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## INTRODUCTION

Hypertensive disorder of pregnancy (HDP) is a major cause of poor maternal and fetal outcome worldwide. In Malaysia, it is one of the commonest admission to the Government Obstetric unit. Hypertensive Disorders in pregnancy (HDP) is the 4th leading cause of maternal mortality in Malaysia from the CEMD 2005-2008.

## STUDY OBJECTIVES

To review and evaluate incidence of hypertensive disorder in pregnancy in Malaysia

## METHODS

This is a retrospective review based on data from the National Obstetrics Registry from 1st January 2011 to 31st December 2012. A total of 260,959 deliveries were analyzed. In this study, there were a total of 11,746 cases of Hypertensive Disorder in Pregnancy (HDP) which account for 4.5 % of the deliveries.

## RESULTS

### INCIDENCE OF HDP IN THE PARTICIPATING HOSPITALS FROM 2011 UNTIL 2012

Participating Hospitals	2011			2012		
	TD	Total HDP	%	TD	Total HDP	%
Hospital Sultanah Aminah	12,641	781	6.18	12,466	574	4.60
Hospital Sultanah Bahiyah	10,502	436	4.15	10,419	373	3.58
Hospital Raja Permaisuri Zainab II	13,220	487	3.68	11,096	397	3.58
Hospital Melaka	10,939	465	4.25	10,877	426	3.92
Hospital Tuanku Jaafar	4,886	204	4.18	6,273	241	3.84
Hospital Tengku Ampuan Afzan (HTAA)	9,431	611	6.48	8,823	470	5.33
Hospital Raja Permaisuri Bainun	6,320	494	7.82	4,603	322	7.00
Hospital Tuanku Fauziah	4,119	154	3.74	3,954	126	3.19
Hospital Pulau Pinang	3,383	57	1.68	3,046	46	1.51
Hospital Likas	14,955	106	0.71	13,865	146	1.05
Hospital Umum Sarawak	9,941	474	4.77	1,522	69	4.53
Hospital Tengku Ampuan Rahimah	12,477	487	3.90	12,212	513	4.20
Hospital Sultanah Nur Zahirah	12,181	644	5.29	12,945	641	4.95
Hospital Kuala Lumpur	11,868	543	4.58	11,995	459	3.83
<b>Total</b>	<b>136,863</b>	<b>5943</b>	<b>4.34</b>	<b>124,096</b>	<b>4803</b>	<b>3.87</b>

Table 1: Incidence of Hypertensive Disorder in Pregnancy in the Participating Hospitals from 2011 till 2012

In this study, there were a total of 260,959 deliveries. There were 11,746% of cases of Hypertensive Disorders with account for 4.5%. From the data, the incidence of HDP was 4.34% in 2011 and 3.87% in 2012.

### TYPES OF HYPERTENSIVE DISORDER IN PREGNANCY IN THE PARTICIPATING HOSPITALS FROM 2011 UNTIL 2012

Type of HDP	2011	%	2012	%
Pre-existing	1107	18.63	850	17.70
Gestational	4316	72.62	3427	71.35
- PIH without proteinuria	3168	53.31	2468	51.38
- Pre-eclampsia/ Eclampsia	1148	19.32	959	19.97
Chronic hypertension with superimposed PE	400	6.73	298	6.20
Unclassified	49	0.82	35	0.73
Missing data	71	1.19	193	4.02
<b>Total</b>	<b>5943</b>	<b>100</b>	<b>4803</b>	<b>100</b>

Table 2: Type of HDP in the participating hospitals from 2011 until 2012

The data show that the Gestational hypertension was the commonest type of HDP at 72%, pre-existing 18% and chronic hypertension with superimposed pre-eclampsia is 6.5%.

### PATIENTS' DEMOGRAPHIC DISTRIBUTION

Factors	Category	Year		Total	Percentage (%) among HDP group	Incidence of HDP in the study group
		2011	2012			
Ethnicity	Malay	4701	3872	8573	79.8	4.76
	Chinese	353	280	633	5.9	3.98
	Indian	204	142	346	3.2	2.73
	Other indigenous group in Sabah & Sarawak	363	208	571	5.3	2.17
	Foreigner	322	301	623	5.8	2.42
Parity	1	1821	1484	3305	30.7	3.68
	2-5	3481	2486	5967	55.5	3.82
	>5	637	471	1108	10.3	7.61
	unknown	4	2	6	0.1	2.00
	10-20	186	123	309	2.8	1.61
Age group	21-30	2367	1927	4294	39.9	2.86
	31-40	2941	2375	5316	49.4	6.26
	41-50	447	366	813	7.5	12.37
	>50	2	1	3	0.03	8.11

Table 3: HDP by ethnicity, parity and age group in the participating hospitals from 2011 until 2012

In the study, Malay ethnicity had the highest incidence of HDP at 4.76%, followed with Chinese 3.98 % and Indian 2.73%. The incidence of HDP is higher in the age group 40yrs and more at 7.61%. In Para 1 the incidence of HDP were 3.68% and above Parity 5 and more it was 7.61%. The incidence was 4.76% in Malays. Highest incidence of HDP were in parity 2 to 5 The incidence of HPD was commonly seen in women in the 4th decade of life.

### PARITY ACCORDING TO THE HYPERTENSIVE CLASSIFICATION

Parity	CLASSIFICATION OF HDP WITH PERCENTAGES					TOTAL
	Pre-existing	Gestational Hypertension	Chronic Hypertension with Superimposed PE	Unclassified	Missing Data	
1	519 (15.5)	2496 (76.0)	188 (5.6)	23 (0.6)	79 (2.3)	3305
2-5	1212 (19.1)	4486 (70.9)	417 (6.6)	52 (0.8)	160 (2.5)	6327
> 5	225 (20.3)	756 (68.2)	93 (8.3)	9 (0.8)	25 (2.2)	1108
unknown	1 (16.7)	5 (83.3)	0	0	0	6

Table 4: Parity according to the Hypertensive Classification

In general, in this study gestational hypertension was highest in Parity 1 with at 76.0 % compare to parity 2 to 6 with 70.9%.

### MODE OF DELIVERY ACCORDING TO THE HYPERTENSIVE CLASSIFICATION

MODE OF DELIVERY	CLASSIFICATION OF HDP WITH PERCENTAGES					TOTAL
	Pre-existing	Gestational Hypertension	Chronic Hypertension with Superimposed PE	Unclassified	Missing Data	
SVD	929 (47.5)	3800 (49.1)	230 (33.0)	45 (53.6)	136 (15.1)	5140
Breech	13 (0.6)	41 (0.5)	4 (0.6)	1 (1.2)	3 (1.1)	62
Vacuum	60 (3.1)	242 (3.1)	20 (2.9)	3 (3.6)	9 (3.4)	334
Forcep	3 (0.2)	30 (10.4)	3 (0.4)	0	1 (0.4)	37
Caesarean Section	914 (46.7)	3507 (45.3)	425 (60.8)	34 (40.4)	112 (42.4)	4992
Missing Data	38 (1.9)	123 (1.5)	16 (2.3)	2 (2.3)	3 (1.1)	181
<b>TOTAL</b>	<b>1957</b>	<b>7743</b>	<b>698</b>	<b>84</b>	<b>264</b>	<b>10746</b>

Table 5: Mode of Delivery for 2011 and 2012 according to Hypertensive Classification

Vaginal delivery was the commonest mode of delivery in gestational hypertension (49%). However, in chronic hypertension with superimposed pre-eclampsia, Caesarean section was the commonest mode of delivery at 60.8%

### MATERNAL AND FETAL OUTCOMES

#### FETAL OUTCOMES – BIRTH WEIGHT AND APGAR SCORE

Category	Year		Total	Percentage (%)		
	2011	2012				
Birth Weight	≤1000	139	124	263	2.5	
	1001-1500	273	202	475	4.4	
	1501-2000	403	393	796	7.4	
	2001-2500	962	826	1788	16.6	
	2501-3000	1910	1485	3395	31.6	
	3001-3500	1490	1190	2680	25.0	
	3501-3999	513	382	895	8.3	
≥4000	253	201	454	4.2		
Apgar Score (at 1 min)	≤6	536	452	988	9.2	
	≥7	5114	4226	9340	86.9	
	Missing	293	125	418	3.9	
	(at 5 min)	≤6	122	128	250	2.3
		≥7	5486	4538	10024	93.2
Missing		335	137	472	4.3	

Table 7: Fetal Complications of Hypertensive Disorder in Pregnancy from 2011 until 2012

There were 22.6% in 2011 and 24.98% in 2012 premature babies born to mothers with hypertensive disorders. Other complications includes intrauterine growth restriction 2.83 % and 2.54% each year. There were about 0.9 to 1.04 % of intrauterine death noted in this study.

### MATERNAL COMPLICATIONS

Maternal Complications	2011	%	2012	%
1. Abruptio placenta	31	0.52	54	1.12
2. Pulmonary embolism	8	0.13	1	0.02
3. Post-partum hemorrhage	92	1.55	44	0.92
4. Eclampsia	198	3.33	160	3.33
5. DIVC	0	0.00	0	0.00
6. Pulmonary oedema	4	0.07	12	0.25
7. Maternal collapse	6	0.10	0	0.00
Total number of complications	339	5.70	271	5.64
Total number of Hypertensive Disorders	5943		4803	

Table 8: Maternal Complications of Hypertensive Disorder in Pregnancy from 2011 until 2012

There were 3.33% cases of eclampsia among patients with HDP, 1.23 % of post-partum haemorrhage and 0.82% of abruptio placenta

## CONCLUSION

There were a total of 11,746 cases of Hypertensive Disorder in Pregnancy which account from 4.5% of all deliveries. The incidence of hypertensive disorder in this study were 4.34% in 2011 and 3.87 % in 2012 respectively. Gestational hypertension remained the commonest type of Hypertensive disorder in Pregnancy. The incidence of HDP in Malays were 4.78%. Majority of babies were delivered with good Apgar score with birth weight ranging from 2500 gm to 3000gm. A quarter of the babies were delivered prematurely and Eclampsia remained the commonest maternal complication. Early detection of HDP is vital to improve maternal and fetal outcomes.

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