

Prevalence and Determinants of Hypertensive Disorders of Pregnancy among Women Attending Antenatal Clinics in El Marj city, Libya; 2024

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ABSTRACT:

Hypertensive conditions frequently affect pregnant women, which remains a major global cause of maternal and neonatal mortality as well as morbidity. **Objectives:** To identify the prevalence of hypertension and its determinant factors among pregnant women attending antenatal clinics at Almarj city. **Subjects and methods:** cross sectional study was conducted on 187 pregnant women attending these antenatal clinics at Almarj city. A structured questionnaire was applied for collection of relevant data from pregnant women. **Results:** prevalence of hypertension disorders among studied women was 19.8%. On the other hand, the percentage of chronic hypertension, gestational hypertension, preeclampsia among pregnant women were 8.6 %, 5.3 % and 5.9 % respectively. Using monovariate analysis reveals that education, history of chronic disease and family history of hypertension and diabetes are significantly associated with hypertensive disorders of pregnancy. Multivariate analysis revealed that only education was significant predicting factor. **Conclusion:** Prevalence of education, history of chronic disease and family history of hypertension and diabetes are significantly associated with hypertensive disorders of pregnancy. development of strategies aiming to reduction of hypertensive disorders of pregnancy.

Keywords: Hypertensive disorders, El Marj city, pregnancy, antenatal clinics.

INTRODUCTION:

as high or elevated blood pressure, is a disorder marked by a continuous increase in blood vessel pressure. Hypertensive disorders frequently affect pregnant women, which remain a major global cause of maternal and neonatal mortality as well as morbidity (1).

The most frequent medical problem that arises during pregnancy is hypertension, which complicates two to three percent of pregnancies. 18% of maternal deaths globally are attributed to hypertensive disorders of pregnancy (HDP), with an estimated 62 000–77 000 deaths occurring annually (2). With a global frequency of 116 per 100,000 women of reproductive age, the prevalence of HDP varies by area. In terms of regional prevalence, HDP was most common in Africa (335 per 100,000 women of reproductive age), followed by Southeast Asia and the Middle East, while it was least common in the Western Pacific (16 per 100,000 women of childbearing age). An estimated 18.1 million HDP incident cases occurred globally in 2019, and the disease is believed to have caused 27,800 deaths in women of

reproductive age, a 30% decrease since 1990.4 Furthermore, it is predicted that HDP contributes to 200 000 stillbirths globally each year from pregnancies that terminate in stillbirth.

The Working Group on High Blood Pressure in Pregnancy of the National High Blood Pressure Education Program recommends categorizing hypertensive diseases during pregnancy into four groups: Chronic hypertension, preeclampsia-eclampsia, preeclampsia on top of chronic hypertension, and gestational hypertension—either transitory pregnancy hypertension or chronic hypertension detected (2).

Hypertensive disorders of pregnancy point to an underlying pathology that may exist pre-pregnancy or emerge post-mid-gestation. Due to insufficient healthcare-seeking behavior, hypertensive disorders of pregnancy frequently go undiagnosed in low- and middle-income countries until complications arise (3).

Hypertension during Pregnancy (HDP) results from complicated factors more than increased blood pressure rates. The persistent diastolic pressure of 95mmHg and

above is the defining level for hypertension during pregnancy. The systolic pressure is usually not considered, although ongoing systolic pressure exceeding 160 mmHg causes concern (World Health Organization). Severe hypertension is present when diastolic levels of over 110 mmHg are reached (4).

Hypertension in pregnancy is a significant challenge in antenatal practice due to its influence on obstetric and foetal outcomes (5).

The Working Group on High Blood Pressure in Pregnancy of the National High Blood Pressure Education Program recommends categorizing hypertensive diseases during pregnancy into four groups: Chronic hypertension, preeclampsia-eclampsia, preeclampsia on top of chronic hypertension, and gestational hypertension (either transient hypertension of pregnancy hypertension or chronic pregnancy hypertension detected in the latter half of pregnancy) (2). Pre-eclampsia, or hypertension during pregnancy, is the leading factor affecting maternal and perinatal mortality and morbidity. The two main and most serious side effects of pre-eclampsia are hemorrhage and cerebral hemorrhage. Renal failure and Abruption of the placenta are two of the main side effects of this illness. Prematurity, intrauterine growth restriction (IUGR), intrauterine foetal death (IUFD), and neonatal death are examples of perinatal problems (6).

The Aim of the Study: To identify the prevalence of hypertension and its determinant factors among pregnant women attending antenatal clinics at Almarj city.

Subjects and Methods:

Study area and period: The study was conducted at antenatal clinics at Almarj city. these clinics were chosen by simple random sample. The data collection period was from March to May 2024,

Study design: cross sectional study

Study Population: pregnant women attending these antenatal clinics.

Sample size: Sample size was calculated using EPI INFO VERSION 7 software. Sample size calculation was based on prevalence of hypertension in pregnancy was 13.9% (5). With a power of 80% and confidence level of 95%, the sample needed for the study was 184 respondents.

Operational definitions

Gestational hypertension: Diagnosis is made in women whose blood pressures reach 140/90 mm Hg or greater for the first time after 20wks or greater than 20wks, but in whom proteinuria is not identified, no previous

hypertensive and absence of other systemic symptoms (7).

Preeclampsia /eclampsia: Preeclampsia: defined as a pregnancy-specific syndrome that can affect almost all organ systems characterized by a new onset of hypertension after 20 weeks gestation (systolic blood pressure ≥ 140 mmHg and/or diastolic BP ≥ 90) mmHg and proteinuria (7).

Preeclampsia superimposed on chronic hypertension: Those mothers recognized to have hypertension before pregnancy or before 20 weeks of gestation and had signs of preeclampsia after 20 weeks of gestation (7).

Hypertensive disorders of the pregnancy (HDP) included any of the above descriptions (7).

Tool of the study: Data were collected from pregnant women by using semi-structured questionnaire. It covered the following items: Socio-demographic characteristics of the respondents: age, education and occupation. Obstetric history: Trimester of pregnancy and Number of pregnancies. History of chronic conditions as well as family history of chronic disease

Pilot study: A pilot study was conducted on 20 pregnant women to check for difficulties in the questionnaire that may arise during final data collection. Necessary modifications were applied before final data collection. Those women were not included in the study.

Ethical consideration: The necessary official permissions from different authorities were obtained before the conduction of the study. Explanation of the aim of the study to respondents was performed. Informed consent to participate in the study was obtained from respondents. Confidentiality of the data was assured.

Statistical analysis: Data management and analysis was done with SPSS program, version 20. Comparisons between frequency-based data were performed using χ^2 -test and for age was done by Mann-Whitney U test after excluding normality of the variable with Kolmogorov-Smirnov test ($P < 0.05$). For all comparisons, the statistical level of significance was set at $P < 0.05$. Binary logistic regression analysis was performed for all variables. The dependent variable was hypertension (presence or absence of hypertension).

RESULTS:

A total of 187 women were included in the present study. Figure (1) illustrate the prevalence of HDP among the study population while figure (2) demonstrates the distribution of types of HDP.

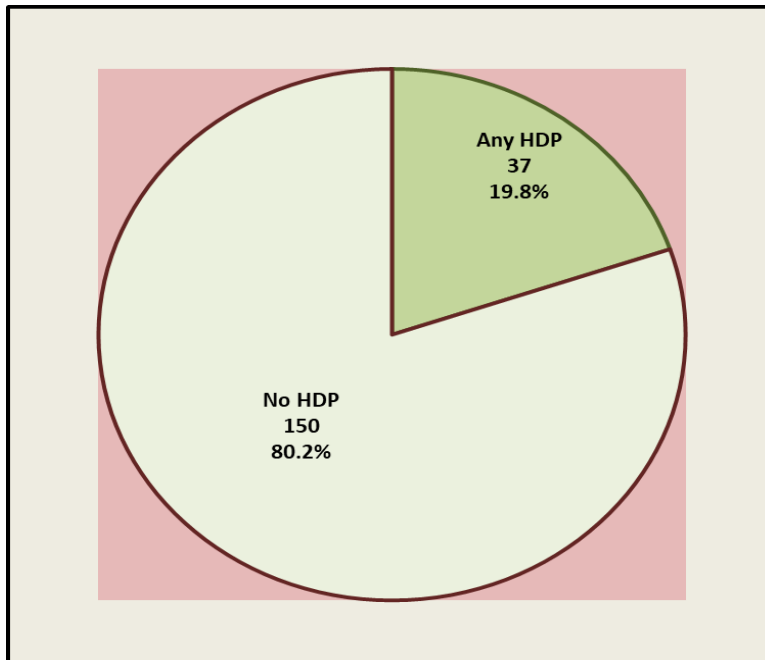


Figure (1): The prevalence of hypertensive disorders of the pregnancy (HDP) among the study population.

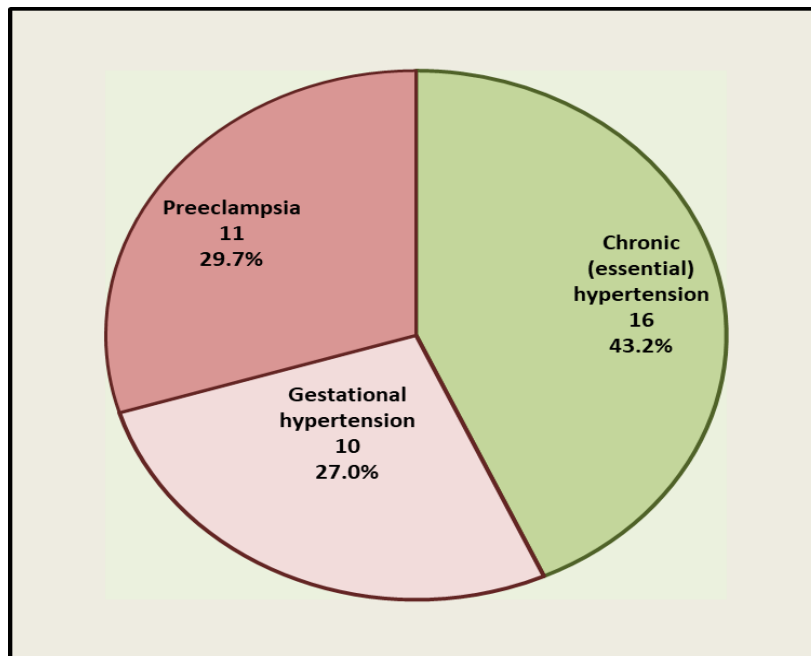


Figure (2): The distribution of cases of hypertensive disorders of the pregnancy (HDP) according to type of hypertension.

Table (1): Distribution of respondents by demographic and personal characteristics and hypertension Almarj, 2024.

Characteristic	Categories	HDP among categories		Total	P
		Yes N (%)	No		
Age (years)	<30 †	13 (15.3)	72	85 (100%)	0.3
	30 - 39	19 (23.2)	63	82 (100%)	
	40 - 50	5 (25.0)	15	20 (100%)	
	Mean + SD	31.3 ± 6.3	30.5 ± 6.5	30.7 ± 6.4	0.424 **
University or beyond education	Yes	29 (26.6)	80	109 (100%)	0.006*
	No	8 (10.3)	70	78 (100%)	
Working mother	Yes	17 (23.9)	54	71 (100%)	0.264
	No	20 (17.2)	96	116 (100%)	
Any chronic condition	Yes	6 (40.0)	9	15 (100%)	0.04*
	No	31 (18.0)	141	172 (100%)	
Family history of hypertension	Yes	22 (27.5)	58	80 (100%)	0.02*
	No	15 (14.0)	92	107 (100%)	
Family history of diabetes	Yes	24 (24.2)	75	99 (100%)	0.07
	No	13 (14.8)	75	88 (100%)	
Trimester of pregnancy at time of study	First	10 (17.5)	47	57(100%)	0.87
	Second	14 (21.2)	52	66(100%)	
	Third	13 (20.3)	51	64(100%)	
Gravidity	Primi	5 (13.5)	32	37(100%)	0.53
	Multi	23 (20.7)	88	111(100%)	
	Grand-multi	9 (23.1)	30	39(100%)	

HDP Hypertensive disorders of the pregnancySD Standard deviation

* Statistically significant at 95% level of confidence.

** Mann-Whitney U test applied, otherwise Chi-square (χ^2) test.

† One case aged below 20

Table (1) shows distribution of HDP according demographic and personal characteristics of studied women (monovariate analysis). Higher rates of HDP existed in a statistically significant difference for higher educational level, presence of any chronic condition, with family history of hypertension and family history of diabetes. In addition, higher rates of HDP existed with higher age, among working mothers, advanced trimesters and higher gravidity but without statistically significant difference.

Table (2): Multivariate analysis of factors affecting hypertension disorders of pregnant women, Almarj, 2024.

Factor	B	Wald X ²	P	AOR	95% C.I. for AOR
Age	0.024	0.415	0.520	1.024	0.952 - 1.102
Lower Education (before university)	-1.296	6.859	0.009*	0.274	0.104 - 0.722
Working mother	-0.069	0.023	0.880	0.933	0.379 - 2.295
History of chronic disease	0.955	2.239	0.135	2.599	0.744 - 9.079
Family history of hypertension	0.749	2.741	0.098	2.114	0.871 - 5.128
Family history of diabetes	0.165	0.131	0.717	1.179	0.483 - 2.878
First trimester pregnancy	-0.087	0.039	0.843	0.917	0.387 - 2.169
Primigravida mother	-0.688	1.434	0.231	0.502	0.163 - 1.550
Constant	1.720	0.761	0.383	5.583	

B Beta coefficient of regression**AOR** Adjusted odds ratio**C.I.** Confidence interval

* Statistically significant negative predictor for hypertensive disorders of pregnancy.

Table (2) shows that by logistic regression analysis, the only significant independent factor associated with hypertension disorders was education with inverse relationship.

DISCUSSION:

The present study reveals that prevalence of hypertension disorders among studied women was 19.8%. This result is higher than the findings of some other studies; the discrepancy may be the consequence of different research methods and study locations. In addition, the present study finds that the percentage of chronic hypertension, gestational hypertension, preeclampsia among pregnant women were 8.6 %, 5.3 % and 5.9 % respectively. Roberts et al. (2005)⁸ found that pregnant women in Sydney, Australia had hypertensive pregnancy disorders in a population-based study. 9.8% of the women overall experienced hypertensive pregnancy disorders: 4.2% had preeclampsia, 6% had chronic hypertension, 0.3% had preeclampsia on top of chronic hypertension, and 4.3% had gestational hypertension. While according to Familoni et al. (2004)⁹, hypertension was present in 9.8% of cases. Of them, (45%) had gestational hypertension; (14.8%) had preeclampsia-eclampsia; (18%) had preeclampsia superimposed on chronic hypertension; (13.5%) cases had chronic hypertension; and 8% had pregnancy-aggravated chronic hypertension. On the other hand, Vigil-De Garcia, P et al (2004)¹⁰ in Nigeria discovered that 5.3% of the cases had pregnancy-induced hypertension disorders in 26.2%, 19.7%, and 54.1% of cases, respectively, preeclampsia superimposed on chronic hypertension, gestational hypertension, and preeclampsia/eclampsia were noted.

According to Khosravi et al. (2014)¹¹, 9.8% of mothers who visited the Valiasr Hospital Delivery Ward had a pregnancy associated with hypertension. Of these, 60.5% had preeclampsia-eclampsia, 18% had preeclampsia on top of chronic hypertension, 13.5% had chronic hypertension, and 8% had chronic hypertension aggravated by pregnancy. Accordantly, Elghoudi A et al, (2022)⁶ revealed that prevalence of Gestational hypertension is 8.4% and pre-eclampsia is 5.1% among pregnant women attending Aljalaa maternity hospital, in the Western Part of the State of Libya.

Nath et al, 2022 documented that prevalence of hypertension was 13.9% among women attending antenatal clinics in Bengaluru (5).

Abid et al (2021)¹² revealed that the prevalence of chronic hypertensive pregnant women was 2.5% among pregnant women admitted to Obstetrics and Gynecology Tripoli Medical Center.

Globally speaking, the prevalence of hypertensive disorders during pregnancy varies by region; it has been recorded to range from 1.5% in Sweden to a record 7.5% in Brazil. Saudi Arabia's percentage was similarly believed to be between 2.6% and 3.7% (13).

Using monovariate analysis, the present study reveals that education, history of chronic disease and family history of hypertension and diabetes mellitus are significantly associated with hypertensive disorders of pregnancy. Multivariate analysis revealed that education only significant determinant factor. This finding suggests

that importance of education as indicator of socioeconomic levels and determinant of health.

Tebeu et al (2011) ¹⁴ revealed that numerous variables related to hypertension disease during pregnancy by using monovariate analysis. Early adolescence, nulliparity, illiteracy, unemployment, and a family history of hypertension were among them. Multivariate analysis revealed that women with illiteracy, housewives, nulliparae, women with family histories of hypertension and women with a history of hypertension during pregnancy continued to have a higher risk of developing hypertension during pregnancy.

The findings of this study are not concordant with those of Elmansorry et al., (2023) ¹⁵ who displayed in study conducted in Aljala Maternity Hospital, Tripoli-Libya; that older age was significantly associated with high blood pressure, similarly increased number of pregnancies was correlated significantly with elevated blood pressure.

CONCLUSION AND RECOMMENDATIONS:

The prevalence of hypertensive disorders of pregnancy among studied women was 19.2%. Mother education, history of chronic disease and family history of hypertension and diabetes are significantly associated with hypertensive disorders of pregnancy. Multivariate analysis revealed that education was the only significant predictive factor with inverse relationship as it seems that mothers with higher education are more prone for HDP than other irrespective and independent of any related factor. The findings of the present study suggest that development of strategies targeting augmenting primary care in general and antenatal care in particular; with respect for chronic (essential) hypertension which may further complicate the situation. Early diagnosis of the condition and raising the awareness among pregnant women and prospective mothers as well as primary health care providers may be an obligatory strategy. Further research to explore the relationship between maternal education and HDP seems necessary to solve this mystery

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