

## Assessment of Risk Factors in Hypertensive Disorder During Pregnancy: Hospital Based (KAP) Knowledge, Attitude and Practice Survey. A Key for Preventive Approach

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### ABSTRACT

**Background:** Hypertensive disorder (HDP) during pregnancy is a group of conditions featuring with high blood pressure that may lead to fetomaternal morbidity and mortality, particularly in developing countries. **Aims and Objectives:** To assess relationship between risk factor of hypertensive disorder during pregnancy, their self care knowledge and practice to prevent and control hypertension. **Materials And Method:** A cross-sectional study of 93 registered, pregnant women belonging to reproductive age group, after 20<sup>th</sup> gestation age completed, who came for ANC checkup or admitted for hypertension management or prior to delivery in Nepalgunj medical college and teaching hospital under department of Obstetrics and Gynecology from 15<sup>th</sup> June to 15<sup>th</sup> December 2018. Blood pressure was measured for each women at booking or at subsequent visits. Urine test for protein albumin was performed if blood pressure was elevated. Data was entered and analysis was completed using SPSS package version 20. **Results:** The overall prevalence of hypertensive disorder during pregnancy was 2.85% among all deliveries. Pre-eclampsia accounted 36% of the cases followed by eclampsia 18%. Gestational hypertension was 21%, pregnancy induced hypertension was 20% and chronic hypertension was only 5% in study population. **Conclusion:** Knowledge and attitude regarding lack of exercise, low salt diet, obesity and lack of rest were poor contributory risk factors. It is recommended that all pregnant women must develop knowledge about associated risk factors and ensure the application of behavioral change practices to control and prevent hypertensive disorder during pregnancy.

**Key words:** Blood pressure, hypertension, HDP, pregnancy, self care knowledge

### INTRODUCTION

Pregnancy, also known as “gestation”, a state of carrying a fetus in women's womb during period of reproductive cycle<sup>1</sup>. It is one of the joyous moment for every womanhood in natural phenomenal sequence of their life. But this art of physiological changes, however, may get distorted due to imbalance between pregnancy and their associated risk factors. Hypertensive disorder during pregnancy is one of the major complications, putting both mother and conceptus health at stake.

#### Burden of diseases

Everyday 830 women, approximately die from preventable causes related to pregnancy and child birth. Almost all 99% of all maternal deaths occur in developing countries, residing in rural areas and among poorer communities. Being motherhood is challenging and may associated with ill health and even deaths<sup>2</sup>.

In developed countries, 16% of maternal deaths due to hypertensive disorders. One out of third of all maternal deaths are from hypertensive disorders and young female are 3-fold increased at risk<sup>3</sup>.

#### Pregnancy-induced hypertension

It occurs in about 5-8% of all pregnancies. Although the cause of PIH is unknown, certain factors are associated to increase the risk of PIH, such as young women with a first pregnancy, pregnant women younger than 20 years and those older than 40 years, women with multiple fetuses, gestational diabetics, pregnant women with preexisting hypertension or previous episodes of preeclampsia or PIH and pregnant women with preexisting renal disease<sup>4</sup>.

#### Gestational hypertension

High BP develops after week 20 in pregnancy and goes away after delivery.

#### Pre-eclampsia

This is also one of the serious major condition after 20<sup>th</sup> week of pregnancy, affecting 2-8% of all pregnancies. Gestation hypertension and PIH may progress later on as severe pre-eclampsia. Increase systolic blood pressure 140mmhg or above and diastolic pressure 90mmhg or above along with raised protein in the urine is the diagnostic feature for pre-eclampsia which can lead to serious complications for both mom and baby if not treated quickly<sup>5</sup>. Obesity has been associated with a 2-4 fold increased risk of developing pre-eclampsia in different populations<sup>6</sup>. It contributes almost 70% of maternal and perinatal morbidity and mortality rate<sup>3</sup>.

#### Eclampsia

Eclampsia is the onset of seizures (convulsions) in a woman with pre-eclampsia occurring before, during, or after delivery. Most often it is during the second half of pregnancy. The

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seizures are of the - tonicclonic type and typically last about a minute. Following the seizure there is typically either a period of confusion or coma<sup>7</sup>.

### Chronic hypertension

BP  $\geq$  140 mmHg systolic or 90 mmHg diastolic prior to pregnancy or before 20 weeks gestation Persists >12 weeks postpartum<sup>5</sup>.

### Degree of hypertension

Blood pressure category	Systolic mmhg (upper number)		Diastolic mmhg (lower number)
Normal	< 120	And	< 80
Elevated	120 - 129	And	< 80
High blood pressure (Hypertensive stage I)	130 -139	or	80 – 89
High blood pressure (Hypertensive stage II)	140 or higher	Or	90 or higher
Hypertensive crisis (consult your Doctor immediately)	Higher than 180	And/Or	Higher than 120

### Blood pressure categories

Guideline for blood pressure classification according JNC 8 blood pressure<sup>8</sup> (American Heart Association And American Stroke Association)

### Self-care knowledge

In this study self-care knowledge refers to range of activities that pregnant women must have self awareness to perform healthy life style or adhering to balance diet and medication, exercising, symptoms management and taking rest. Self-care knowledge on hypertension is needed in order to change behavior and practices to be maintained their life style for controlling blood pressure<sup>4</sup>.

### General measurements to prevent hypertensive disorder during pregnancy

- Low salt diet and keep body hydrate by drink at least eight glasses of water every day.
- Increase amount of protein diet, leafy green vegetables and decrease amount of junk food, fried food.
- Avoid drinking alcohol and beverages containing caffeine.
- Avoid smoking.
- Get enough sleep and plenty of rest.
- Increase physical activity or get regular exercises.
- Timely consult Doctor and get prescribed medication<sup>9</sup>

### Assessment of BMI

BMI was categorized according to WHO definitions as underweight <18.5, normal weight 18.5-24.9, overweight 25.0-29.9, and obese  $\geq$ 30<sup>10</sup>. It had been great impact in rise in blood pressure by 2-4 fold due to obesity during pregnancy.<sup>11</sup>

### OBJECTIVES OF THE STUDY

- To assess factors effecting hypertension and self care knowledge among pregnant women regarding hypertension.
- To study the relationship between self care knowledge and preventive measures taken with hypertension among pregnant women.

### MATERIAL AND METHODS

This is cross sectional hospital based study carried out from 15<sup>th</sup> June 2018 to 15<sup>th</sup> December 2018 on the basis of knowledge, attitude and preventive practices of hypertensive disorder on women who registered in Obstetric/gynaecological department of Nepalgunj medical college and teaching hospital, Kohalpur, banke. The study population includes pregnant women between reproductive age group of 15-49 years who had completed 20<sup>th</sup> weeks of gestation and admitted for hypertension management or prior to delivery. Non-probability convenient sampling method was applied on the basis of exclusion and inclusion criteria. Pretested, semi-structured questionnaire was designed and interviewed with respondents. It was also given and asked to the visitor of patient in case of severe toxemia of pregnant women. Based on study done in BPKHS, Nepal, considering 27.1% as prevalence of hypertensive disorder during pregnancy and using power 80%, the study sample size was 93<sup>16</sup>. Data were sorted, scrutinized and then analyzed in excel, SPSS version 20.0 using descriptive statistics, frequency, significance level less than 0.05 and correlation in linear regression models. The open ended questions were grouped and categorized. Verbal consent was taken and assured them for anonymity and confidentiality. The article was finalized for study after being satisfied and ethically considered by Institutional review committee of Nepalgunj Medical College Teaching Hospital (NGMCTH), Kohalpur.

### RESULTS

During the study period, incidence proportion of pre eclampsia (36%) was found to be the major hypertensive disorder among study population as shown in figure no. 1. Similarly table I Shows that age distribution for HDP comprised maximum (57%) in 20-29 years whereas minimum (8.6%) in 40-49 years.

■ Pre eclampsia ■ Eclampsia ■ Gest. HTN ■ PIH ■ Chr. HTN

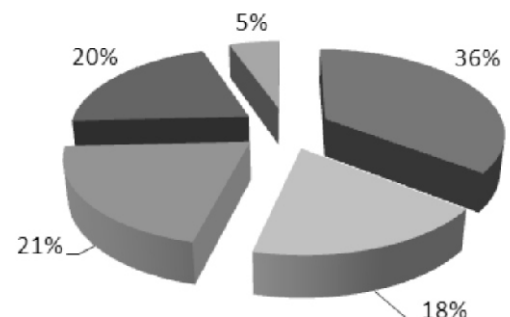


Figure 1

Reproductive age group	Frequency	(N)%
15 – 19	12	12.95
20 – 29	53	57.0
30 – 39	20	21.5
40 – 49	8	8.6

Table no. I

It was also observed that residential distribution was slightly higher in urban for hypertensive disorder during pregnancy, i.e 51.65% from urban population and 48.40% from rural population which seemed to be linked with confounding potentials (high carb fat diet, high intake of salt, sedentary life style, socioeconomic status etc.) responsible for rise in blood pressure in pregnant women belonging to urban area.

Table II and III shows that reproductive attributes were not significant associations although nulli parity and third trimester had greater chance of developing hypertension during pregnancy. It was observed that 41 and 29 respondents were categorized as obese and overweight respectively whereas only 18 and 5 respondents were belonged to normal and underweight respectively among total population.

Figure 2. shows that 48% pregnant women were unaware about cause of high BP whereas 37% and 15% of women agreed that lack of exercise and high salt diet respectively were major cause of rise in BP during pregnancy. These risk factors contributed to be highly significant relationship among pregnant women in the study population.



Figure 2: Reason behind high blood pressure in total population

Lack of exercise  
Total agreed pregnant women = 26  
Actual followers yes = 10  
no = 16

High salt diet  
Total agreed pregnant women = 11  
Actual followers yes = 5  
no = 6

According to figure no.3, 32.3% women were agreed that they had knowledge on taking low salt diet while others were taking normal as well as high salt diet and found to be highly significant risk factor for rise in blood pressure. Similarly, only 14.0% were aware of doing regular exercise while rests of 86.0% were not doing any exercise.

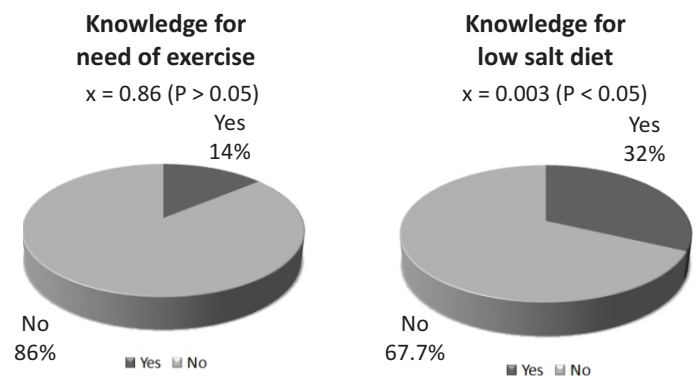


Figure 3: Association between knowledge and practice among total population

DISCUSSION

The purpose of study was to find out risk factors influencing hypertensive disorder during pregnancy and relationship between self care knowledge of pregnant women and hypertension control. Present study showed that hypertensive disorder during pregnancy comprised of majority of age group at range of 20 to 29 years with prevalence of HDP was 2.85% while study done in BPKIHS, Dharan, Nepal, had prevalence for

Variables	BMI				Diet	
	Obese	Overweight	Normal	Underweight	Vegetarian	Mixed
N (%)	41(33.3%)	29(39.1%)	18(31.2%)	5(5.4%)	21(23%)	72(77%)
P value	0.010				0.000	

Table no. II

Variables	ANC Visit		Trimester		Parity	
	Booked	Unbooked	2 <sup>nd</sup>	3 <sup>rd</sup>	Nulli	Multi
N (%)	50(54%)	44(46%)	32(34.4%)	61(65.6%)	57(61.3%)	36(38.7%)
P value	0.001		0.26		0.50	

Table no. II

HDP was 27.1%<sup>12</sup>. According to Ethiopian journal of health science, incidence hypertension during pregnancy increases with age and parity and multiple pregnancies where majority of hypertensive disorder 83 (52.5%) were range at 25 – 34 years<sup>13</sup>. Pregnant women (51.65%) residing urban area were opt to have greater tendency for developing hypertension than pregnant women belonged to rural area (48.40%). Most of the pregnant women were nulliparous 61.3% and showed to be statistically significant association with severity of disease ( $p=0.001$ ) which is higher than the report of 44.1% from the university of calabar, south Nigeria<sup>14</sup>.

According to the reason behind rise in blood pressure, 37% and 15% of pregnant women knew that lack of exercise and high salt diet respectively were the major contribution for rise in blood pressure. However, 48% of respondents among total population still had no idea about rise in Blood pressure during pregnancy. Present study revealed similar background with the study from Bindura district, University of health science, Zimbabwe where 55.1% respondents demonstrated knowledge of high salt diet contributes HDP. This relationship had statistically highly significant association with HDP in present study. Therefore, continue practice on danger of salt consumption and lack of exercise as a predisposing factor for HDP in some susceptible pregnant women is necessary to reduce incidence of hypertension during pregnancy<sup>15</sup>.

There was a huge gap between self care knowledge and preventive practices among pregnant women. Only 14% of the pregnant women had knowledge that exercise during pregnancy is necessary to prevent high blood pressure and despite of those who had knowledge about exercise were not following it on regular basis. Meanwhile, only 32% of pregnant women were aware of taking low salt diet among total population who agreed that high salt intake was major cause of rise in blood pressure. A study from Banaras Hindu University reflected similar result with present study in regards of self care knowledge and practices to prevent HDP<sup>10</sup>.

Pregnant women with less knowledge of risk factors such as obesity and the need to reduce weight further inquiries into the women's perceptions on weight gain and obesity. The findings would clearly guide on any misconceptions while strengthening self care knowledge in this regard.

## CONCLUSION

Hypertensive disorder during pregnancy is one of the major complication following maternal and neonatal mortality and morbidity. Urban residence with high socio-economic class, rural residence with marginalized caste, illiteracy, nulli parity, high BMI level, lack of exercise, consumption of unhealthy and high salt diet were identifiable independent risk factors in this study. The major risk factor of rise in blood pressure was lack of exercise and high salt diet for the reason behind rise in blood pressure. Despite of having knowledge about risk factors to

prevent and control hypertension in some pregnant women, they were still reluctant to practice their knowledge in day to day basis. So, understanding associated risk factor and developing self care knowledge regarding hypertension during pregnancy is a mandatory tool for controlling high blood pressure. Considering the findings observed in present study, to educate the pregnant women on identifying risk factors of HDP and also motivate them to take preventive measures as a compulsory requirement.

## REFERENCES

1. WHO pregnancy world health organization.[Online] <https://www.who.int/topics/pregnancy/en/>.
2. Factsheet about maternal mortality WHO guidance, updates bulletin, 18 feb 2018).
3. Pregnancy Induced Hypertension Including Eclampsia, Obstetrics and Gynecological Emergencies, 2006. <http://my.clevelandclinic.org/health/>.
4. Swarayi I. The Relationship Between Pregnancy Induced Hypertension (PIH) Self Care Knowledge and Hypertension Control Among Pregnant Mothers Aged 18 to 49 Years in Bindura District, March, 2010.
5. Lindheimer MD, Taler SJ, Cunningham FG. Hypertension in pregnancy. *J Am Soc Hypertens* 2008;2:484-94.
6. Cnattingius S, Bergstrom R, Lipworth L, Kramer MS. Pre pregnancy weight and the risk of adverse pregnancy outcomes. *N Engl J Med*. 1998;338:147-152.
7. Eclampsia Wikipedia [online] <https://en.wikipedia.org/wiki/Eclampsia>.
8. Guideline for blood pressure classification according JNC 8 blood pressure (American Heart Association And American Stroke Association).
9. Singh V, Srivastava M. Associated risk factors with pregnancy-induced hypertension: A hospital-based KAP study. *Int J Med Public Health* 2015;5:59-62.
10. Nutrition – Body mass index – BMI <http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi>
11. Oken E, Taveras EM, Kleinman KP, Rich-Edwards JW, Gillman MW. Gestational weight gain and child adiposity at age 3 years. *American Journal of Obstetrics and Gynecology*. 2007;196:322.
12. Khadka M et al. Evaluation of associated risk factors of near miss obstetrics cases at BPKIHS, Dharan, Nepal. *Int J Reprod Contracept Obstet Gynecol*. 2018 Feb;7(2):xxx-xxx.
13. Zenebe Wolde, Hailemariam Segni, Mirkuzie Woldie Hypertensive Disorders of Pregnancy in Jimma University Specialized Hospital Ethiop *J Health Sci*. 2011 Nov; 21(3): 147-154.
14. Mary Esien Kooffreh<sup>1</sup>, Mabel Ekott<sup>2</sup>, Dorcas O Ekpoudom The prevalence of pre-eclampsia among pregnant women in the University of Calabar Teaching Hospital, Calabar 2014 | Volume :3; 133-136.
15. P.I the relationship between pregnancy induced hypertension self care knowledge and hypertension control among Pregnant mothers aged 18 to 49 years in bindura district UNIVERSITY OF ZIMBABWE; 3 2015.