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FREQUENCY OF PREECLAMPSIA IN MULTIGRAVIDA AT LADY WILLINGDON HOSPITAL, KHAIRPUR, MEDICAL COLLEGE, TEACHING HOSPITAL, KHAIRPUR

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Abstract

Objective: *To determine the frequency of preeclampsia in multigravida women presenting to Lady Willingdon Hospital, Khairpur.*

Methodology: *Descriptive cross-sectional study was conducted at department of Obstetrics and Gynecology, Lady Willingdon Hospital, Khairpur (Mir's), Sindh, in six months, from 15th December 2023 to 14th June 2024. This study included 135 multigravida women (those with two to four previous pregnancies) who fulfilled the inclusion and exclusion criteria. After obtaining informed consent, demographic and clinical data were collected through a structured proforma. Quantitative data were expressed as mean ± standard deviation, while qualitative variables were presented as frequencies and percentages. Data analysis was performed using SPSS version 20. Effect modifiers were controlled through stratification, and the post-stratification chi-square test was applied, with a p-value ≤ 0.05 considered statistically significant.*

Results: *The mean age, gestational age, body mass index (BMI), and weight of the participants were 32.14 ± 8.49 years, 25.72 ± 4.24 weeks, 27.41 ± 2.56 kg/m², and 78.7 ± 9.87 kg, respectively. Out of 135 multigravida women, 23 (17%) were diagnosed with preeclampsia, while 112 (83%) did not have the condition.*

Conclusion: *The frequency of preeclampsia among multigravida women was found to be 17%. Effective antenatal, natal, and postnatal follow-up programs, along with maternal and family education, are essential to reduce the risk and adverse outcomes of preeclampsia, a major contributor to maternal and perinatal morbidity and mortality.*

Introduction

"Multigravida" is defined as having been pregnant 2 to 4 times.[1] Numerous studies have investigated the negative consequences associated with parity, including preeclampsia, premature rupture of membranes, gestational diabetes mellitus, postpartum hemorrhage, prematurity, birth asphyxia, and neonatal jaundice.[2] Multiparity is considered as risky and predisposes women to experience child birth issues owing to the high incidence of perinatal complications that rose with parity and because such care is not readily available to the wider population[3]. Preeclampsia is defined as According to the International

Society for the Study of Hypertension in Pregnancy (ISSHP), this condition occurs in previously normotensive, nonproteinuric pregnant women after 20 weeks of gestation. It is new onset hypertension (140 mmHg systolic or 90 mmHg diastolic).[4] It is the second leading cause of maternal mortality In high-income countries, it causes 16% of maternal mortality, compared to 9% to 26% in low-income nations.[5]. It occurs in 5-8 % of pregnant women worldwide [6,7]. A study conducted in Pakistan by Soomro et el[8] showed the frequency of preeclampsia among multigravida was 19.8%.

Preeclampsia occurrence is relatively high in developing nations such as those of Pakistan owing to lack of quality antenatal care, late diagnosis and appropriate management of risk factors[9]. Multiple studies carried out locally have recorded different rates of preeclampsia in women with more than one pregnancy, the effects of which are the impact of regional, genetic, and socioeconomic factors[10]. Nevertheless, there is still no uniform data on the precise prevalence of preeclampsia in various populations of multigravida. This frequency is important to understand in order to develop preventive and management measures that will be appropriate in local healthcare contexts[11].

Exploring the frequency of preeclampsia in multigravida women provides a multitude of benefits, including insights into specific risks, assessment of maternal and fetal health implications, support for effective management strategies, appropriate allocation of healthcare resources, addressing long-term health consequences, facilitating reproductive counseling, and promoting research advancements. These endeavors collectively contribute to enhancing the quality of care, reducing adverse outcomes, and advancing the field of maternal-fetal medicine.

Methodology

This was a descriptive cross-sectional study conducted in Department of Obstetrics and Gynecology, Lady Willingdon Hospital, Khairpur (Mir's), Sindh, for six months from 15th December 2023 to 14th June 2024 after approval from the study synopsis. Sample size was determined using OpenEpi sample size calculator, with 95% confidence level, expected proportion of preeclampsia in multigravida at 55 women being 14.8%, and absolute precision (6%) provided us a minimum of 135 participants overall. A non-probability consecutive sampling was used for selecting participants.

The participants in the study were women who aged 20–50 years, had at least two pregnancies and diagnosed as a singleton pregnancy by ultrasonography and gestational age of ≥20 weeks estimated with a dating ultrasound. The women with known chronic hypertension, renal disease or autoimmune disorder and their antecedents of previous major pregnancy complications such as placental abruption or fetal anomalies no longer had pregnant status were excluded. Smokers and participants who were unwilling or unable to give informed consent were excluded.

After obtaining ethical approval from the relevant department of same institute, all eligible multigravida women presenting to the hospital during the six-month study period were invited to participate. Written informed consent was obtained from each participant by the researcher. Gestational age was determined based on an early dating scan and the last menstrual period. Preeclampsia was diagnosed through clinical examination, including blood pressure measurement using a calibrated sphygmomanometer and assessment of proteinuria using a urine dipstick. A diagnosis of preeclampsia was made if a patient had a blood pressure of 140/90 mmHg or higher and proteinuria of +1 or greater, with or without edema. Information on parity, gestational age, and vital signs including blood pressure and proteinuria was recorded for each participant as part of routine examination. All data were documented on a predesigned proforma.

The statistical software that was used to analyze and input the collected data was the Statistical Package of the Social Sciences (SPSS) version 24. The frequencies and percentage were used to present qualitative variables (occupation, residence, and presence or absence of preeclampsia) whereas mean + standard deviation or median (IQR) were used to present quantitative variables (age, gestational age, BMI,

weight, monthly income, and blood pressure). The Shapiro Wilk test was used to determine the normality of data. Stratification was made to control the effect modifiers, including age, parity, BMI, residence, monthly income and gestational age. The Chi-square test was undertaken after the stratification and the p-value of 0.05 was taken to be statistically significant.

Result

There were 135 pregnant women in the study. The average age of the participants was 32.14 8.49 (20-50 years) and the average gestational age is 25.72 4.24 weeks. The average BMI was 27.41 +2.56 kg/m 2 and the average weight was 78.7 +9.87 kg. The general incidence of preeclampsia among the participants in the study was 17% (23/135). There was a strong correlation between maternal age and prevalence of preeclampsia (p = 0.02), whereby aged women 20 to 35 years had higher prevalence rate 27.3% than aged women 36 to 50 years 12.1%. Similarly, the residence state was statistically significant (p = 0.01) with preeclampsia being more prevalent in women of rural (36) than urban (12.7) residence. There were no statistically significant links between preeclampsia and gestational age (p = 0.84), parity (p = 0.75), BMI (p = 0.29), type 2 diabetes mellitus (p = 0.36), family history of hypertension (p = 0.32), or occupational status (p = 0.2).

Table 1: Descriptive Statistics of Study Participants (n = 135)

Variable	Mean ± SD	Range (Min–Max)
Age (years)	32.14 ± 8.49	20–50
Gestational Age (weeks)	25.72 ± 4.24	21–36
BMI (kg/m²)	27.41 ± 2.56	23–33
Weight (kg)	78.7 ± 9.87	68–115

Table 2: Distribution of Preeclampsia According to Maternal Characteristics (n = 135)

Variable	Category	Preeclampsia Yes n (%)	Preeclampsia No n (%)	Total n (%)	p-value
Age (years)	20–35	12 (27.3%)	32 (72.7%)	44 (100%)	0.02
	36–50	11 (12.1%)	80 (87.9%)	91 (100%)	
Gestational Age (weeks)	≤30	12 (17.6%)	56 (82.4%)	68 (100%)	0.84
	>30	11 (16.4%)	56 (83.6%)	67 (100%)	

Table 3: Preeclampsia in Relation to Residence, Parity, and BMI (n = 135)

Variable	Category	Preeclampsia Yes n (%)	Preeclampsia No n (%)	Total n (%)	p-value
Residence	Urban	14 (12.7%)	96 (87.3%)	110 (100%)	0.01
	Rural	9 (36.0%)	16 (64.0%)	25 (100%)	
Parity	≤3	9 (18.4%)	40 (81.6%)	49 (100%)	0.75
	>3	14 (16.3%)	72 (83.7%)	86 (100%)	
BMI (kg/m²)	≤30	6 (12.5%)	42 (87.5%)	48 (100%)	0.29
	>30	17 (19.5%)	70 (80.5%)	87 (100%)	

Table 4: Preeclampsia According to Comorbid and Socio-Demographic Factors (n = 135)

Variable	Category	Preeclampsia Yes n (%)	Preeclampsia No n (%)	Total n (%)	p-value
Type 2 Diabetes Mellitus	Yes	5 (23.8%)	16 (76.2%)	21 (100%)	0.36
	No	18 (15.8%)	96 (84.2%)	114 (100%)	

Family History of Hypertension	Yes	5 (12.2%)	36 (87.8%)	41 (100%)	0.32
	No	18 (19.1%)	76 (80.9%)	94 (100%)	
Occupational Status	Employed	4 (10.5%)	34 (89.5%)	38 (100%)	0.20
	Unemployed	19 (19.6%)	78 (80.4%)	97 (100%)	

Discussion

Preeclampsia is a pregnancy related hypertensive disorder in which a pregnant woman experiences high blood pressure and proteinuria which is usually experienced after 20 weeks of pregnancy. Although often considered to be more common in first-time pregnancies, it also may occur in multigravida women and cause great threat to mother and fetus[12]. In multigravida, preeclampsia may occur due to pre-existing conditions, changes in partner paternity, or underlying vascular or immune factors. Early identification and management are critical to reducing complications, emphasizing the importance of regular prenatal care and monitoring[13].

This study (n = 135) found an overall preeclampsia prevalence of 17% (23/135). This is noticeably higher than many global estimates, which typically place preeclampsia prevalence between about 2–10% of pregnancies, although estimates vary by region, case-definition, and setting. Higher prevalences especially in single-center or tertiary referral studies and in some low- and middle-income country (LMIC) cohorts have been reported, so this 17% could reflect local referral patterns, case-mix, or measurement/diagnostic differences[14].

Study observed a significant association (p = 0.02) but with greater frequency among women aged 20–35 years (27.3%) than those 36–50 years (12.1%). This runs counter to study conducted by Tyas et al[15] that identify advanced maternal age (≥35 years) as a risk factor for preeclampsia and other hypertensive disorders of pregnancy. A study by Soomro et al[16] reported that pregnant women aged 35 years and older had a higher prevalence (9.29%) of pre-eclampsia, consistent with the findings of the present study. Similarly, Bilano et al[17] also observed that increasing maternal age is a significant risk factor for the development of pre-eclampsia.

Findings of this study showed a significantly higher prevalence in rural women (36%) than urban (12.7%) (p = 0.01). This pattern has been observed in other study that report higher rates of hypertensive disorders of pregnancy or higher maternal risk in rural areas reasons cited include reduced access to antenatal care, higher baseline rates of undiagnosed chronic disease, and health-system factors[18].

Study found no statistically significant association between BMI and preeclampsia (p = 0.29), despite a mean BMI of 27.41 ± 2.56 kg/m^2. The study conducted by Poorolajal et al[19] show a clear positive relationship between higher pre-pregnancy BMI / maternal overweight–obesity and increased risk of preeclampsia.

This study observed no significant links between parity (p = 0.75) or gestational age (p = 0.84) and preeclampsia. Maeda et al[20] conducted a study and identify nulliparity as a risk factor for preeclampsia. Similarly, gestational age is usually treated as an outcome, rather than predictor associations between gestational age at presentation and severity/outcomes.

In the present study, other factors such as type 2 diabetes mellitus (T2DM), family history of hypertension, and occupational status showed no statistically significant association with the development of preeclampsia (p = 0.36, p = 0.32, and p = 0.20, respectively). However, this finding contrasts with previous studies by Ulfsdottir et al[21] and Dimitriadis et al[22], who reported that chronic medical conditions particularly pre-existing diabetes and a positive family history of hypertension are significant risk factors for preeclampsia.

Conclusions

The frequency of preeclampsia in multigravida women was 17 percent. Preeclampsia awareness, early detection and pharmacological therapy, and health promotion during routine antenatal care services and communities, with a focus on preeclampsia risk factors, could improve maternal and perinatal outcomes in these settings.

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