclampsia after 34 weeks of gestation(71.7%), while the remaining were having early onset pre-eclampsia (28.3%).

In the study, the hemoglobin levels were lower in majority of the mothers with late onset pre- eclampsia comparatively. Thus, the study found statistically significant association between the onset of pre-eclampsia and hemoglobin levels among the mothers.

The platelet count was lower in majority of the mothers with late onset pre-eclampsia comparatively. Thus, the study found statistically significant association between the onset of pre- eclampsia and platelet count among the mothers.

In the study, the condition was severe in majority of the mothers with early onset preeclampsia (60.0%), while the condition of mothers with late onset preeclampsia was non severe in majority (55.3%). However, the study found no significant association between the onset of pre-eclampsia and the severity of condition among the mothers.

In the study, majority of the mothers with early onset pre-eclampsia delivered spontaneously (53.3%), whereas majority with late onset pre-eclampsia required induction for delivering the child (53.9%). However, the study found no significant association between the onset of pre-eclampsia and the type of delivery among the mothers.

In the study, the proportion of mortality was more among the mothers with early onset pre-eclampsia comparatively. However, the study found no significant association between the onset of pre-eclampsia and maternal outcome.

The proportion of subjects with prolonged hospital stay, ICU stay, requirement of blood transfusion, incidence of wound infection and fever was more in case of early onset preeclampsia comparatively. On analysing the association between the onset of pre-eclampsia and maternal morbidity, the study found statistically significant association only in terms of blood transfusion.

The proportion of subjects with complications such as eclampsia, HELLP syndrome, AKI, DIC, PPH, and abruption was more in case of early onset preeclampsia, while the PRES syndrome was present more in case of late onset preeclampsia. On analysing the association between the onset of pre-eclampsia and maternal complications, the study found statistically significant association only in terms of HELLP syndrome and AKI.

In the study, the fetal weight was lower in majority of the mothers with early onset pre-eclampsia comparatively. Thus, the study found statistically significant association between the onset of pre- eclampsia and weight of the fetus.

In the study, the proportion of children alive was lower in majority of the mothers with early onset pre-eclampsia comparatively. However, the study found statistically significant association between the onset of pre-eclampsia and

overall fetal outcome.

In the study, the condition of the live born children was assessed based on APGAR score. Accordingly, majority of the children born to the mothers with early onset pre-eclampsia developed moderate depression comparatively. Thus, the study found statistically significant association between the onset of pre-eclampsia and APGAR score of the child.

In the study, resuscitation was required in majority of children born alive to the mothers with early onset pre-eclampsia (70.8%), whereas the resuscitation was not required in majority children born alive to the mother with late onset pre-eclampsia (75.0%). Thus, the study found statistically significant association between the onset of pre-eclampsia and requirement of fetal resuscitation. Also, NICU was required for management in majority of children born alive to the mothers with early onset pre-eclampsia (83.3%), whereas the NICU was not required in majority children born alive to the mother with late onset pre-eclampsia (57.8%). Thus, the study found statisticallysignificant association between the onset of pre-eclampsia and requirement of NICU for management.

CONCLUSION

In this study majority were late onset preeclampsia, early onset had more maternal and fetal complications and morbidities. Fetal mortality and need for resuscitation was also more in early onset preeclampsia.

Thus Preeclampsia must be diagnosed in early pregnancy to prevent its complications. Preventive screening of women for high risk in preeclampsia must be done and existing preventive measures should be applied.

Severe Preeclampsia is still a progressive disease, so it should be terminated as soon as possible to prevent morbidity and mortality.

Thus accessible healthcare, education and awareness regarding antenatal checkups should be encouraged for early detection of pre-eclampsia. Thus prompt management of its complications will lead to better maternal and fetal outcomes.

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