

# Study to Determine the Obstetric Outcome in Pregnant Females with Hypertensive Disorders and its Frequency in Saudi Arabia

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## ABSTRACT

**Aim:** To know the prevalence, demographic characteristics and obstetric outcome of hypertensive disorders in pregnancy.

**Study design:** A Descriptive study

**Place and Duration:** This study was conducted over a one-year period at Department of obstetrics & Gynecology, Dr Sulaiman Al-Habib Hospital, Buraidah Al-Qassim Saudi Arabia for one-year duration from June 2019 to June 2020

**Subjects and methods:** All pregnant women reporting hypertension in pregnancy were included in the research. A special proforma has been designed to save demographic data.

**Results:** 3.4% of pregnant women had hypertensive disorders in the analyzed period. Most were between the ages of 21 and 35 years of age, and belonged to the Al Qassim Region Saudi Arabia. 60.1% had gestational hypertension, 24.47% had pre-eclampsia, and 15.4% had chronic hypertension. In this study, women with pre-eclampsia / eclampsia had an increased risk of perinatal morbidity and mortality compared to women with gestational hypertension.

**Conclusion:** This study revealed that hypertension during pregnancy is a major concern for obstetricians and contributes to poor maternal and perinatal outcomes. There is an urgent need to increase awareness of the prenatal reserve and provide urgent postnatal care at the door to improve obstetric outcomes.

**Key words:** gestational hypertension, preeclampsia, eclampsia, chronic arterial hypertension, perinatal death.

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## INTRODUCTION

Given that hypertension disorders in pregnancy are one of the main causes of perinatal morbidity and mortality, it places a heavy burden on the health of the obstetric population<sup>1-3</sup>. Includes pre-eclampsia / eclampsia (PE / E), gestational hypertension, chronic hypertension (CH) and chronic hypertension with superimposed pre-eclampsia. Each category has a different pathophysiology and ramifications for mother and child<sup>4</sup>. The global incidence in the world ranges from 12 to 22%.

Preeclampsia, which can develop into unpredictable eclampsia, is a life-threatening complication of pregnancy. The incidence of PE is approximately 5-8% of all pregnancies<sup>5-6</sup>. Globally, PE / E contributes to maternal death every three minutes. Chronic hypertension complicates approximately 5% of all pregnancies and is becoming more common due to delayed delivery.

The aim of the study is to develop a strategy to understand the prevalence of hypertensive disorders in pregnancy, the mother's demographic characteristics and the results of obstetrics outcome, thus avoiding negative consequences in the context of our situation.

## MATERIALS AND METHODS

This descriptive study was conducted at Department of obstetrics & Gynecology, Dr Sulaiman Al-Habib Hospital, Buraidah Al-Qassim Saudi Arabia for one-year duration from June 2019 to June 2020. During the one-year study, pregnant women with hypertension admitted to the emergency room or outpatient treatment participated in the study.

Pre-eclampsia is defined by the International Association for the Study of Hypertension in Pregnancy. This requires two measurements of diastolic blood pressure of 90 mmHg or more separated by at least 4 hours in a woman with a baseline or systolic pressure of 140 mmHg and a urinary protein excretion of at least 300 mg in 24 hours or 2 or more dipstick readings for medium flow urine samples or catheter samples if 24-hour collection is not available. Eclampsia is defined as the occurrence of seizures in women with pre-eclampsia that cannot be attributed to other causes. Gestational hypertension was diagnosed when a previous woman with normal blood pressure had a diastolic blood pressure of 90 mm Hg or higher or a systolic blood pressure of 140 mm Hg for the first time after 20 weeks. pregnancy without proteinuria. Chronic hypertension was diagnosed if hypertension was present before 20th week of pregnancy. Hypertension in pregnancy is defined from BP >140/90 – 159/109 mm Hg and severe hypertension if BP 160/110 mm Hg or more.

## RESULTS

During the study period, about 143 of the women were diagnosed with hypertension. Among them 18.2% had mild, 83 (58%) had moderate and 34 (23.8%) patients had severe hypertension. In preeclamptic women 54.3% patients had severe hypertension while among gestational hypertension women 12.8% and among chronic hypertension patients 18.2% had severe hypertension. Other clinical variables were showed in Table 1.

Table I: Demographic and clinical data of subjects in study group

Pathological findings	Pre-eclampsia (n=35)	Gestational Hypertension (n=86)	Chronic Hypertension (n=22)	Total (n=143)
Hypertension				
Mild	3(8.6%)	23(26.7%)		26(18.2%)
Moderate	13(37.1%)	47(63.51%)	18(81.8%)	83(58.0%)
Severe	19(54.3%)	11(12.8%)	4(18.2%)	34(23.8%)
Proteinuria	35(100%)		3(13.6%)	38(26.6%)
↑ Fibrinogen degradation products	15(42.9%)	9(10.5%)	2(9.1%)	26(18.2%)
↑ Prothrombin time/Partial thromboplastin time	13(37.1%)	21(24.4%)	2(9.1%)	36(25.2%)
Deranged Liver function test	5(14.3%)		2(9.1%)	7(4.9%)
Deranged Renal function test	10(28.6%)	5(5.8%)	2(9.1%)	17(11.9%)
Abnormal Glucose tolerance test		2(2.3%)		2(1.4%)

We found that women with pre-eclampsia / eclampsia had an increased risk of perinatal morbidity and mortality compared to women with gestational hypertension. (Table 2)

Table II: Obstetric outcome of study group

Pathological findings	Pre-eclampsia (n=35)	Gestational Hypertension (n=86)	Chronic Hypertension (n=22)	Total (n=143)
Mode of Delivery				
Normal vaginal	18(51.43%)	46(53.49%)	14(63.64%)	78(54.55%)
Instrumental delivery	2(5.71%)		2(9.09%)	4(2.80%)
Caesarean section				
Emergency	11(31.43%)	29(33.72%)	2(9.09%)	42(29.37%)
Elective		11(12.79%)	4(18.18%)	15(10.49%)
Died Undelivered	4(11.43%)			4(2.8%)
Perinatal Consequences	N =23	N=94 (8 twins)	N=22	Total =139
Intrauterine death (undelivered maternal death)	3(13.04%)			3(2.16%)
Still Births	5(21.74%)	16(17.02%)	8(36.36%)	29(20.86%)
Early Neonatal Death	4(17.39%)	8(8.51%)		12(8.63%)
Premature	20(86.96%)	32(34.04%)	9(40.91%)	61(43.88%)
Growth retarded	3(13.04%)	9(9.57%)	2(9.09%)	14(10.07%)
Apgar score	N=21	N=70	N=11	N=102
At 1 min <5	4(19.05%)	5(7.14%)	0	9(8.82%)
>5	17(80.95%)	65(92.86%)	11(50%)	93(91.18%)
At 5 min <5	4(19.05%)	4(5.71%)	0	6(7.84%)
>5	17(80.95%)	66(94.29%)	11(50%)	94(92.16%)
Prolonged admission in Nursery	6(28.57%)	11(15.71%)	5(22.73%)	22(21.57%)

**DISCUSSION**

The study presented data on the prevalence, maternal demographics, and obstetric outcomes of pregnant women with hypertension over the duration of one year at Department of obstetrics & Gynecology, Dr SulaimanAl-Habib Hospital, Buraidah Al-Qassim Saudi Arabia

. The prevalence of hypertensive disorders in our hospital is around 3.2% compared to 3.3% in neighboring Iran<sup>9</sup>. Other reported cases are 4.6% in Africa, 5.3% in Ethiopia and Nigeria, 5.9% in the US, and 7.5% in Brazil. This shift may be due to racial, social and environmental differences between these populations<sup>10</sup>.

In this study, the incidence of gestational hypertension (69%) was significantly higher than that of pre-eclampsia (21%). Poonyth et al. In their study, Familonia et al<sup>11</sup>. Reported higher gestational hypertension (70%) compared to PH (24%). They published an incidence of 54% PE / E and 26% of gestational hypertension in their population<sup>12</sup>.

However, non-origin in the literature is an important risk factor for pre-eclampsia / eclampsia. Al-Mulhim et al. Preeclampsia was reported by a high percentage (40%) of

women of extreme reproductive age, while in another study 27% were adolescents, 7 in contrast to this series, only 8% were > 20 years of age and <36 years of age<sup>13</sup>.

Pre-eclampsia / eclampsia was common among obstetric emergencies, as in our observations. Recurrence of hypertension during pregnancy is a common disease and occurs in 16% of our patients. Preeclampsia is a heterogeneous disease of unknown etiology with an important genetic component<sup>14-17</sup>. In this study, it was difficult to assess the exact type / cause of hypertension in family members due to female illiteracy and poor health, but approximately 9% of the study population in this group had some form of hypertension in family members. Surgical delivery has been reported to increase the incidence of hypertension in pregnancy. In our study, 41% of women were born via caesarean section.

In our study, two maternal deaths were reported due to eclampsia<sup>18-19</sup>. Both women died before giving birth. Death before birth was also reported in a study in Nigeria. In another center in Pakistan, maternal deaths from eclampsia were reported as 16%, but the patients included in this study generally came from eclampsia only and not from gestational hypertension.

The most common associated maternal complications were placental abruption and PPH. The most common associated fetal complications were meconium aspiration syndrome, followed by preterm birth, IUGR, and LBW. Efforts should be made to reduce the risk factors responsible for the high incidence of preeclampsia and eclampsia at the grass-roots level. Awareness and resources should be made available at all levels to reduce the maternal and fetal complications associated with hypertensive disorders of pregnancy<sup>20, 21</sup>. Programs should be introduced to raise awareness at the community level, and health facilities should be well equipped to make early detection and manage preeclampsia and other hypertensive disorders adequately.

## CONCLUSION

This study revealed that hypertension during pregnancy is a major concern for obstetricians and contributes to poor maternal and perinatal outcomes. There is an urgent need to increase awareness of the prenatal reserve and provide urgent postnatal care at the door to improve obstetric outcomes.

## REFERENCES

- Barton, John R., George R. Saade, and Baha M. Sibai. "A proposed plan for prenatal care to minimize risks of COVID-19 to patients and providers: focus on hypertensive disorders of pregnancy." *American journal of perinatology* 37, no. 8 (2020): 837.
- Idris, Haruna, Nwachukwu ChiemezieNwagboDuum, Umar GatiAdamu, RasheedatMorayoAbdullateef, and Isah Aliyu Yabagi. "Hypertensive disorders in pregnancy: Pattern and obstetric outcome in Bida, Nigeria." *Nigerian Medical Journal: Journal of the Nigeria Medical Association* 61, no. 1 (2020): 42.
- Jongsma, Karin Rolanda, Josephus FM van den Heuvel, Jasmijn Rake, Annelien L. Bredenoord, and Mireille N. Bekker. "User Experiences With and Recommendations for Mobile Health Technology for Hypertensive Disorders of Pregnancy: Mixed Methods Study." *JMIR mHealth and uHealth* 8, no. 8 (2020): e17271.
- Butwick, Alexander J., Maurice L. Druzin, Gary M. Shaw, and Nan Guo. "Evaluation of US State-Level Variation in Hypertensive Disorders of Pregnancy." *JAMA Network Open* 3, no. 10 (2020): e2018741-e2018741.
- Xie, Xinglei, Jiaming Liu, Isabel Pujol, Alicia López, María José Martínez, Apolonia García-Patterson, Juan M. Adelantado, Gemma Ginovart, and Rosa Corcoy. "Inadequate Weight Gain According to the Institute of Medicine 2009 Guidelines in Women with Gestational Diabetes: Frequency, Clinical Predictors, and the Association with Pregnancy Outcomes." *Journal of Clinical Medicine* 9, no. 10 (2020): 3343.
- Njukang, Nkem Ernest, E. G. B. E. Thomas Obinchemti, Martin Sama, TahAldofYoah, and Joseph Kamgno. "Prevalence and Risk Factors of Hypertensive Disorders in Pregnancy: Case of Mezam Division, NWR Cameroon." *Journal of Women's Health and Development* 3 (2020): 247-267.
- Suzumori, Nobuhiro, Takeshi Ebara, Taro Matsuki, Yasuyuki Yamada, Sayaka Kato, Toyonori Omori, Shinji Saitoh, MichihiroKamijima, Mayumi Sugiura-Ogasawara, and Japan Environment & Children's Study Group. "Effects of long working hours and shift work during pregnancy on obstetric and perinatal outcomes: A large prospective cohort study—Japan Environment and Children's Study." *Birth* 47, no. 1 (2020): 67-79.
- Tesfa, Endalamaw, EndalkachewNibret, Solomon TebejeGizaw, YohannesZenebe, Zewdie Mekonnen, Sefaelem Assefa, MulatuMelese, NetsanetFentahun, and AbainehMunsha. "Prevalence and determinants of hypertensive disorders of pregnancy in Ethiopia: A systematic review and meta-analysis." *Plos one* 15, no. 9 (2020): e0239048.
- Arvizu, Mariel, Jennifer J. Stuart, Janet W. Rich-Edwards, Audrey J. Gaskins, Bernard Rosner, and Jorge E. Chavarro. "Pregpregnancy adherence to dietary recommendations for the prevention of cardiovascular disease in relation to risk of hypertensive disorders of pregnancy." *The American Journal of Clinical Nutrition* (2020).
- Roca, Gabriela Querejeta, JacquelyneAnyaso, Susan Redline, and Natalie A. Bello. "Associations Between Sleep Disorders and Hypertensive Disorders of Pregnancy and Materno-fetal Consequences." *Current Hypertension Reports* 22, no. 8 (2020): 1-9.
- Wu, Pensée, Kelvin P. Jordan, Carolyn A. Chew-Graham, Thais Coutinho, Gina P. Lundberg, Ki E. Park, Lucy C. Chappell, Phylo K. Myint, Angela HEM Maas, and Mamas A. Mamas. "Temporal trends in pregnancy-associated stroke and its outcomes among women with hypertensive disorders of pregnancy." *Journal of the American Heart Association* 9, no. 15 (2020): e016182.
- Biococca, Matthew J., Hector Mendez-Figueroa, Suneet P. Chauhan, and Baha M. Sibai. "Maternal obesity and the risk of early-onset and late-onset hypertensive disorders of pregnancy." *Obstetrics & Gynecology* 136, no. 1 (2020): 118-127.
- Salehi Omran, Setareh, and Michelle Hu Leppert. "Are Strokes Declining Among Pregnant Women With Hypertensive Disorders of Pregnancy?." (2020): e017917.
- Sanapo, Laura, Mary T. Donofrio, Homa K. Ahmadzia, Alexis C. Gimovsky, and Mohamed A. Mohamed. "The association of maternal hypertensive disorders with neonatal congenital heart disease: analysis of a United States cohort." *Journal of Perinatology* (2020): 1-8.
- Wu, Pensée, Carolyn A. Chew-Graham, Angela HEM Maas, Lucy C. Chappell, Jessica E. Potts, Martha Gulati, Kelvin P. Jordan, and Mamas A. Mamas. "Temporal Changes in Hypertensive Disorders of Pregnancy and Impact on Cardiovascular and Obstetric Outcomes." *The American Journal of Cardiology* (2020).
- Obsa M, WolkaWoticha E, GirmaWeji B, KassahunDessu B, DendirWolde G, GebremeskelGirmay B, TamruBakru E, Belay L, Hussein Gediye M, GobenaKute N, Menchamo MW. Neonatal and Fetal Outcomes of Pregnant Mothers with Hypertensive Disorder of Pregnancy at Hospitals in Wolaita Zone, Southern Ethiopia. *Journal of Midwifery and Reproductive Health*. 2019;7(2):1615-20.
- Leavitt K, Običan S, Yankowitz J. Treatment and prevention of hypertensive disorders during pregnancy. *Clinics in perinatology*. 2019 Jun 1;46(2):173-85.
- Youash S, Sharma V. Depression, antidepressants and hypertensive disorders of pregnancy: a systematic review. *Current drug safety*. 2019 Jul 1;14(2):102-8.
- Dachew BA, Scott JG, Betts K, Mamun A, Alati R. Hypertensive disorders of pregnancy and the risk of offspring depression in childhood: Findings from the Avon Longitudinal Study of Parents and Children. *Development and psychopathology*. 2020 Aug;32(3):845-51.
- Ahsan N, Naheed F, Shiekh F. Hypertensive Disorders of Pregnancy and Its Associated Fetomaternal Complications. *Journal of Surgery Pakistan*. 2019 Oct;24:4.
- Zwertbroek EF, Zwertbroek J, Broekhuijsen K, Franssen MT, Ganzevoort W, Langenveld J, Mol BW, Van Pampus M, Scherjon S, Van Baar AL, Groen H. Neonatal developmental and behavioral outcomes of immediate delivery versus expectant monitoring in mild hypertensive disorders of pregnancy: 5-year outcomes of the HYPITAT II trial. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2020 Jan 1;244:172-9.