Original Article

Frequency of Preeclampsia in Pregnant Women Presenting in A Tertiary Hospital

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ABSTRACT

Preeclampsia is pregnancy specific disorder that involves endothelial dysfunction and vasospam, so it needs prompt diagnosis and expert management as both mother and fetus are at risk. **Objective:** To determine the frequency of preeclampsia in pregnant women presenting in a tertiary hospital. **Methods:** This Cross-Sectional study was done in Department of Obstetrics and Gynecology, Unit-II ward-9, Jinnah Postgraduate Medical Centre, Karachi from 6th April 2018- 10th November 2018. We included 340 pregnant females fulfilling the inclusion criteria. Informed consent was taken. The data were collected on prepared performa. **Results:** A total of 340 pregnant women were included in this study, mean age of patients was 28.3 ± 3.5 (16-30) years and mean gestational age in patients was 33.6 ± 5.2 in weeks. 49(14.4%) patients had pre-eclampsia while 291(85.6%) pregnant women were normotensive. **Conclusions:** Our results show patient with preeclampsia are at increased risk for morbidity and mortality of both new born and mother, so proper antenatal workup is required.

INTRODUCTION

Preeclampsia (multisystem disorder) is a serious pregnancy complication which mainly occurs after 20 weeks of pregnancy. It is defined as raised blood pressure along with proteinuria in previously normotensive patient. The incidence of preeclampsia ranges from 2% to 6% of all pregnancies. While the global incidence is bit higher and ranges from 5% to 14%. In developing nations, the incidence of disease is reported from 4% to 8% and being the second most common cause of still birth and early neonatal deaths in these countries [1]. Many features make preeclampsia as severe and life threatening like systolic blood pressure more then 160mmhg, impaired hepatic function indicated by elevated liver enzymes, progressive renal insufficiency, pulmonary edema and thrombocytopenia [2]. Proteinuria is defined as presence of at least 300mg of protein in 24-hour urine collection. Preeclampsia is characterized by endothelial dysfunction so it usually leads to multisystem disorder [3, 4]. It may involve cardiovascular system resulting in to hypertension, may lead to thromboembolism may present with deep venous thrombosis or stroke. Although hypertension is the most common presentation. Number of maternal and fetal risk factors are involved in the pathophysiology of preeclampsia like prim paternity, limited sperm exposure,

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pregnancy after donor insertion, extreme of maternal age, preeclampsia in last pregnancy, family history of preeclampsia, hydrophobic degeneration of placenta, insulin resistance, gestational diabetes mellitus, multi-fetal gestation and obesity [5]. So, preeclampsia needs prompt diagnosis and expert management. Due to paucity of local data we have done this study to determine the frequency of preeclampsia in our hospital to make local guidelines for better management of patient.

METHODS

This Cross-Sectional study was done in Department of Obstetrics and Gynecology, Unit-II ward-9, Jinnah Postgraduate Medical Centre, Karachi from 6th April 2018 to 10th November 2018. By using WHO calculator with confidence level of 95% with error of margin 1.6% and anticipated Population around 2.31% sample size is 340. We enrolled patients 340 patients by using Non-probability, consecutive sampling of age of patients 16-30 years, normal BP at enrollment, singleton pregnancy and gesional age must be ≥ 20 weeks. We excluded patients with baseline hypertension, patients with baseline proteinuria (>300 mg of protein in a 24-hour urine collection), Patients with baseline renal disease as per record of patient, Multiple pregnancy as per record of patient, Maternal heart disease like Myocardial infarction, ASD (atrial septal defect) as per record of patient, Chromosomal abnormalities or foetal abnormalities suspected on ultrasound as per record of patient and use of medication other than iron supplements as per record of patient. 340 pregnant females admitted were randomly selected included in the study as per inclusion criteria. Advantages and disadvantages were discussed with family and the patient. Preeclamsia is laballed when ssystolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg in previous normotensive women and new-onset proteinuria >300 mg of protein in a 24-hour urine collection after 20 weeks' gestation. Informed consent were done and complete demographic and clinical data were collected. After overnight fasting, venous blood samples from patients were obtained from upper extremities preferably right upper arm cubital vein to measure hemoglobin, liver function test and 24-hour urine collection for proteinuria assessment. The data were analyzed on SPSS version 18.0. The age, gestational age, and BMI were expressed in mean ± SD. Residence, anemia, diabetes mellitus, smoker and Preeclampsia were presented as frequencies along with percentages. Effect modifiers age, gastational age, BMI, residence, anemia, diabetes mellitus, smoker were controlled through stratification. Post stratification chi-square test applied to observe their effect on the preeclampsia. Statistical significance were considered at p-value ≤0.05.

RESULTS

A total of 340 pregnant women were included in this study, mean age of patients was 28.3 ± 3.5 (16-30) years. Mean BMI of the patients was 25.4 ± 4.1, mean gestational age in patients was 33.6±5.2 in weeks as shown in table 1.

Table 1: Descriptive Statistics of Demographic Characteristics

Variables	n	Minimum	Maximum	Mean
Age	340	16	30	28.3
BMI	340	22.1	29.9	25.4
Gestational age	340	29.1	39	33.6

There were 106(44.1%) with anemia, 88(25.9%) patients have diabetes mellitus. 58(17.1%) patients were from smokers, 163(47.9%) patients were from rural area and 177(52.1%) patients were from urban area as shown. Out of 340 pregnant women 49(14.4%) patients had pre-eclampsia while 291(85.6%) pregnant women were normotensive as shown in table 2.

Table 2: Descriptive statistics of clinical characteristics

Variables		Frequency (%)
Anemia	Yes	105(44.1)
	No	190(55.9)
Diabetes mellitus	Yes	88(25.9)
	No	252(74.1)
Smokers	Yes	58(17.1)
	No	282(82.9)
Residential Status	Rural	163(47.9)
	Urban	177(52.1)
Preeclampsia	Yes	49(14.4)
	No	291(85.6)

Stratification for pre-eclampsia was done with respect to effect modifiers age, gestational age, BMI, anemia, diabetes mellitus, smokers and residential status using chi-square test at level of significant 0.05. as shown in table 3.

Table 3: Stratification for pre-eclampsia with variable

Variables		Pre-Eclamptic N=49	Normal N=291	Total	p-value
Age	≤25 yrs	19(13.1%)	126(86.9%)	145	0.55
	>25 yrs	30(15.4%)	165(84.6%)	195	
Gestational age (in weeks)	≤32	25(16.3%)	128(83.7%)	153	0.36
	>32	24(12.8%)	163(87.2%)	187	
BMI	≤25 kg/m2	15(10.9%)	123(89.1%)	138	0.12
	≤25 kg/m2	34(16.8%)	168(83.2%)	202	
Anemia	Yes	32(30.5%)	73(69.5%)	105	0.0001
	No	17(8.9%)	173(91.1%)	190	
Diabetes mellitus	Yes	29(33%)	59(67%)	88	0.0001
	No	20(11.5%)	232(88.5%)	252	
Smokers	Yes	22(37.9%)	36(62.1%)	58	0.0001
	No	27(9.6%)	255(90.4%)	282	
Residential Status	Rural	28(17.2%)	135(82.8%)	163	0.16
	Urban	21(11.9%)	156(88.1%)	177	

DISCUSSION

A major pregnancy condition known as preeclampsia (multisystem illness) typically develops after 20 weeks of pregnancy. Preeclampsia affects 3-8% of pregnant women and accounts for 20% of maternal deaths, preterm birth and perinatal mortality each year worldwide. In the UK, it makes about 4-6% of pregnancies more difficult. The third most common cause of maternal death and morbidity in the world is preeclampsia [6]. The World Health Organization (WHO) has estimated that preeclampsia kills over 60,000 women worldwide year, accounting for 11% of deaths in the United Kingdom and 24% of all maternal deaths in India. The strongest risk factor for preeclampsia in subsequent pregnancies is the first pregnancy, where the chance of preeclampsia is 4.1% [7, 8]. Preeclampsia recurrence rates have been reported to range considerably from 0-5% and even up to 65%. Preeclampsia's pathogenesis is still mostly unclear. It has been proposed that maternal endothelial dysfunction, which manifests clinically as hypertension, proteinuria, and edoema, is caused by a soluble substance or components that are reduced by placental synthesis as a result of early placental ischemia. Pregnancy delivery is the only known treatment for pre-eclampsia, however the choice of whether to monitor the mother or deliver the baby is crucial for both the mother's and the fetus's welfare. Antiplatelet aspirin therapy, which lowers the incidence of pre-eclampsia by 10% in women who have at least one risk factor, is the foundation of secondary prevention [9]. There is presently no study that can be used to determine the precise dosage or the ideal timing to start taking aspirin. However aspirin should be started as soon as feasible, i.e., before 12–14 weeks, which corresponds to the start of the trophoblast invasion's first phase. Aspirin's effectiveness has only been demonstrated in women who had pre-eclampsia in the past that was accompanied by intrauterine growth retardation and who were thrombophilic-free [10, 11]. In this study mean age of patients was 28.3 ± 3.5 (16-30) years with mean gestational age in patients was 33.6 ± 5.2 in weeks. In our study 49 (14.4%) patients had pre- eclampsia, while similar results were also seen in Guerrier *et al.,* who enrolled 1257 women and observed 419 (16%) women had preeclampsia this finding was inconsistent with the study conducted at Northern Finland by Kaaja *et al.,* who found preeclampsia in about 13.9% [12, 13]. While the results from the study by Agrawal *et al.,* in India shows the presence of preeclampsia up to 28% with variation in different regions, similarly, study by Akter and Khanum shown vey higher number up to 44% this may be due to the most of women enrolled was in third trimester [14, 15]. Although preeclampsia varies he prevalence from 1.8 to 16.7% in developing countries, and our finding figure is near to upper value [16]. Interestingly figures from china and japan up to 0.59% lies closer to lower value one reason of higher number in developing countries like us might be lower concern about health and lack of facilities [17]. In this study preeclampsia was more observed in patients with diabetes mellitus vs non-diabetic (59.1% vs 40.8%) with significant p-value, this may be diabetic patients more prone to develop endothelial dysfunction, similar finding was also observed in other studies where diabetes was strong risk factor for preeclampsia [18, 19]. We have also observed that preeclampsia was more in women with rural background vs urban (57.1% vs 42.8%) was statically insignificant similarly study by Moussa *et al.,* was also supportive to these findings [20].

CONCLUSIONS

The study gives new insight of increasing trend in pre-eclampsia over the years that needs proper understanding of pathophysiology and major risk factors for the development of preeclampsia. This study also warns for antenatal checkup as there was more preeclampsia as observed in patients with rural background. More studies are suggested in future for much better understanding.

Authors Contribution

Conceptualization: AM, MH
Methodology: SB, MH
Formal analysis: AM
Writing-review and editing: Z, SR, GD, WA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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