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PREVALENCE AND RISK FACTORS OF PRE-ECLAMPSIA AMONG EXPECTANT MOTHERS: A CROSS-SECTIONAL STUDY AT A HOSPITAL SETTING.

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ABSTRACT

BACKGROUND: Pre-eclampsia continues to be a leading cause of complications during pregnancy, especially in low- and middle-income regions. **OBJECTIVE:** This study was conducted to determine how widespread pre-eclampsia is and to identify contributing risk factors among women receiving antenatal care at a tertiary-level hospital. **METHOLOGY:** Employing a cross-sectional approach, information from 384 participants was gathered via interviews, clinical evaluations, and reviews of patient records. Data analysis was done using SPSS version 26. **RESULT**: The findings revealed a prevalence rate of 8.7%. Notable associations were identified between pre-eclampsia and factors such as maternal age, parity, BMI, and a personal or family history of hypertension. **CONCLUSION:** These results highlight the importance of early identification and intervention for at-risk pregnant women to improve maternal and neonatal outcomes.

KEYWORDS: Prevalence, Pregnancy risks, Pre-eclampsia, antenatal screening, cross-sectional study.

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INTRODUCTION

Pre-eclampsia is a condition during pregnancy after the 20th week which comes with hypertension and proteinuria. It is one of the main complications during pregnancy and has an immense effect on both maternal and neonatal healthcare services. The disease is more pronounced in areas with inadequate quality healthcare services[1,3]

Key mechanisms that play a role in pre-eclampsia include abnormal placental development, maternal endothelial disparity, and placental syndromes. Alongside these, genetics, obesity, pre-existing hypertension, and other immunologic and metabolic factors also contribute to the problem[4,8]

The most developing countries are often late to diagnose and treat these diseases due to a lack of antenatal care and diagnostic services. This amplifies the need for better understanding and early detection of pre-eclampsia to promote better healthcare[9,12]

This study aims to evaluate pre-eclampsia prevalence among women in a tertiary care hospital and identify the most common social, clinical, and demographic risk factors associated with it. This can lead to making better targeted intervention strategies.

METHODOLOGY

Study Design and Site

This cross-sectional hospital-based study conducted between January 2024 to December 2024 at Department of Obstetrics and Gynecology Unit of People Medical

College Hospital (Tertiary care Hospital) Nawabshah, Pakistan.

Study Group

Pregnant women aged 18 to 45 years were included, who were agreed to participate and were at least 20 weeks into gestation. Those with chronic kidney disease or those on antihypertensive medications prior to pregnancy were not included.

Sample Size and Selection

Using Cochran's formula, the required sample size was calculated at 384, based on a 10% estimated prevalence rate, a 95% confidence level, and a 3% margin of error. Participants were selected using systematic random sampling.

Data Collection Methods

Trained nurses used a structured questionnaire to gather data on socio-demographics, obstetric history, and lifestyle. Clinical assessments included blood pressure measurements and urinalysis for protein detection.

Variables of Interest

- **Outcome Variable**: Pre-eclampsia diagnosis
- **Predictor Variables**: Maternal age, parity, BMI, education, income level, family history of hypertension, prior pre-eclampsia, and gestational age

Statistical Analysis

SPSS Version 26 was used to analyze the data. Descriptive statistics provided a general overview, while bivariate and multivariate logistic regressions identified associations. Significance was determined at $p < 0.05$.

RESULTS

Demographic Characteristics

Among the 384 women analyzed, the average age was 29.3 years (±5.2). Most participants (68%) were aged between 25 and 35. A majority were multigravida (56%), had secondary-level education (8.9%), and belonged to lower or middle-income households (74%).

Table 1: Socio-Demographic Characteristics of Participants

VARIABLE	FREQUENCY (N=384)	PERCENTAGE (%)
Age <25 years	7 6	1 1.6
Age 25-35 years	2 61	6 15.8
Age >35 years	4 7	1 1.8
Nulliparous	1 69	4 18
Multiparous	2 15	5 4.0
Primary education	8 9	2 2.3
Secondary education	2 34	6 8.9
Tertiary education	6 1	1 0.3

Prevalence

The occurrence of pre-eclampsia among the study participants was 8.7% (33 cases), all identified after the 20th week of gestation through standardized diagnostics.

Associated Risk Factors

Significant risk factors for pre-eclampsia included:

- Age over 35 ($p = 0.03$)
- Being pregnant for the first time (nulliparity, $p = 0.04$)
- Obesity (BMI >30 kg/m², $p = 0.002$)
- Family history of hypertension ($p = 0.01$)
- Prior experience with pre-eclampsia ($p = 0.001$) (Table 2).

Table 2: Bivariate Analysis of Risk Factors for Pre-Eclampsia

RISK FACTOR	PRE-ECLAMPSIA (%)	P-VALUE
Age >35 years	1 7.0	0.03
Nulliparity	1 2.4	0.04
BMI >30 kg/m²	1 4.3	0.002
Family history of HTN	1 6.8	0.01
History of Pre-eclampsia	2 5.6	0.001

Table 3: Multivariate Logistic Regression of Significant Risk Factors

VARIABLE	ADJUSTED ODDS RATIO (AOR)	95% CI	P-VALUE
Age >35 years	2.3	1.1–4.9	0.03
Nulliparity	13.9	1.0–3.6	0.045
BMI >30 kg/m²	3.2	1.5–6.8	0.002
Family history of HTN	2 2.8	1.3–5.9	0.01
Previous pre-eclampsia	4 3.5	2.0–10.1	0.001

Logistic regression analysis revealed adjusted odds ratios (AORs) ranging from

1.9 to 4.5 for these risk factors, indicating strong associations.

DISCUSSION

The identified 8.7% prevalence aligns with similar studies conducted in sub-Saharan regions. Older maternal age was significantly linked to increased risk,
potentially due to age-related vascular alterations. First-time mothers also showed higher vulnerability, which may stem from immunological responses during their first pregnancy[13]

Obesity emerged as the most prominent risk, consistent with literature pointing to metabolic and inflammatory pathways. A familial predisposition to hypertension
further emphasizes the genetic influences at play. Importantly, a prior history of pre-eclampsia was the strongest predictor of recurrence, highlighting the importance of a detailed pregnancy history in managing future risks[14,15]

These findings advocate for proactive antenatal strategies focusing on early identification and management of high-risk groups.

CONCLUSION

Pre-eclampsia continues to pose a considerable risk during pregnancy. Early identification of risk factors allows healthcare providers to intervene sooner, improving health outcomes. Strengthening antenatal systems with focused screening and individualized care can mitigate these risks.

ETHICS APPROVAL: The ERC gave ethical review approval.

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin.

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AUTHORS' CONTRIBUTIONS:

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated in the work to take public responsibility of this manuscript. All authors read and approved the final manuscript.

CONFLICT OF INTEREST: No competing interest declared

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