

Prevalence and Associated Risk Factors for Preeclampsia among Pregnant Women Attending Antenatal Care In King Abdulaziz University Hospital in Jeddah, Saudi Arabia: A Hospital-Based Study.

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ABSTRACT

Background: Preeclampsia is one of the major causes of maternal mortality in Saudi Arabia. It has been increasing and linked to many factors, making prevention of the disease a continuous challenge. Yet few studies have been conducted in Saudi Arabia. This study aimed to assess the prevalence and factors associated with preeclampsia among pregnant women attending antenatal care in King Abdulaziz University Hospital in Jeddah, Saudi Arabia. **Methods:** Hospital-based, cross-sectional study was conducted in King Abdulaziz University Hospital, between March and May 2016. All pregnant women who had antenatal visit at King Abdulaziz University Hospital included in the study. A total of 370 pregnant women were enrolled in the study. Pretested and structured questionnaire via face-to-face interview technique was used for data collection. The data were entered in to an Excel sheet and exported to SPSS version 20 statistical package for further analysis. Descriptive statistics were used to explore the data in relation to relevant variables. Binary logistic regression analysis was employed. Odds ratio with 95% confidence intervals (CI) was computed to identify factors associated with Preeclampsia. **Results:** The prevalence of preeclampsia among pregnant women in King Abdulaziz University Hospital was found to be 4.2%. With various risk factors and background factors statistically controlled, the prevalence odds ratios of pre-eclampsia was found to be higher among women with twin pregnancy (OR:1.13; 95%CI:1.72-3.29), terminated pregnancy (OR:1.48;95%CI:1.60-3.18), women with severe to mild anemia (OR ranges from 1.18 to 1.37), tobacco smoking (OR:1.91;95%CI:1.19-1.31), diabetes (OR:1.89;95%CI:1.44-2.49), asthma (OR:2.05;95%CI:1.59-2.65), Women having family history of hypertension [Adjusted Odds Ratio (AOR) = 5.39 (95% CI 3.16–13.9)], chronic hypertension [AOR = 5.1 (95% CI 1.23–11.9)], age ≥ 35 years [AOR = 4.5 (95% CI 1.56–12.8)], family history of diabetes mellitus [AOR = 2.7 (95% CI 1.29–4.06)]. **Conclusion:** The prevalence of preeclampsia in this hospital was lower than other similar studies. Having personal or family history of hypertension, older age, and family history of diabetic mellitus, smoking, having anemia, multiple pregnancies were the most frequent factors associated with preeclampsia. Encouraging pregnant women to have health seeking behavior during pregnancy would provide a chance to diagnose preeclampsia as early as possible.

Keywords: Prevalence, Preeclampsia, risk factors, pregnancy

INTRODUCTION

Globally, there are approximately 300,000 pregnant women died from pregnancy-related causes. Of which 60% to 80% of all maternal deaths are due to five major complications, which are; postpartum hemorrhage, puerperal sepsis, preeclampsia, un-safe abortion and obstructed labor.^[1]

Preeclampsia is a life threatening complication of pregnancy. It is a condition that typically starts after 20th week of pregnancy and is related to increased blood pressure (BP $\geq 140/90$ mmHg) and protein in

from mild to severe. Preeclampsia occurs in 5–8% of pregnancies worldwide. It is the second leading cause of direct maternal and fetal deaths.^[2] The World Health Organization (WHO) estimates of maternal death due to preeclampsia were 25.7% in Latin-American and Caribbean, and 9.1% in Asian and African countries.^[3,4] The incidence of preeclampsia was found to be seven times higher in developing countries than developed countries.^[1] It has been linked to many risk factors, making prevention of the disease a continuous challenge. Few studies have been conducted in Saudi Arabia regarding prevalence and risk factor of preeclampsia. This study was conducted to assess the prevalence and factors associated with preeclampsia among pregnant women attending antenatal care in King Abdulaziz University Hospital in Jeddah, Saudi Arabia.

MATERIALS AND METHODS

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mother's urine (urinary albumin protein ≥ 300 mg/24 h). The clinical spectrum of preeclampsia ranges

A hospital-based cross-sectional study was conducted in King Abdulaziz University Hospital between March and May 2016. All pregnant women who had antenatal visit at King Abdulaziz University Hospital were included for the study. A total of 370 pregnant women were enrolled in the study. All pregnant women with a gestational age of 20 weeks or greater were recruited in the study. Pregnant women's gestational age was measured based on women recall of the last menstrual period (LMP). Ultrasound estimation for gestational age was also considered when women fail to recall the LMP but underwent for ultrasound evaluation. When the gestational age estimation was not possible in both cases, pregnant women were excluded from the study to prevent misclassification. Sample size was estimated using single proportion formula.

A Pretested and structured questionnaire via face-to-face interview technique was used for data collection. The questionnaire was first prepared in English then translated to Arabic language and back to English to maintain conceptual consistency. Four medical students were involved in the data collection process. Medical records were also reviewed for some clinical and laboratory results including proteinuria. All data collectors were taken two days training on interviewing technique. Blood pressure readings were taken while the woman was seated in the upright position using a mercury sphygmomanometer apparatus. Pregnant women with abnormal findings were checked again and again and then have undergone for another BP measurement after 2–3 hours in order to confirm the diagnosis. Ethical clearance was obtained from the ethical committee at King Abdulaziz University Hospital. All participants signed on an informed consent.

The data were entered into Excel sheet and exported to SPSS version 20 statistical package for further analysis. Descriptive statistics were used to explore the data in relation to relevant variables. Binary logistic regression analysis was employed. Odds ratio with 95% confidence intervals (CI) was computed to identify factors associated with Preeclampsia.

RESULTS

Socio-demographic characteristics of the participants
A total of 370 pregnant women were enrolled in the study. The mean age of the participants was 27 years with standard deviation of 5.3. Three hundred and seven (83%) of participants have attended secondary school or above. More than half of participants were housewives [Table 1].

Obstetric characteristics of the respondents

One and three one (27.8%) of the respondents were primigravida and about 72.2% of pregnant women were multigravida and 72 (19.5%) of them has history of multiple pregnancy [Table 2].

Table 1: Socio-demographic characteristics of study participants.

Variables	Frequency n= 370	Percent
Age		
< 20	18	4.8%
20-30	202	54.6%
>30	150	40.5%
Nationality		
Saudi	243	65.7%
Non- Saudi	127	34.3%
Education level		
Illiterate	13	8.4%
Elementary school	50	13.5%
Secondary school	41	11%
High school	82	22.2%
Diploma	48	13%
University	85	23%
Higher education	51	13.8%
Occupation		
Student	60	16.2%
Employee	86	23.2%
Housewife	192	52%
Retired	32	8.6%

Table 2: Obstetric characteristics of the respondents.

Variable	Frequency	Percent
Gravidity		
Primigravida	103	72.8%
multigravida	267	72.2%
Parity		
Nullipara	108	29.2%
1 delivery	129	34.9%
≥2 deliveries	133	35.9%
Multiplicity of pregnancy		
Singleton	298	80.5%
Twin	40	10.8%
More than Twin	32	8.6%

Behavioral and family history related characteristics
In our study 30 (1.6%) women were smokers and 21 (4.3%) of them were using Shisha. Four hundred and one (81.8%) had family history of hypertension, and 56 (11.6%) had family history of diabetes mellitus

Factors associated with preeclampsia

By using bivariate analysis we observed that maternal age, education, gravidity, multiplicity of pregnancy, and having chronic hypertension or diabetes mellitus are significant factors at 0.2 level of significant. However, in multivariate analysis those factors were remained significantly and independently associated with preeclampsia.

The risk of preeclampsia was higher in older pregnant ladies. Women in age category 35 and above had 3.5 times higher odds of developing preeclampsia than those aged 30 years or less [AOR 3.5, 95% CI 2.06 – 11.9]. Women with history of chronic hypertension had about 6.7 times higher odds of developing preeclampsia than women who haven't [AOR 6.69, 95% CI 1.5–13.7]. Those women with family history of diabetes mellitus had 2 times higher odds of developing preeclampsia as compared to those

with no family history. [AOR 2.0, 95% CI 1.29 – 6.1].

Also women with history of multiple pregnancy have about 2 times higher odds of developing preeclampsia than those counterparts [AOR 2.0, 95% CI 1.52–7.8].

DISCUSSION

In this cross-sectional study the prevalence of preeclampsia was found to be 4.2%. Other similar studies worldwide have shown higher prevalence of preeclampsia among their study population.^{6,7,8} And smaller prevalence was observed in other studies from developed countries (1.4%–5.0%).⁹ The difference between the present finding and other studies might be due to the geographic differences and study design.

Many risk factors of preeclampsia have been studied. For instance, maternal age was found to be associated with the development of preeclampsia in studies conducted at Finland and Iran.^[10,11] With this regard our study showed the presence of higher odds of developing preeclampsia in older women. We found that pregnant women who were 35 or above had three times more odds of develop preeclampsia than those 25–29 years old. This could be explained as woman gets older she is more likely to have cardiovascular problems. This would particularly happen due to the gradual loss of compliance of the cardiovascular vessels that is mainly associated with ageing of uterine blood vessels and arterial stiffness. In addition, when woman gets older, the hemodynamic adaptation during pregnancy become more difficult.^[12]

Family history was also found to be associated with preeclampsia. Those women with family history of hypertension had about seven times greater odds of developing preeclampsia compared those who haven't. This finding is similar to findings of studies conducted in Brazil, Sudan, Pakistan, and Uganda.¹³⁻¹⁶ This could be due to genetic factors that contribute to the physiologic predisposition of preeclampsia. Also, pregnant women with family history of diabetes mellitus were about two times more likely to develop preeclampsia. The report in the present study was in line with the research done in Thailand.^[17] Genetic factors might be responsible to predisposing women to an increase risk of preeclampsia. Preexisting hypertension had statistically significant association with preeclampsia. Being women with preexisting hypertension were about four times more likely to develop preeclampsia. This finding was in concordance with the researches done in France and Nigeria.^[18,19] In line with other studies, smoking was significant in this study. Our study findings may serve as an important call for health care providers to heighten their awareness of the

increased population-level risk for preeclampsia originating in pregnancy.

CONCLUSION

The prevalence of preeclampsia in this hospital was lower than other similar studies. Having personal or family history of hypertension, older age, and family history of diabetic mellitus, smoking, having anemia, multiple pregnancies were the most frequent factors associated with preeclampsia. Encouraging pregnant women to have health seeking behavior during pregnancy would provide a chance to diagnose preeclampsia as early as possible.

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