



## CONSANGUINITY AND PRESENCE OF PRE-ECLAMPSIA AND ECLAMPSIA IN A TERTIARY CARE HOSPITAL IN LAHORE.

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**Aims and objectives:** *To find out the association of consanguinity and presence of pre-eclampsia and eclampsia in tertiary care hospital in Lahore.*

**Material and Methods:** *This study was carried out on 151 patients at lady Wallington, Lahore.*

**Results:** *Out of 151 patients the minimum gestational age was 26 weeks and maximum was 45 weeks. Among the 50 patients of preeclampsia 23 underwent SVD and 27 had CS. Similarly, among the 51 patients of eclampsia, 17 were delivered through SVD and 34 after CS. In pre-eclampsia history of either pre-eclampsia or eclampsia was found in 62%, whereas in case of eclampsia history of pre-eclampsia was seen in 15.6% and history of eclampsia in previous pregnancy was found in 60%. In normal pregnancy 32% patients had cousin marriages, whereas in pre-eclampsia it was observed in 50 % and 70 % of eclampsia patients. The percentage of positive family history was 32% in pre-eclampsia and 48% is eclampsia.*

**Conclusion:** *Consanguinity is associated with pre-eclampsia and eclampsia*

**Key words:** Pre-eclampsia, Eclampsia, Hypertension.

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## **Introduction:**

Preeclampsia and eclampsia are multifaceted hypertensive disorders of pregnancy, affecting several systems. The nervous system is commonly affected and is a cause of significant morbidity and death in eclamptic women. Preeclampsia and eclampsia are not separate disorders but are differentiated according to their clinical symptoms<sup>1</sup>. Both these disorders are the commonest and most serious disease of human pregnancy, occurring in mid to late stages of gestation. The diagnosis is made on three clinical signs: pregnancy induced hypertension, proteinuria and oedema. Severe deterioration is marked by organ dysfunction and development of a convulsive condition<sup>2</sup>.

Preeclampsia is defined as gestational blood pressure (BP) elevation with proteinuria that develops after 20 weeks of gestation. In preeclampsia, hypertension and proteinuria are present, and when convulsions occur in addition to these signs, the condition is referred to as eclampsia. Criteria for the diagnosis of preeclampsia is systolic blood pressure  $\geq 140$  mmHg or diastolic blood pressure  $\geq 90$  mmHg and proteinuria of 0.3 g or greater in a 24-hour urine specimen<sup>3,4</sup>. Severe preeclampsia is defined as systolic blood pressure  $\geq 160$  mmHg or a diastolic blood pressure of  $\geq 110$  mmHg on 2 occasions recorded 24-hour apart in association with proteinuria  $\geq 2$ g/24 hours. Preeclamptic women can also be divided into early onset preeclampsia (appearance of both proteinuria and hypertension  $< 32$  weeks of gestation) and late onset preeclampsia ( $> 32$  weeks)<sup>37</sup>. Additional signs and symptoms that occur include visual disturbances, headache, epigastric pain, thrombocytopenia and abnormal liver function. These results form microangiopathy of target organs like liver, brain and kidney<sup>38</sup>. It has been noted that the typical clinical presentation of the disease differs geographically and this is due to different interacting genetic and environmental factors<sup>5</sup>.

Eclampsia is a poorly understood multisystem complication of pregnancy. The typical clinical picture is of generalised tonic clonic seizures during third trimester, during labour, or puerperium in women who already have hypertension, proteinuria and oedema<sup>6</sup>. Women who are at increased risk of preeclampsia according to epidemiology are primigravida, women suffering from preexisting diabetes mellitus, preexisting hypertension or previous preeclampsia, family history of preeclampsia, multiple gestations, higher body mass index. Preeclampsia has been dubbed as “the disease of theories” because of the multiple hypotheses to explain its

development. It has now been established that abnormal placentation and placental vascular insufficiency are the core features of this disease but the pathophysiology of the associated systemic abnormalities occurring still remains a mystery<sup>7</sup>.

In order to make sense of this mystery of a disease, we endeavored to look at the family history of 151 patients at Lady Wallington Hospital, Lahore. 50 women were suffering from preeclampsia, 51 form eclampsia whereas 50 women had normal pregnancy and were taken as normal control.

### **Results:**

Detailed history was taken from all the patients, with special emphasis on previous obstetric history and family history of the diseases understudy. Physical examination was also recorded to see if the criteria for the diagnosis of the eclampsia and preeclampsia were fulfilled. Detailed clinical history was taken and results are as follows:

#### **Detailed clinical data and history of patients included understudy:**

Among the patients in this study in all the groups, the age ranged from 18 -40 years with mean age of 26.92±4.32 years. The maximum number of women in all three groups were in the age range of 14-28years. (Table 1)

Table 1: Shows age groups of patients in each study set.

Age groups in years	Normal Pregnancy No: (%)	Preeclampsia No: (%)	Eclampsia No: (%)
18-23 yrs	6 (12%)	12 (24%)	12 (23.5%)
24-28 yrs	28 (56%)	25 (50%)	25 (49%)
29-33 yrs	13 (26%)	9 (18%)	8 (15.6%)
34-40 yrs	3 (6%)	4 (8%)	6 (11.6%)

Gestational age at delivery of all of the 151 patients ranged from 26 weeks to 42weeks with the mean age of 35.85±3.40 weeks. The gestational age group showing the maximum number was 33-37 weeks. (Table 2)

Table 2: Gestational age at delivery groups seen in the 3 different study sets.

Gestational age in weeks	Normal Pregnancy No: (%)	Preeclampsia No: (%)	Eclampsia No: (%)
26-32wks	4(8%)	9(18%)	17(33.3%)
33-37wks	15(30%)	29(58%)	22(43.1%)
38-42wks	31(62%)	12(24%)	12(23.5%)

Among the primigravida (n=48) normal pregnancy was seen in 17 (34%) women. In patients of preeclampsia 11(22%) were primigravida whereas in eclamptic patients 20(40%) were in primigravida.

In a total of 50 patients of normal pregnancy, 49(98%) were delivered by spontaneous vaginal delivery (SVD) and only 1(2%) was delivered after Caesarian Section (CS). Among the 50 patients of preeclamptic pregnancies 23(46%) underwent SVD and 27 (54%) had CS. Similarly among the 51 patients of eclampsia 17(33.3%) were delivered through SVD and 34(66.6%) after CS. Significant association was observed between mode of delivery and groups  $p < 0.001$ .

In the normal pregnancy group, there was no history of previous hypertension. Among the 50 patients of the preeclampsia, 34 (68%) had a positive history of hypertension during the previous pregnancy, whereas in patients of eclampsia (n=51) 46 (90.1%) had history of hypertension during the previous pregnancies. (Table 3)

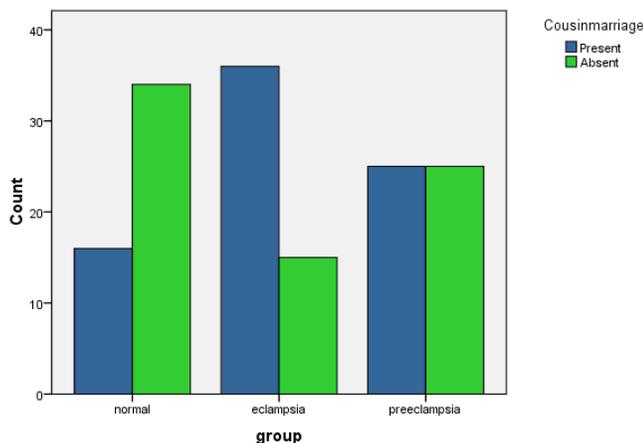
Table 3: Shows the history of hypertension in previous pregnancies.

Study group	Present No. (%)	Absent No. (%)
Normal pregnancy	0	50(100%)
Preeclampsia	34(68%)	16(32%)
Eclampsia	46(90.1%)	5(9.8%)
Pearson Chi-Square = 85.171, $p < 0.001$		

No history of either preeclampsia or eclampsia was found in the normal pregnancy group. In the group of preeclampsia (n=50) it was present in 31(62%) patients. In case of eclampsia, history of preeclampsia was seen in 8 cases (15.6%) and history of eclampsia in previous pregnancy was found in 31 (60.7%) cases. History of gestational diabetes mellitus was negative in all the study groups. Among the normal pregnancy group (n=50) the history of previous miscarriage was present in 13 (26%), in preeclampsia (n=50) there was positive history for miscarriage in 19 (38%) whereas in the eclampsia it was in 17 (27.4%) cases. No significant association was observed between history of previous miscarriage and the groups under study  $p = 0.062$ .

In normal pregnancy 32% patients had cousin marriages, whereas in preeclampsia it was observed in 50% of patients and in 70% of eclampsia patients (Fig 1). Significant association was observed between cousin marriage and groups under study  $p < 0.001$

Figure 1: Shows the frequency of cousin marriages in each of the study group.



Family history of preeclampsia and eclampsia was taken in each studied case. There was no history of disease in the family of women in normal pregnancy group. In preeclampsia and eclampsia the percentage of positive family history was 32% and 48% respectively (Table: 4).

Significant association was observed between family history of disease and groups under study  $p < 0.001$ .

Table 4: Shows patients with family history of preeclampsia and eclampsia.

Group	Family history of disease present No: (%)	Family history of disease absent No: (%)
Normal Pregnancy	0 (0%)	50(100%)
Preeclampsia	16(32%)	34(68%)
Eclampsia	24(48%)	27(52%)
Pearson Chi-Square = 29.878, , $p < 0.001$		

## Discussion:

Preeclampsia and eclampsia are quite prevalent in our society although the exact number and prevalence needs to be established by conducting studies like this one. We have looked at the medical history of 151 patients admitted in Lady Wallington Hospital, Lahore and compared the few of the perimeters among the normal pregnancy and patients of pre-eclapsia and eclampsia.

Looking at the age demographic, our study shows that a younger age group developed preeclampsia/ eclampsia ranging from 18-28 years of age. The reason could be that women get married and have children at a younger age in our country. Similar studies in other countries show a higher age group developing this condition starting from 30 years and upwards <sup>8,9</sup>.

The most interesting finding was the significant association of consanguinity with preeclampsia and eclampsia. In our society there is a higher trend of cousin marriages than in the western society. Therefore in the normal pregnancy group 32% patients had cousin marriages. This percentage is quite high when compared to the western figures. In case of preeclampsia and eclampsia this number is even higher i.e., observed in 50% of patients of preeclampsia and in 70% of eclampsia. Significant association was observed between consanguinity and preeclampsia and eclampsia. This shows that there may be some role of genetics in both these

diseases in our society, as these diseases are more prevalent here than the west. In a study conducted in Jordan, it showed 38% consanguineous marriages in a total of 77 cases of both preeclampsia and eclampsia<sup>7,8</sup>. However, they found statistically no significant difference in the occurrence of severe pre-eclampsia/eclampsia between primipara married to a first cousin or a relative other than a first cousin and primipara married to a non-relative. On the other hand, in our study there is a marked increase in the number of patients having consanguineous marriage that developed the disease and also reflected a family history of the disease as well. In another study of Jordan by **Obeidat et al** showed a significant association with low birth weight delivery (13.9% vs. 10.1%), preterm delivery (19.9% vs. 12.3%), and births with congenital anomalies (4.1% vs. 0.8%) compared with non-consanguineous marriages<sup>10</sup>.

History of hypertension in previous pregnancies was strongly positive in the diseased group and so was the family history of preeclampsia and eclampsia in the diseased group<sup>11</sup>. This ties in nicely with our significant association of consanguinity with preeclampsia and eclampsia, suggesting a genetic or hereditary influence or cause of the disease which should be investigated further<sup>12</sup>.

## **Conclusion:**

Our study supported a relationship between consanguinity and occurrence of pre-eclampsia and eclampsia, suggesting genetic influence. The role of more complex genetic, metabolic, immunological, or possibly yet other unknown factors should be evaluated.

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