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EPIDEMIOLOGY OF GESTATIONAL HYPERTENSION IN PREGNANT WOMEN OF DISTRICT MARDAN

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Abstract

Background: *Gestational hypertension (GH) is a condition of new-onset high blood pressure that arises after 20 weeks of pregnancy and sometimes progresses to more severe conditions that are fatal for both the neonate and mother. The information about the prevalence of this disease is limited in the women of District Mardan. Therefore, this study aims to determine the current status of GH in this population.*

Material and Methods: *This study sample was 400 pregnant women from District Mardan, from different age groups, who were visiting health facilities. Information was obtained by interview, and a structured questionnaire was used. BMI and blood pressure were measured by a trained health professional. Data were analysed by SPSS software version 20. Prevalence rate was calculated, and the X-square test was used for the significance of various factors. P< 0.05 was considered a significant level.*

Results: *This study identified a 11.5% prevalence (46 women out of the total 400) in this population of District Mardan. Multiparity and positive Family history were the significant factors identified in this population. No significant association of the location, education level, socioeconomic status, or BMI was seen.*

Conclusion: *The comparatively high prevalence of GH in women of Mardan demands health interventions and timely diagnosis to prevent complications for both mother and fetus. Large-scale studies on the risk factors within this population are required to gain a clearer understanding of the disease, its control, and management.*

INTRODUCTION

Gestational hypertension (GH) is a condition of new-onset high blood pressure that arises after 20 weeks of pregnancy without proteinuria. GH causes significant cases of morbidity and mortality worldwide (American College of Obstetricians and Gynaecologists [ACOG], 2020). About 5-10% of pregnancies are globally affected by hypertension, which includes both chronic hypertension and preeclampsia (Sibai et al., 2003). GH causes serious complications, which include placental abruption, preterm delivery, fatal growth restriction, and a risk of long-term cardiovascular disease in mother and child (Magee et al., 2014).

In low- and middle-income countries, including Pakistan, the burden of GH is very high due to limited healthcare facilities, including prenatal care, and limited awareness among pregnant women (Nisar et al., 2014).

Mardan district, located in the Khyber Pakhtunkhwa province of Pakistan, faces unique health care

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challenges, such as socioeconomic factors, cultural practices, and access to healthcare facilities (Khan et al., 2019). The information about the prevalence of GH in pregnant women of Mardan district is limited despite its critical importance in reducing maternal and neonatal mortality rates in accordance with Sustainable Development Goals (United Nations, 2015). Furthermore, information about the epidemiology and risk factors of GH among pregnant women in Mardan is necessary for local health care policies and interventions.

To prevent the more severe conditions, such as preeclampsia and eclampsia, in pregnant women, early diagnosis and management play a key role (Roberts & Hubel, 2009). Therefore, this study aims to highlight the current status of gestational hypertension in the local pregnant women of District Mardan.

Material and Methods

This cross-sectional study is based on a health facilities-based survey conducted at Mardan Medical Complex Hospital and in private clinics within the district. The study sample consisted of 400 pregnant women with 20 weeks of pregnancy who attended antenatal clinics. The study period is from September to November 2024. Women who had chronic hypertension or known renal disease were not included in this study. All the participants were given information about the study that their participation is totally voluntary and their identity will be kept confidential. Informed consents were obtained. The study is approved by the University Review Committee.

Data was collected by using a predesigned structured questionnaire, which consisted of questions about sociodemographic, parity, and family history of hypertension. BMI (Body Mass Index) was calculated by taking anthropometric measurements (Table 1). A calibrated sphygmomanometer was used for measuring blood pressure, with two readings at least 6 hours apart. Chi-square analysis is used to identify the association of GH with various sociodemographic and health-related factors. SPSS (version 20) software was used for analysis.

Table 1. Sociodemographic characteristics of the sample population, N = 400

Characteristics	Categories	N	(%)
Age group			
	≤ 40	290	72.5%
	> 40	110	27.5%
Location			
	Rural areas	208	52%
	Urban areas	192	48%
Education			
	Illiterate	120	30%
	SSC/matriculate	226	56.5%
	Graduate	54	13.5%
Economic status			
	Low	224	56%%
	Middle	114	28.5%
	Higher	62	15.5%
Parity			
	Primigravida	92	23%
	Multigravida	308	77%
BMI	Underweight (<18.5),	48	12%
	Normal weight (18.5–24.9),	144	36%

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	Overweight (25.0–29.9),	132	33%
	Obesity (30 or greater).	76	19%
Family history of hypertension	Yes	286	71.5%
	No	110	27.5%

Results:

Of the total 400 sample women, 46 (11.5%) were shown to have GH (Figure 1). 78.3% percent were in the age group below 40, while 21.7% were from the age group above 40. The number of GH was significantly high (p = 0.0095) in the multiparous women (93.5%) compared to the primiparous (6.5%). Similarly, family history of hypertension was significantly associated with the GH in these sample women (p = 0,028).

Although the differences in the age group, location, education level, economic status, and BMI were also reported, these differences were not statistically significant (p > 0.05) (Table 2).

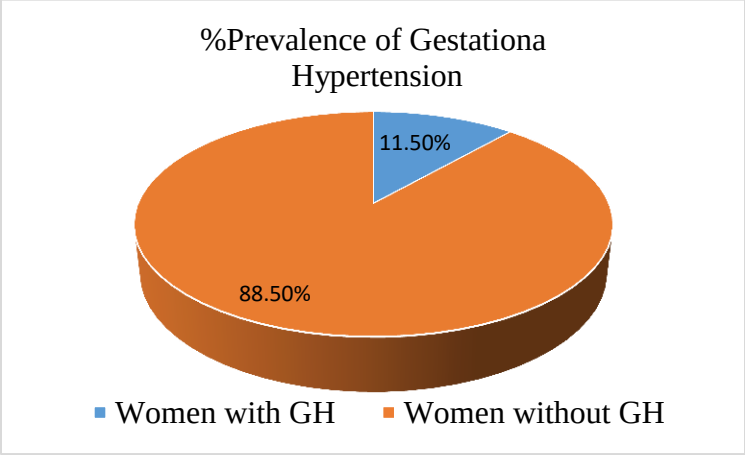

Figure 1: Percentage of women with and without Gestational Hypertension.

Table 2. Frequencies of women with gestational hypertension in District Mardan.

Characteristics	Categories	N	Frequencies of affected women (N = 46)	Percentage (%) of affected women cases	P*-value
Age group					
	≤ 40	290	36	78.3%	0.333
	> 40	110	10	21.7%	
Location					
	Rural areas	208	26	56.5%	0.556
	Urban areas	192	20	43.5%	
Education					
	Illiterate	120	16	34.8%	0.441
	SSC/matriculate	226	21	45.7%	
	Graduate	54	9	19.6%	

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	Economic status					
		Low	224	25	54.3%	0.129
		Middle	114	18	39.1%	
		Higher	62	3	6.5%	
	Parity					
		Primiparous	92	3	6.5%	0.0095
		Multiparous	308	43	93.5%	
BMI	Underweight (<18.5),	48	5	10.9%	0.476	
	Normal weight (18.5–24.9),	144	12	26.1%		
	Overweight (25.0–29.9),	132	17	37.0%		
	Obesity (30 or greater).	76	12	26.1%		
Family history of Hypertension	Yes	286	40	87.0%	0.028	
	No	110	6	13.0%		

*Chi-square P-value.

Discussion

Our study reported a 11.5% prevalence of GH in pregnant women of District Mardan. Comparing with international and national data, this prevalence is higher, and has several implications. Regional differences exist in the global prevalence of hypertensive disorders of pregnancy (HDP) and especially gestational hypertension in different populations worldwide. For instance, a large population-based study from India, Pakistan, Mozambique, and Nigeria showed the prevalence in Pakistan was 9.3% (Magee et al., 2019). When surveys and facility record reviews were taken into account, the estimated prevalence of pregnancy hypertension in Pakistan increased to 11.6%. (Magee et al., 2019).

Additionally, a systematic review of GH of pregnancy in sub-Saharan Africa reported aa combine prevalence of approximately 8%, which falls within the global estimated range of 5–10% for hypertensive pregnancy complications (Gemoechi et al., 2020) it is evident from global trend that the number of cases of GH increases worldwide, their age-standardized incidence rates are stable or modestly declining in many regions (Global Burden of Disease Pregnancy Hypertensive Disorders Collaborators. (2021). However, our population-based study's small sample size may have contributed to the higher prevalence of gestational hypertension in Mardan compared to the global figures. In Pakistan, a cross-sectional study reported a 13.70% prevalence of pregnancy-induced hypertension (Awais et al., 2023), and 8.66% prevalence was reported from a tertiary care hospital in Lahore (Fakharunissa et al., 2022). By comparing with these studies, the Mardan figures are higher than Lahore and lower than some broader population or multi-district estimates.

Our study also indicated that women with two or more children have a high prevalence of GH. Several other studies also show the association of GH with the multiparity status in pregnant women. For instance, Smith et al. indicated that first-time mothers have decreased risks of gestational

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hypertension compared to women with two or more past pregnancies (Smith et al., 2020).

In our study, a positive family history was a significant factor for gestational hypertension in women of District Mardan. This indicates a positive genetic predisposition for the GH. A study from Ahmed et al. 2019 also indicated the family history as a high risk for GH due to inherited genetic factors and shared environmental effects. Kumar and Singh (2021) also found that women with hypertension in first-degree relatives were twice as likely to develop gestational hypertension.

There are some limitations in our study, such as a small sample size and generalizability, as our study is health facility-based, its findings may not represent the entire pregnant population of the district Mardan. However, this study's result gives a valuable insight that in each ten pregnancies, more than one woman has a risk of GH development, which may, in the future, cause maternal or neonatal complications. Such as (e.g., progression to pre-eclampsia/eclampsia, preterm birth, low birth weight, maternal morbidity) that demand early screening, monitoring, and management. To understand the risk factors, further studies with a large sample size are required in this population.

Conclusion

A higher burden of the disease is represented by a prevalence of 11.5% GH in this population, particularly those with two or more children and a positive family history of hypertension. The current research supports our study linking multiparty and genetic predisposition with the hypertensive disorders during pregnancy. Therefore, during routine examination, multiparity status and family history of hypertension should be taken into account. So that early diagnosis will help in preventing complications and improving maternal and foetal outcomes.

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