NATIONAL OBSTETRICS REGISTRY

3RD REPORT OF NATIONAL OBSTETRICS REGISTRY

2011-2012

Editors:
Ravichandran Jeganathan
Shamala Devi Karalasingam

CRC
MINISTRY OF HEALTH MALAYSIA
Research that matters to patients

NATIONAL OBSTETRICS REGISTRY

3RD REPORT

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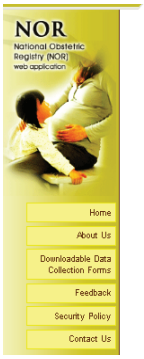
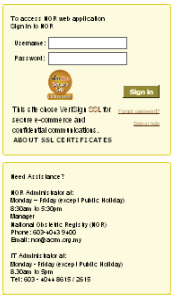
- Our source data providers for their timely data collection and hard work.
- Steering committee members and governance board for their tireless effort and expertise dedicated to this registry
- Clinical Research Centre National for its leadership, supervision and technical support.
- The registry coordinating team and technical support team for their commitment and contribution in preparing this report.

NOR Web Application

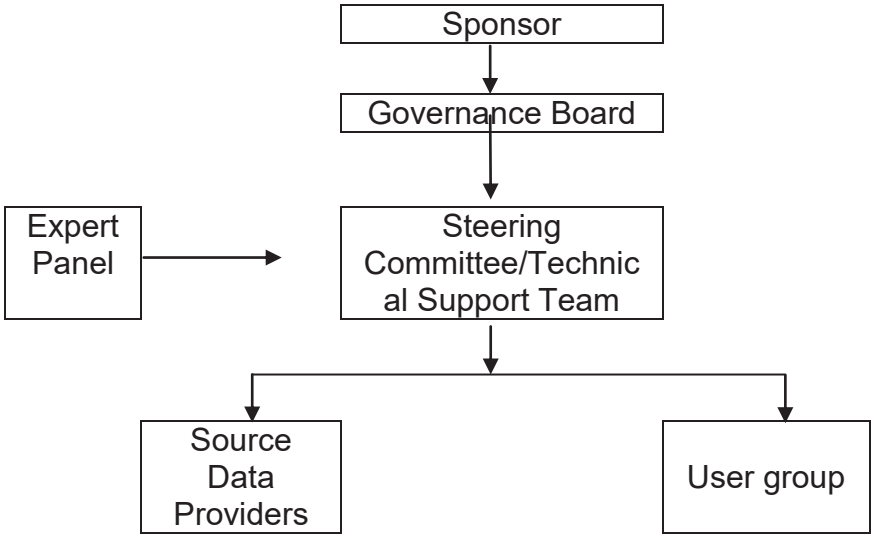
- Go to ***www.acrm.gov.my*** and click on NOR
- Login to NOR
- Select Patient and fill up NOR notification and relevant details.
- Print out reports.





Organization of NOR

The organizational structure for the registry is depicted below.



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LETTER FROM THE PRINCIPAL INVESTIGATOR

The National Obstetrics Registry is presently one of the most active databases. Since its inception in 2009, the database has just expanded. As of December 2014 we have more than 600,000 datasets. Our data has aroused interest both within and out of the country and we have been recognised internationally as a reliable source of data.

NOR data has been presented at local and international conferences and congresses. This 3rd report covers the years 2011 and 2012 and you will be able to see the data from new fields that we have added. A total of 43 posters and 2 oral presentations using this dataset was presented at local and international conferences namely, National Conference in Clinical Research, Diabetic Asia Conference, Asia Oceanic Congress of Obstetrics & Gynaecology in Sarawak, Controversies in Maternal Fetal Medicine in Shanghai and Royal college of Obstetrics and Gynaecology World Congress in Hyderabad, to name a few. Two manuscripts have also been sent to high impact journals for publication.

The total data analysed in this report is 260,958 deliveries. Data cleaning and analysis of this enormous data was undertaken by the CRC team and it must be said that they have done a wonderful job.

A congratulatory note is a very small token of appreciation to the authors, their associates and the core team from CRC for all the hard work to make this 3rd report a reality. The sustained growth of NOR would not have been possible without the dedication and hard work of the steering committee, site coordinators, the O&G heads of department of the participating hospitals and the CRC team.

Our heartfelt thanks to the Director General of Health and the Clinical Research Centre, Malaysia for their continuous support for the National Obstetrics Registry.

Thank you

Dr J. Ravichandran R. Jeganathan
Principal Investigator
National Obstetrics Registry
Ministry of Health, Malaysia

ABBREVATIONS

AIDS	Acquired immunodeficiency syndrome
CRC	Clinical Research Centre
CS	Caesarean Section
CEMD	Confidential enquiry into maternal death
DIVC	Disseminated intravascular coagulopathy
DVT	Deep vein thrombosis
ECV	External Cephalic Version
DM	Diabetes Mellitus
ECV	External Cephalic Version
FSB	Fresh Stillbirth
GDM	Gestational Diabetes Mellitus
HDP	Hypertensive disorder in pregnancy
HKL	Kuala Lumpur Hospital
HPP	Pulau Pinang Hospital
HPT	Hypertension
HL	Likas Hospital
HO	House Officer
HRPB	Raja Permaisuri Bainun Hospital
HRPZ	Raja Perempuan Zainab Hospital
HSNZ	Sultanah Nur Zahirah Hospital
HSA	Sultanah Aminah Hospital
HSB	Tengku Fauziah Hospital
HTAR	Tengku Ampuan Rahimah Hospital
HTAA	Tengku Ampuan Afzan Hospital
HTJ	Tuanku Jaafar Hospital
HL	Likas Hospital
HU	Hospital Umum
HIV	Human Immunodeficiency virus
ICU	Intensive care unit

IHD	Ischaemic heart disease
ITP	Idiopathic thrombocytopenic purpura
IUD	Intrauterine Death
IUGR	Intrauterine growth restriction
KPI	Key Performance Index
LCM	Lethal Congenital Malformation
LSCS	Lower Segment Caesarean Section
MO	Medical Officer
MOH	Ministry of Health
MMR	Maternal Mortality rate
MSB	Macerated stillbirth
NA	Not Available
NICU	Neonatal Intensive care unit
NOR	National Obstetrics Registry
NYHA	New York heart association
OA	Orang Asli
O&G	Obstetrics and Gynaecology
PIH	Pregnancy induced hypertension
PPH	Postpartum Haemorrhage
PPROMXCV	Prelabour preterm rupture of membrane
RCOG	Royal college of Obstetrics and Gynaecology
SDP	Site Data Provider
STD	Sexually transmitted disease
STI	Sexually transmitted infection
SVD	Spontaneous vaginal delivery
TB	Tuberculosis
VBAC	Vaginal birth after Caesarean
WHO	World Health Organization

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CHAPTER 1
TYPE OF DELIVERY

CHAPTER 1 TYPE OF DELIVERY

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Tengku Ampuan Afzan Hospital, Pahang

SUMMARY

There were a total of 136,863 deliveries in 2011 and 124,096 in 2012 from the 14 SDP in Malaysia. The vaginal deliveries accounted for 70.78 % whilst in 2012 it was at 69.98%.

1.1 INTRODUCTION

Vaginal delivery was the main mode of delivery .CS rates were 23.41% in 2011 and 25.08% in 2012. The highest delivery rate was from HL Sabah in both years

1.2 PATIENT DERMOGRAPHICS

Highest birth rates were seen in Malay ethnicity at 68.44% in 2011 and 69.78% in 2012. Foreigners had a higher birth rate in both years than the other two major ethnic group in the country. In both the years the age group with the highest delivery rate was in 25- 29 years. CS was 32.46% in 2011 and 33.20 % in this group and CS rates were higher among Indians in both years. CS rates were also higher in primi gravida and vacuum extraction was the instrument of choice in both years. Women who were color coded green had a higher rate of instrumental delivery.19.02 % of women color coded white 1 had CS in 2011 and similarly in 2012. Diabetes in pregnancy contributed to a higher CS rate in both years followed by hypertension in pregnancy.

1.3 OUTCOMES

More than 90% of babies had Apgar score >7 at 5 min of life. 51.21% of vaginal breech babies had Apgar> 7 at 1 min and 61.68% had Apgar score > 7 at 5 min in 2011. In 2012 vaginal breech babies had Apgar score > 7 at 1 min was 49.33% whilst Apgar score > 7 at 5 min was 63.62%.

1.4 CONCLUSION

14 tertiary hospitals in Malaysia contributed data to NOR. There were a total of 136,863 deliveries in 2011 which accounted for 33.08% of all deliveries in the public hospitals. In 2012, NOR captured 124,096 deliveries which accounted for 32% all deliveries in the public hospitals.

1.5 RECOMMENDATION

1. To make all the fields mandatory
2. To recruit all hospitals in stages to provide data to NOR for a comprehensive analysis of obstetric care in the country.

1.6 REFERRENCES

1. Preliminary report of National Obstetrics Registry 2009
2. National Obstetrics Registry – 2nd Report 2010.

Table 1.1 Distribution of delivery by SDP 2011 and 2012

SDP	2011		2012	
	n	%	n	%
HTF, Perlis	4,119	3.01	3,954	3.19
HSB, Kedah	10,502	7.67	10,419	8.40
HPP	3,383	2.47	3,046	2.45
HRPB, Perak	6,320	4.62	4,603	3.71
HTAR, Selangor	12,477	9.12	12,212	9.84
HKL	11,868	8.67	11,995	9.67
HTJ Negeri Sembilan	4,886	3.57	6,273	5.05
Hospital Melaka	10,939	7.99	10,877	8.76
HSA, Johor	12,641	9.24	12,466	10.05
HTAA, Pahang	9,431	6.89	8,823	7.11
HSNZ, Terengganu	12,181	8.90	12,945	10.43
HRPZ 11, Kelantan	13,220	9.66	11,096	8.94
HU Sarawak	9,941	7.26	1,522	1.23
HL, Sabah	14,955	10.93	13,865	11.17
Total	136,863	100	124,096	100

Table 1.2 Distribution of Total delivery by Types 2011 and 2012

Delivery	Types	2011		2012	
		n	%	n	%
Vaginal	SVD	96,312	70.37	86,080	69.37
	Breech	535	0.39	448	0.36
	NA	24	0.02	16	0.01
Total		96,871	70.78	86,837	69.98
Instrumental	Vacuum	4,387	3.21	4,183	3.37
	Forceps	568	0.42	437	0.35
Total		4,947	3.61	4,616	3.72
CS	LSCS	31,817	23.25	30,929	24.92
	Classical	133	0.10	139	0.11
	Hysterotomy	18	0.01	23	0.02
	Hysterectomy	53	0.04	51	0.04
	Others	10	0.01	10	0.01
Total		32,037	23.41	31,124	25.08
NA		3,007	2.20	1,519	1.22
Total		136,862	100.00	124,096	100.00

Table 1.3 Distribution of delivery by age 2011 and 2012

Delivery Type 2011	Age									
	10-14	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**
Vaginal	107	5,381	19,618	33,546	23071	11269	3043	222	14	1
%	0.11	5.55	20.25	34.63	23.82	11.63	3.14	0.23	0.01	0.00
Instrumental	4	301	1,179	2,062	909	360	100	6	2	0
%	0.08	6.08	23.83	41.68	18.37	7.28	2.02	0.12	0.04	0.00
Caesarean	12	867	4,704	10,399	8597	5008	1519	128	7	0
%	0.04	2.71	14.68	32.46	26.83	15.63	4.74	0.40	0.02	0.00
NA	4	182	547	956	728	415	103	6	3	0
%	0.13	6.05	18.19	31.79	24.21	13.80	3.43	0.20	0.10	0.00
2012	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**
Vaginal	104	4,621	17,069	30,701	20876	9963	2668	200	17	0
%	0.12	5.32	19.66	35.35	24.04	11.47	3.07	0.23	0.02	0.00
Instrumental	5	278	1,060	1,866	952	332	88	7	1	0
%	0.11	6.02	22.96	40.42	20.62	7.19	1.91	0.15	0.02	0.00
Caesarean	17	764	4,103	10,332	8637	4913	1448	101	8	2
%	0.05	2.45	13.18	33.20	27.75	15.79	4.65	0.32	0.03	0.01
NA	0	73	281	522	365	196	58	6	0	0
%	0.00	4.81	18.50	34.36	24.03	12.90	3.82	0.39	0.00	0.00

Table 1.4 Distribution of delivery type by SDP 2011

SDP 2011	Vaginal						Instrumental				Caesarean		NA		Total	
	SVD		Breech		NA		Vacuum		Forceps							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
HTF, Perlis	2,999	72.72	18	0.44	0	0.00	119	2.89	4	0.10	952	23.08	32	0.78	4,124	3.01
HSB, Kedah	7,036	66.97	58	0.55	2	0.02	562	5.35	9	0.09	2610	24.84	229	2.18	10,506	7.68
HPP	1,688	49.84	9	0.27	0	0.00	53	1.56	15	0.44	1464	43.22	158	4.66	3,387	2.47
HRPB, Perak	3,239	51.23	7	0.11	0	0.00	23	0.36	8	0.13	2909	46.01	137	2.17	6,323	4.62
HTAR, Selangor	8,554	68.60	76	0.61	1	0.01	599	4.80	255	2.04	2895	23.22	90	0.72	12,470	9.11
HKL	8,107	68.28	64	0.54	2	0.02	195	1.64	17	0.14	3397	28.61	91	0.77	11,873	8.68
HTJ, Negeri Sembilan	3,472	71.50	10	0.21	7	0.14	148	3.05	13	0.27	1029	21.19	177	3.64	4,856	3.55
Hospital Melaka	7,922	72.38	27	0.25	1	0.01	396	3.62	61	0.56	2441	22.30	97	0.89	10,945	8.00
HSA, Johor	7,869	62.22	75	0.59	4	0.03	942	7.45	89	0.70	3344	26.44	324	2.56	12,647	9.24
HTAA, Pahang	6,652	70.50	18	0.19	3	0.03	396	4.20	15	0.16	2275	24.11	76	0.81	9,435	6.89
HSNZ, Terengganu	9,551	78.37	55	0.45	2	0.02	86	0.71	26	0.21	2305	18.91	162	1.33	12,187	8.90
HRPZ II, Kelantan	10,677	80.81	53	0.40	1	0.01	54	0.41	14	0.11	2295	17.37	118	0.89	13,212	9.65
HU Sarawak	6,186	62.19	42	0.42	0	0.00	383	3.85	38	0.38	2346	23.59	952	9.57	9,947	7.27
HL, Sabah	12,360	82.66	23	0.15	1	0.01	431	2.88	4	0.03	1769	11.83	364	2.43	14,952	10.92
Total	53,295	59.17	266	0.30	11	0.01	2,292	2.54	186	0.21	32031	35.56	1,996	2.22	90,077	65.81

Table 1.5 Distribution of delivery type by SDP 2012

SDP 2012	Vaginal						Instrumental				Caesarean		NA		Total	
	SVD		Breech		NA		Vacuum		Forceps							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
HTF, Perlis	7,903	63.37	71	0.57	1	0.01	871	6.98	82	0.66	3385	27.14	158	1.27	12,471	9.11
HSB, Kedah	6,652	63.80	50	0.48	3	0.03	721	6.92	22	0.21	2816	27.01	162	1.55	10,426	7.62
HPP	7,980	71.90	34	0.31	0	0.00	99	0.89	8	0.07	2144	19.32	834	7.51	11,099	8.11
HRPB, Perak	7,831	71.99	26	0.24	3	0.03	354	3.25	17	0.16	2615	24.04	32	0.29	10,878	7.95
HTAR, Selangor	4,425	70.63	16	0.26	1	0.02	213	3.40	17	0.27	1588	25.35	5	0.08	6,265	4.58
HKL	6,381	72.34	18	0.20	0	0.00	355	4.02	29	0.33	2030	23.01	8	0.09	8,821	6.45
HTJ, Negeri Sembilan	1,662	36.08	2	0.04	0	0.00	12	0.26	2	0.04	2872	62.35	56	1.22	4,606	3.37
Hospital Melaka	2,877	72.71	23	0.58	2	0.05	107	2.70	11	0.28	935	23.63	2	0.05	3,957	2.89
HSA, Johor	1,544	50.67	8	0.26	0	0.00	53	1.74	14	0.46	1350	44.31	78	2.56	3,047	2.23
HTAA, Pahang	11,356	83.64	9	0.07	1	0.01	277	2.04	5	0.04	1928	14.20	1	0.01	13,577	9.92
HSNZ, Terengganu	1,110	72.83	8	0.52	1	0.07	44	2.89	3	0.20	340	22.31	18	1.18	1,524	1.11
HRPZ II, Kelantan	8,056	65.98	73	0.60	1	0.01	589	4.82	184	1.51	3144	25.75	163	1.33	12,210	8.92
HU Sarawak	10,588	81.76	77	0.59	3	0.02	170	1.31	28	0.22	2084	16.09	0	0.00	12,950	9.46
HL, Sabah	7,715	64.27	33	0.27	0	0.00	318	2.65	15	0.12	3921	32.66	2	0.02	12,004	8.77
Total	86,080	69.51	448	0.36	16	0.01	4,183	3.38	437	0.35	31152	25.16	1,519	1.23	123,835	90.48

Table 1.6 Deliveries in relation to risk level at booking 2011 and 2012

Risk Level at Booking 2011	Vaginal						Instrumental				Caesarean		NA		Total	
	SVD		Breech		NA		Vacuum		Forceps							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Red	1,672	1.75	13	2.99	0	0.00	108	2.47	19	3.36	1143	37.60	85	2.89	3,040	2.25
Yellow	8,561	8.93	41	9.43	1	4.35	407	9.32	57	10.09	4971	34.74	270	9.17	14,308	10.57
Green	49,863	52.04	226	51.95	15	65.22	2,349	53.80	318	56.28	17219	24.11	1,431	48.61	71,421	52.75
White II	4,151	4.33	21	4.83	1	4.35	106	2.43	13	2.30	579	11.62	113	3.84	4,984	3.68
White I	12,318	12.86	47	10.80	2	8.70	730	16.72	98	17.35	3193	19.02	400	13.59	16,788	12.40
No Code	4,736	4.94	41	9.43	1	4.35	215	4.92	27	4.78	1158	18.08	227	7.71	6,405	4.73
NA	14,514	15.15	46	10.57	3	13.04	451	10.33	33	5.84	2974	16.13	418	14.20	18,439	13.62
2012																
Red	1,694	1.98	15	4.20	0	0.00	104	2.50	15	3.46	1198	39.07	40	2.66	3,066	2.51
Yellow	11,246	13.14	37	10.36	0	0.00	614	14.76	76	17.55	6283	33.89	284	18.92	18,540	15.15
Green	49,637	58.01	201	56.30	9	56.25	2,355	56.61	232	53.58	17198	24.40	846	56.36	70,478	57.59
White II	5,851	6.84	13	3.64	0	0.00	174	4.18	11	2.54	948	13.44	55	3.66	7,052	5.76
White I	10,642	12.44	33	9.24	1	6.25	655	15.75	69	15.94	2721	19.03	175	11.66	14,296	11.68
No code	2,943	3.44	35	9.80	1	6.25	130	3.13	18	4.16	1037	24.50	68	4.53	4,232	3.46
NA	3,547	4.15	23	6.44	5	31.25	128	3.08	12	2.77	968	20.53	33	2.20	4,716	3.85

Table 1.7 Delivery by ethnicity 2011

Ethnicity 2011	Vaginal						Instrumental				Caesarean		NA		Total	
	SVD		Breech		NA		Vacuum		Forceps							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Malay	65,850	71.07	310	0.33	19	0.02	2,776	3.00	363	0.39	21605	23.32	1,738	1.88	92,661	68.44
Chinese	5,398	64.02	21	0.25	0	0.00	383	4.54	60	0.71	2308	27.37	262	3.11	8,432	6.23
Indian	3,745	58.59	26	0.41	0	0.00	255	3.99	51	0.80	2214	34.64	101	1.58	6,392	4.72
Kadazan/Dusun	3,222	80.51	8	0.20	0	0.00	125	3.12	1	0.02	553	13.82	93	2.32	4,002	2.96
Murut	256	74.42	0	0.00	0	0.00	7	2.03	0	0.00	71	20.64	10	2.91	344	0.25
Bajau	2,636	83.66	5	0.16	0	0.00	98	3.11	2	0.06	344	10.92	66	2.09	3,151	2.33
Melanau	90	73.17	0	0.00	0	0.00	1	0.81	0	0.00	18	14.63	14	11.38	123	0.09
Iban	1,410	65.52	9	0.42	0	0.00	79	3.67	8	0.37	472	21.93	174	8.09	2,152	1.59
Bidayuh	977	62.11	8	0.51	0	0.00	54	3.43	7	0.45	404	25.68	123	7.82	1,573	1.16
OA (Peninsular Malaysia)	581	63.85	1	0.11	0	0.00	34	3.74	3	0.33	278	30.55	13	1.43	910	0.67
Other indigenous group in Sabah & Sarawak	2,197	81.52	0	0.00	1	0.04	78	2.89	5	0.19	359	13.32	55	2.04	2,695	1.99
Foreigners	8,217	72.51	33	0.29	3	0.03	426	3.76	57	0.50	2352	20.76	244	2.15	11,332	8.37
Others	916	75.77	10	0.83	0	0.00	38	3.14	6	0.50	204	16.87	35	2.89	1,209	0.89
unknown	320	78.05	4	0.98	0	0.00	13	3.17	2	0.49	55	13.41	16	3.90	410	0.30
Total	95,815	70.77	435	0.32	23	0.02	4,367	3.23	565	0.42	31237	23.07	2,944	2.17	135,386	100.00

Table 1.8 Delivery by ethnicity 2012

Ethnicity 2012	Vaginal						Instrumental				Caesarean		NA		Total	
	SVD		Breech		NA		Vacuum		Forceps							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Malay	59,674	69.88	268	0.31	12	0.01	2,774	3.25	278	0.33	21146	24.76	1,245	1.46	85,397	69.78
Chinese	4,707	63.49	20	0.27	0	0.00	366	4.94	46	0.62	2198	29.65	77	1.04	7,414	6.06
Indian	3,512	57.31	23	0.38	0	0.00	256	4.18	36	0.59	2265	36.96	36	0.59	6,128	5.01
Kadazan/Dusun	2,912	80.73	2	0.06	0	0.00	64	1.77	3	0.08	624	17.30	2	0.06	3,607	2.95
Murut	215	83.33	1	0.39	0	0.00	3	1.16	0	0.00	39	15.12	0	0.00	258	0.21
Bajau	2,463	85.40	2	0.07	0	0.00	62	2.15	6	0.21	351	12.17	0	0.00	2,884	2.36
Melanau	23	60.53	1	2.63	0	0.00	3	7.89	0	0.00	11	28.95	0	0.00	38	0.03
Iban	573	75.79	1	0.13	1	0.13	24	3.17	1	0.13	145	19.18	11	1.46	756	0.62
Bidayuh	254	70.56	2	0.56	0	0.00	11	3.06	0	0.00	92	25.56	1	0.28	360	0.29
OA (Peninsular Malaysia)	446	59.55	3	0.40	0	0.00	18	2.40	1	0.13	278	37.12	3	0.40	749	0.61
Other indigenous group in Sabah & Sarawak	1,911	82.91	1	0.04	0	0.00	46	2.00	2	0.09	342	14.84	3	0.13	2,305	1.88
Foreigners	7,423	70.51	31	0.29	3	0.03	457	4.34	58	0.55	2443	23.20	113	1.07	10,528	8.60
Others	1,070	73.79	1	0.07	0	0.00	48	3.31	2	0.14	321	22.14	8	0.55	1,450	1.18
Unknown	377	74.51	1	0.20	0	0.00	28	5.53	0	0.00	98	19.37	2	0.40	506	0.41
Total	85,560	69.91	357	0.29	16	0.01	4,160	3.40	433	0.35	30353	24.80	1,501	1.23	122,380	100.00

Table 1.9 Delivery by Parity 2011 and 2012

Parity 2011	Vaginal						Instrumental				Caesarean		NA	
	SVD		Breech		NA		Vacuum		Forceps					
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
1	29,941	64.30	157	0.34	7	0.02	2,818	6.05	406	0.87	12197	26.19	1,038	2.23
2 - 5	60,230	73.33	332	0.40	17	0.02	1,477	1.80	158	0.19	18144	22.09	1,781	2.17
≥ 6	5,971	75.16	46	0.58	0	0.00	86	1.08	3	0.04	1663	20.93	175	2.20
NA	170	78.34	0	0.00	0	0.00	6	2.76	1	0.46	27	12.44	13	5.99
Total	96,312	70.37	535	0.39	24	0.02	4,387	3.21	568	0.42	32031	23.40	3,007	2.20
2012	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
1	27,133	63.07	139	0.32	6	0.01	2,773	6.45	331	0.77	11998	27.89	638	1.48
2 - 5	53,938	72.77	288	0.39	10	0.01	1,348	1.82	98	0.13	17638	23.79	805	1.09
≥ 6	4,938	74.72	21	0.32	0	0.00	61	0.92	8	0.12	1506	22.79	75	1.13
NA	71	85.54	0	0.00	0	0.00	1	1.20	0	0.00	10	12.05	1	1.20
Total	86,080	69.51	448	0.36	16	0.01	4,183	3.38	437	0.35	31152	25.16	1,519	1.23

Table 1.10 Deliveries in relation to Medical problems 2011

Medical Problems	Vaginal						Instrumental				Caesarean		NA		Total	
	SVD		Breech		NA		Vacuum		Forceps							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Diabetes	**6,861**	**7.12**	**28**	**5.23**	**1**	**4.17**	**355**	**8.09**	**64**	**11.27**	**4193**	**13.09**	**234**	**7.78**	**11,736**	**8.57**
Pre-existing	504	0.52	5	0.93	0	0.00	37	0.84	5	0.88	374	1.17	23	0.76	948	0.69
Gestational	6,326	6.57	23	4.30	1	4.17	316	7.20	59	10.39	3795	11.85	196	6.52	10,716	7.83
NA	88,983	92.39	400	92.34	22	91.67	4,013	91.47	501	88.20	27068	84.51	2,720	92.38	124,973	91.31
Hypertension	**2,886**	**3.00**	**24**	**4.49**	**0**	**0.00**	**177**	**4.03**	**17**	**2.99**	**2603**	**8.13**	**116**	**3.86**	**5,823**	**4.25**
Pre-existing	520	0.54	5	0.93	0	0.00	40	0.91	0	0.00	446	1.39	25	0.83	1,036	0.76
Gestational	**2,169**	**2.25**	**17**	**3.18**	**0**	**0.00**	**119**	**2.71**	**16**	**2.82**	**1872**	**5.84**	**77**	**2.56**	**4,270**	**3.12**
Pre-eclampsia	260	0.27	2	0.37	0	0.00	23	0.52	4	0.70	620	1.94	9	0.30	918	0.67
Eclampsia	7	0.01	0	0.00	0	0.00	0	0.00	0	0.00	37	0.12	2	0.07	46	0.03
Heart Disease	**572**	**0.59**	**5**	**0.93**	**0**	**0.00**	**62**	**1.41**	**6**	**1.06**	**267**	**0.83**	**14**	**0.47**	926	**0.68**
NYHA I	354	0.37	4	0.75	0	0.00	36	0.82	4	0.70	111	0.35	5	0.17	514	0.38
NYHA II	60	0.06	1	0.19	0	0.00	7	0.16	1	0.18	39	0.12	4	0.13	112	0.08
NYHA III	4	0.00	0	0.00	0	0.00	0	0.00	0	0.00	13	0.04	1	0.03	18	0.01
NYHA IV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.00	0	0.00	1	0.00
NA	95,397	99.56	430	99.07	23	100.00	4,323	98.95	560	99.12	31073	97.01	2,934	99.67	136,148	99.48
Others	**4,782**	**4.97**	**27**	**5.05**	**0**	**0.00**	**221**	**5.04**	**41**	**7.22**	**1763**	**5.50**	**107**	**3.56**	**6,941**	**5.07**
TB	52	0.05	0	0.00	0	0.00	2	0.05	1	0.18	20	0.06	22	0.73	97	0.07
Blood Disorder	778	0.81	5	0.93	0	0.00	32	0.73	4	0.70	249	0.78	13	0.43	1,081	0.79
Thalassemia	332	0.34	1	0.19	0	0.00	15	0.34	2	0.35	120	0.37	4	0.13	474	0.35
Collagen Disease	3	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.01	0	0.00	5	0.00
Asthma	1,615	1.68	7	1.31	0	0.00	61	1.39	9	1.58	701	2.19	49	1.63	2,442	1.78
Renal Disease	22	0.02	0	0.00	0	0.00	2	0.05	0	0.00	13	0.04	0	0.00	37	0.03

Table 1.11 Deliveries in relation to Medical problems 2012

Medical Problems	Vaginal						Instrumental				Caesarean		NA		Total	
	SVD		Breech		NA		Vacuum		Forceps							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Diabetes	**6,286**	**7.30**	**22**	**4.91**	**0**	**0.00**	**355**	**8.49**	**43**	**9.84**	**3968**	**12.74**	**151**	**9.94**	**10,825**	**8.72**
Pre-existing	325	0.38	1	0.22	0	0.00	16	0.38	5	1.14	378	1.21	16	1.05	741	0.60
Gestational	5,472	6.36	21	4.69	0	0.00	307	7.34	36	8.24	3362	10.79	134	8.82	9,332	7.52
NA	79,762	93.21	326	93.97	16	100.00	3,837	92.25	392	90.39	26613	85.43	1,350	90.06	113,575	91.52
Hypertension	**2,210**	**2.57**	**20**	**4.46**	**0**	**0.00**	**156**	**3.73**	**19**	**4.35**	**2221**	**7.13**	**62**	**4.08**	**4,688**	**3.78**
Pre-existing	362	0.42	0	0.00	0	0.00	16	0.38	3	0.69	388	1.25	10	0.66	779	0.63
Gestational	**1,631**	**1.89**	**16**	**3.57**	**0**	**0.00**	**126**	**3.01**	**13**	**2.97**	**1556**	**4.99**	**45**	**2.96**	3,387	**2.73**
Pre-eclampsia	210	0.24	4	0.89	0	0.00	24	0.57	3	0.69	521	1.67	9	0.59	771	0.62
Eclampsia	9	0.01	0	0.00	0	0.00	1	0.02	0	0.00	44	0.14	0	0.00	54	0.04
Heart Disease	**404**	**0.47**	**0**	**0.00**	**0**	**0.00**	**57**	**1.36**	**6**	**1.37**	**220**	**0.71**	**13**	**0.86**	700	**0.56**
NYHA I	238	0.28	0	0.00	0	0.00	34	0.81	2	0.46	94	0.30	8	0.53	376	0.30
NYHA II	37	0.04	0	0.00	0	0.00	11	0.26	1	0.23	30	0.10	2	0.13	81	0.07
NYHA III	5	0.01	0	0.00	0	0.00	0	0.00	0	0.00	7	0.02	0	0.00	12	0.01
NYHA IV	2	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.01	0	0.00	4	0.00
NA	85,278	99.67	357	100.00	16	100.00	4,115	98.92	430	99.31	30220	97.01	1,491	99.28	123,296	99.36
Others	**4,040**	**4.69**	**17**	**3.79**	**0**	**0.00**	**226**	**5.40**	**26**	**5.95**	**1704**	**5.47**	**51**	**3.36**	**6,064**	**4.89**
TB	49	0.06	0	0.00	0	0.00	2	0.05	1	0.23	20	0.06	1	0.07	73	0.06
Blood Disorder	712	0.83	2	0.45	0	0.00	33	0.79	1	0.23	233	0.75	9	0.59	990	0.80
Thalassemia	369	0.43	2	0.45	0	0.00	14	0.33	0	0.00	137	0.44	5	0.33	527	0.42
Collagen Disease	1	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.07	2	0.00
Asthma	1,337	1.55	8	1.79	0	0.00	79	1.89	4	0.92	626	2.01	18	1.18	2,072	1.67
Renal Disease	23	0.03	0	0.00	0	0.00	1	0.02	0	0.00	21	0.07	0	0.00	45	0.04
None	74,158	86.15	377	84.15	16	177.78	3,465	82.84	356	81.46	23969	76.94	1,276	84.00	103,617	83.50

Table 1.12 Apgar score in relation to delivery 2011 and 2012

2011	Vaginal						Instrumental				Caesarean		NA		Total	
	SVD		Breech		NA		Vacuum		Forceps							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Apgar at 1 min																
≤ 7	3,392	3.52	129	24.11	1	4.17	699	15.93	79	13.91	3407	10.64	593	19.72	8,300	6.06
> 7	89,910	93.35	274	51.21	18	75.00	3,641	83.00	478	84.15	28043	87.55	1,602	53.28	123,966	90.58
NA	3,010	3.13	132	24.67	5	20.83	47	1.07	11	1.94	581	1.81	812	27.00	4,598	3.36
Apgar at 5 min																
≤ 7	1,243	1.29	56	10.47	0	0.00	141	3.21	24	4.23	738	2.30	394	13.10	2,596	1.90
> 7	91,567	95.07	330	61.68	19	79.17	4,157	94.76	530	93.31	30476	95.15	1,787	59.43	128,866	94.16
NA	3,502	3.64	149	27.85	5	20.83	89	2.03	14	2.46	817	2.55	826	27.47	5,402	3.95
2012																
Apgar at 1 min																
≤ 7	2,552	2.96	125	27.90	2	12.50	694	16.59	66	15.10	3000	9.63	181	11.92	6,620	5.35
> 7	82,824	96.22	221	49.33	12	75.00	3,483	83.27	368	84.21	27974	89.80	416	27.40	115,298	93.11
NA	703	0.82	102	22.77	2	12.50	6	0.14	3	0.69	178	0.57	922	60.74	1,916	1.55
Apgar at 5 min																
≤ 7	721	0.84	60	13.39	0	0.00	161	3.85	20	4.58	666	2.14	6	0.40	1,634	1.32
> 7	84,631	98.32	285	63.62	14	87.50	4,011	95.89	411	94.05	30270	97.17	589	38.80	120,211	97.07
NA	728	0.85	103	22.99	2	12.50	11	0.26	6	1.37	216	0.69	924	60.87	1,990	1.61

Table 1.13 Complication in relation to mode of delivery 2011

Complications 2011	Vaginal						Instrumental				Caesarean		Total	
	SVD		Breech		NA		Vacuum		Forceps					
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Prematurity	8,196	8.51	231	43.18	6	25.00	195	4.44	46	8.10	4912	15.37	13,586	9.93
Foetal Distress	102	0.11	1	0.19	0	0.00	613	13.97	102	17.96	10383	32.48	11,201	8.18
Retained Placenta	249	0.26	3	0.56	0	0.00	7	0.16	1	0.18	2	0.01	262	0.19
PPH	295	0.31	4	0.75	0	0.00	24	0.55	7	1.23	446	1.40	776	0.57
< 1500 mls	258	0.27	4	0.75	0	0.00	22	0.50	4	0.70	266	0.83	554	0.40
≥ 1500 mls	26	0.03	0	0.00	0	0.00	1	0.02	3	0.53	169	0.53	199	0.15
Not Available	2	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.01	4	0.00
NA	9	0.01	0	0.00	0	0.00	1	0.02	0	0.00	9	0.03	19	0.01
Cord Prolapse	7	0.01	4	0.75	0	0.00	5	0.11	0	0.00	243	0.76	259	0.19
IUGR	309	0.32	7	1.31	0	0.00	7	0.16	2	0.35	488	1.53	813	0.59
PPROM	1,539	1.60	13	2.43	2	8.33	105	2.39	15	2.64	462	1.45	2,136	1.56
Amniotic Fluid Embolism	0	0.00	0	0.00	0	0.00	1	0.02	0	0.00	3	0.01	4	0.00
DVT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.00	1	0.00
Uterine Inversion	2	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.00
Uterine Rupture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	7	0.02	7	0.01
Uterine Atony	41	0.04	1	0.19	0	0.00	7	0.16	1	0.18	50	0.16	100	0.07
Thromboembolism	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Others	558	0.58	19	3.55	0	0.00	92	2.10	12	2.11	2296	7.18	2,977	2.18
None	76,964	79.91	338	63.18	21	87.50	2,940	67.02	393	69.19	20778	65.00	101,434	74.11

Table 1.14 Complication in relation to mode of delivery 2012

Complications 2012	Vaginal						Instrumental				Caesarean		Total	
	SVD		Breech		NA		Vacuum		Forceps					
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Prematurity	8,581	9.97	262	58.48	3	18.75	217	5.19	37	8.47	5096	16.39	14,196	11.44
Foetal Distress	81	0.09	1	0.22	0	0.00	464	11.09	48	10.98	10337	33.25	10,931	8.81
Retained Placenta	209	0.24	0	0.00	0	0.00	5	0.12	3	0.69	4	0.01	221	0.18
PPH	189	0.22	3	0.67	0	0.00	19	0.45	8	1.83	369	1.19	588	0.47
< 1500 mls	168	0.20	3	0.67	0	0.00	17	0.41	6	1.37	255	0.82	449	0.36
≥ 1500 mls	17	0.02	0	0.00	0	0.00	1	0.02	2	0.46	106	0.34	126	0.10
Not Available	2	0.00	0	0.00	0	0.00	1	0.02	0	0.00	3	0.01	6	0.00
NA	2	0.00	0	0.00	0	0.00	0	0.00	0	0.00	5	0.02	7	0.01
Cord Prolapse	6	0.01	2	0.45	0	0.00	0	0.00	0	0.00	205	0.66	213	0.17
IUGR	251	0.29	3	0.67	0	0.00	7	0.17	1	0.23	527	1.70	789	0.64
PPROM	1,309	1.52	7	1.56	0	0.00	95	2.27	17	3.89	491	1.58	1,919	1.55
Amniotic Fluid Embolism	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.01	2	0.00
DVT	3	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	3	0.00
Uterine Inversion	4	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.01	6	0.00
Uterine Rupture	2	0.00	0	0.00	0	0.00	0	0.00	0	0.00	8	0.03	10	0.01
Uterine Atony	18	0.02	1	0.22	0	0.00	4	0.10	0	0.00	17	0.05	40	0.03
Thromboembolism	1	0.00	0	0.00	0	0.00	1	0.02	0	0.00	0	0.00	2	0.00
Others	424	0.49	18	4.02	0	0.00	64	1.53	11	2.52	1684	5.42	2,201	1.77
None	73,735	85.66	302	67.41	13	81.25	3,300	78.89	340	77.80	22191	71.37	99,881	80.49

CHAPTER 2
CAESAREAN SECTION

CHAPTER 2 CAESAREAN SECTION

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SUMMARY

CS accounted for 23.41% of all deliveries in 2011 and 25.08% in 2012 from all participating hospitals. The rates were higher from the survey done from the National Healthcare Establishment and Workforce Survey in 2011 which was reported at 19.73 %. Women of Indian ethnicity and primigravida had the highest CS rates in both years. In 2011, women aged 45-49 years had higher CS rates whilst in 2012 the rates were higher in women aged 40-44 years. The top 5 indications for CS were fetal distress, diabetes complicating pregnancy, breech presentation, poor progress and hypertension complicating pregnancy.

2.1 INTRODUCTION

CS accounted for 23.41% of all deliveries in the 14 tertiary hospitals in Malaysia. It has remained the same since 2010 at 23.08%. We see a slight increase in 2012 at 25.08%. HL, Sabah had the lowest CS rate similar to the findings in 2010 as compared to the other hospitals at 11.85% in 2011 and 13.90% in 2012. CS rate in HRPB, Perak has been going up from 32.32% in 2010 to 45.88% in 2011 and 62.33% in 2012. These figures are alarmingly high and we need to identify factors that have given rise to the increasing CS rates.

2.2 PATIENT DERMOGRAPHICS

Among the three major ethnic groups in the country, CS was highest among the Indians at 35.03% in 2011 and 37.39% in 2012. These findings were similar to the findings in 2010.In 2011 we see a higher CS rates among the OA (Peninsular Malaysia) at 35.03% as compared to 2010 which was 27.03%. Of the foreigners that had obstetric care at our facility, a quarter of them had CS as the mode of delivery in 2011 as seen in Table 2.2. Among the 3 major ethnic groups in the country, CS rate was higher among the Indians in 2011 and 2012 and this was also seen in the 2010 report. In 2011 and 2012 we see

that about a quarter of the primi gravida had CS as the mode of delivery. In 2011 we see that 1.83% of women with colour code White 11 for delivery at home or at an alternating birthing centre had a CS and this rate was higher in 2012 at 3.05%. This would reflect the fact that risk is a retrospective diagnosis while the small numbers undergoing CS in this category probably reflect the general validity of the white code.

2.3 INDICATION FOR CS

CS rates were higher among women with GDM at 12.3% as compared to Gestational hypertension at 6.1% in 2011.Similar findings as in 2011 where the CS rates were higher among women with GDM at 12.3% as compared to Gestational hypertension at 6.1% in 2012. Fetal distress was the commonest indication for CS at 32.48%. Poor progress accounted for 8.64% which was similar to 2010. In 2012 we see a similar pattern as in 2011.Rate of maternal request for LSCS has risen. In 2010 the rate was 2.75% whilst in 2011 and 2012 it was 3.22% and 3.40% respectively. Fetal distress accounted for the highest CS rate in both the years followed by Diabetes complicating pregnancy.

Table 2.7 shows 95.63% of CS were done by Specialist and MO of more than 6 months experience in O&G in 2011 whilst in 2012, 96.60 % of CS were done by Specialist and MO of more than 6 months experience in O&G.

2.4 OUTCOME

In 2011 as seen from Table 2.8, about 2.25 % of babies were asphyxiated following CS and in 2012 , 2% of babies were birth asphyxiated following CS. Birth asphyxia was higher in babies following Classical section, Hysterotomy and Caesarean hysterectomies in both years.

2.5 CONCLUSION

CS rates has been gradually rising in Malaysia. There is a wide range of variation in the CS rates from the participating public hospitals. The main contributor to rising CS rates was fetal distress and diagnosis solely by electronic fetal monitoring has led to increase in CS rates. However, it is reasonable that a decision for intervention for a compromised fetus must not be delayed to avoid neonatal morbidity and mortality. CS rates due to breech presentation have increased following practice changes as a result of the Hannah Trial as well as a reluctance to perform ECV.

2.6 RECOMMENDATION

1. To reduce CS rates we should reduce the primary section rates and Obstetricians must be involved in decisions in deciding upon CS.
2. It is probably timely now to consider whether cases requiring CS should be seen by obstetricians before this major decision is taken. This would also provide guidance and teaching to MOs.
3. CS audits should be performed in all hospitals.
4. More research is required to conclude if VBAC was considered or attempted in the group of patients with a previous CS.

2.7 REFERENCE

1. Planned caesarean section versus planned vaginal birth for breech presentation at term: a randomised multicentre trial. Term Breech Trial Collaborative Group. Hannah ME, Hannah WJ, Hewson SA, Hodnett ED, Saigal S, Willan AR. Lancet 2000.
2. National Obstetric Registry 2nd Report 2010 Editors Ravichandran Jeganathan and Shamala Devi Karalasingam.
3. National Healthcare establishment and workforce survey statistics 2009 and 2011.

Table 2.1 CS rates by SDP 2011 and 2012

SDP	2011					2012				
	Total women who delivered	Total CS			LSCS Rates	Total women who delivered	Total CS			LSCS Rates
		Elective	Emergency	NA			Elective	Emergency	NA	
HTF, Perlis	4,087	193	741	0	22.85	3,920	223	691	0	23.32
HSB, Kedah	10,396	705	1,861	0	24.68	10,307	741	2,017	2	26.78
HPP	3,336	305	1,123	0	42.81	3,010	360	962	0	43.92
HRPB, Perak	6,217	644	2,175	1	45.36	4,507	687	2,099	0	61.81
HTAR,Selangor	12,351	704	2,128	1	22.94	12,056	699	2,362	1	25.40
HKL	11,729	711	2,594	0	28.18	11,843	765	3,035	1	32.09
HTJ,Negeri Sembilan	4,841	331	696	8	21.38	6,192	458	1,096	3	25.15
Hospital Melaka	10,833	686	1,698	0	22.01	10,746	746	1,791	0	23.61
HSA, Johor	12,467	636	2,601	0	25.96	12,295	679	2,617	0	26.81
HTAA, Pahang	9,333	550	1,656	3	23.67	8,728	477	1,505	0	22.71
HSNZ, Terengganu	12,019	572	1,646	2	18.47	12,803	596	1,411	11	15.76
HRPZ II, Kelantan	13,066	426	1,810	1	17.12	10,955	332	1,738	2	18.91
HU Sarawak	9,854	375	1,922	1	23.32	1,513	76	259	0	22.14
HL, Sabah	14,851	254	1,479	0	11.67	13,759	285	1,553	43	13.67
Total	135,380	7,092	24,130	17	23.08	122,634	7,124	23,136	63	24.73

Graph 2.1 CS rates from SDP 2011 and 2012

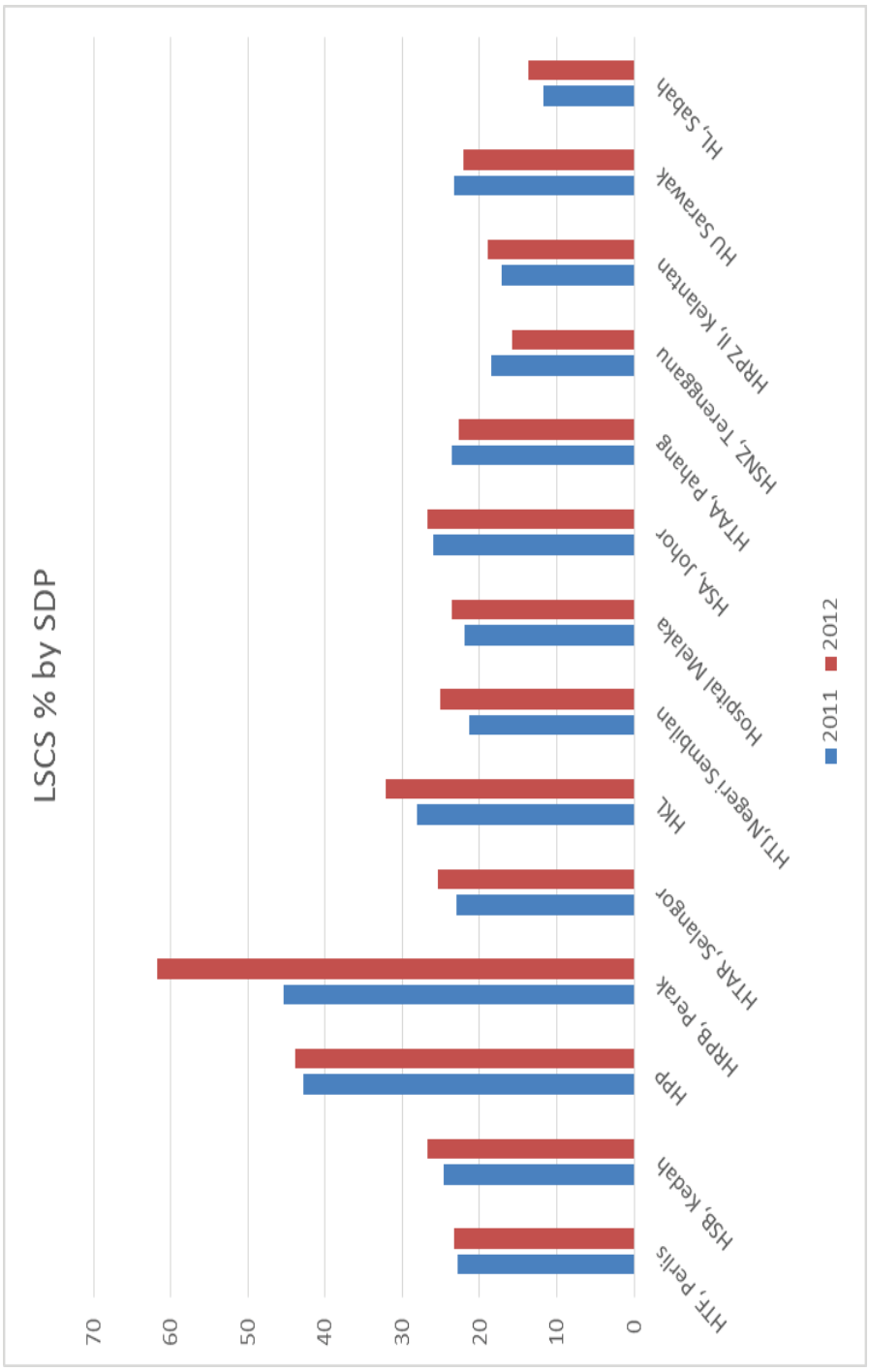

Table 2.2 Distribution of CS by ethnicity 2011 and 2012

Ethnicity	2011					2012				
	Total women who delivered	Total CS			LSCS	Total women who delivered	Total CS			LSCS
		Elective	Emergency	NA			Elective	Emergency	NA	
	n	n	n	n		n	n	n	n	%
Malay	92,649	5,095	16,492	13	23.30	85,391	5,054	16,051	18	24.72
Chinese	8,428	688	1,616	0	27.34	7,417	722	1,471	3	29.57
Indian	6,400	513	1,705	4	34.66	6,128	524	1,740	1	36.95
Kadazan/Dusun	4,003	100	454	0	13.84	3,685	111	500	13	16.58
Murut	345	15	57	0	20.87	262	6	29	4	13.36
Bajau	3,151	56	288	0	10.92	2,930	49	294	8	11.71
Melanau	123	2	16	0	14.63	38	4	7	0	28.95
Iban	2,149	78	391	0	21.82	760	24	121	0	19.08
Bidayuh	1,573	70	334	0	25.68	360	23	69	0	25.56
OA (Peninsular Malaysia)	909	36	242	0	30.58	748	59	218	0	37.03
Other indigenous group in Sabah & Sarawak	2,695	52	307	0	13.32	2,338	54	284	4	14.46
Foreigners	11,333	328	2,025	0	20.76	10,593	423	2,007	10	22.94
Others	1,209	47	157	0	16.87	1,467	52	263	4	21.47
NA	413	12	46	0	13.98	517	19	82	0	19.96
Total	135,380	7,092	24,130	17	23.06	122,634	7,124	23,136	65	24.68

Table 2.3: CS by Age and Parity 2011 and 2012

Age	2011					2012				
	Total women who delivered	Total CS			LSCS	Total women who delivered	Total CS			LSCS
		Elective	Emergency	NA			Elective	Emergency	NA	
	n	n	n	n	%	n	n	n	n	%
10-14	127	2	10	0	9.45	126	4	13	0	13.49
15-19	6,731	70	797	0	12.88	5,736	68	693	3	13.32
20-24	26,048	631	4,070	3	18.06	22,513	545	3,549	9	18.23
25-29	46,963	1,896	8,494	9	22.14	43,421	1,910	8,397	25	23.79
30-34	33,305	2,420	6,175	2	25.81	30,830	2,521	6,097	19	28.01
35-39	17,052	1,587	3,416	3	29.36	15,404	1,625	3,280	8	31.89
40-44	4,765	446	1,073	0	31.88	4,262	420	1,027	1	33.97
45-49	362	39	89	0	35.36	314	29	72	0	32.17
50-54	26	1	6	0	26.92	26	2	6	0	30.77
55-59	1	0	0	0	0.00	2	0	2	0	100.00
Parity										
1	46,158	1,388	10,564	6	25.91	42,679	1,387	10,325	27	27.51
2 - 5	81,166	5,316	12,315	8	21.73	73,336	5,372	11,709	34	23.34
≥ 6	7,840	378	1,235	3	20.61	6,537	363	1,094	4	22.35
NA	216	10	16	0	12.04	82	2	8	0	12.20

Table 2.4 CS by risk level of booking 2011 and 2012

Risk Level at Booking	Caesarean										Total	
	LSCS		Classical		Hysterotomy		Hysterectomy		Others			
2011	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Red	1129	3.64	7	5.38	3	17.65	4	7.55	0	0.00	1,143	3.65
Yellow	4946	15.94	13	10.00	3	17.65	7	13.21	2	25.00	4,971	15.88
Green	17103	55.12	80	61.54	3	17.65	28	52.83	5	62.50	17,219	55.01
White II	576	1.86	2	1.54	0	0.00	1	1.89	0	0.00	579	1.85
White I	3170	10.22	13	10.00	3	17.65	6	11.32	1	12.50	3,193	10.20
No Code	1149	3.70	5	3.85	2	11.76	2	3.77	0	0.00	1,158	3.70
NA	2956	9.53	10	7.69	3	17.65	5	9.43	0	0.00	3,041	9.71
2012												
Red	1,185	3.93	5	3.79	2	9.09	6	11.76	0	0.00	1,198	3.94
Yellow	6,239	20.70	23	17.42	7	31.82	11	21.57	3	30.00	6,283	20.68
Green	17,077	56.66	71	53.79	13	59.09	30	58.82	7	70.00	17,198	56.61
White II	942	3.13	5	3.79	0	0.00	1	1.96	0	0.00	948	3.12
White I	2,705	8.98	16	12.12	0	0.00	0	0.00	0	0.00	2,721	8.96
No Code	1,031	3.42	3	2.27	0	0.00	3	5.88	0	0.00	1,037	3.41
NA	959	3.18	9	6.82	0	0.00	0	0.00	0	0.00	993	3.27

Table 2.5 Distribution of medical problems and CS rates, 2011 and 2012

Medical Problems	Total delivery	Total CS 2011			CS Rates %	Total delivery	Total CS 2012			CS Rates %
		Elective	Emergency	NA			Elective	Emergency	NA	
Diabetes	11,899	1,220	3,074	2	13.41	10,974	1,168	2,879	2	13.01
Pre-existing	957	121	259	0	8.85	747	108	273	0	9.41
Gestational	10,880	1,091	2,799	2	90.60	9,460	999	2,434	2	84.84
NA	60	8	15	0	0.54	767	61	172	0	5.75
Missing	2	0	1	0	0.02	0	0	0	0	0.00
Hypertension	5,943	464	2,226	0	8.40	4,803	370	1,928	4	7.40
Pre-existing	1,060	114	350	0	17.25	805	84	321	1	17.64
Gestational	4,356	299	1,632	0	71.78	3,464	228	1,380	3	69.98
Pre-eclampsia	950	51	593	0	33.35	799	32	512	2	33.89
Eclampsia	49	1	38	0	2.02	57	1	46	0	2.92
Heart Disease	931	100	162	0	0.82	705	72	148	0	0.71
NYHA I	518	41	71	0	42.75	379	26	70	0	43.64
NYHA II	113	19	20	0	14.89	82	11	20	0	14.09
NYHA III	17	4	8	0	4.58	12	3	4	0	3.18
NYHA IV	1	1	0	0	0.38	4	0	2	0	0.91
Not Available	257	23	57	0	30.53	212	25	46	0	32.27
NA	25	12	9	0	8.02	16	7	6	0	5.91
Others	6,942	421	1,340	1	5.50	6,064	458	1,243	1	5.47
TB	77	7	13	0	1.14	73	6	14	0	1.18
Blood Disorder	1,079	63	184	0	14.02	987	58	172	0	13.51
CollagenDisease	5	2	0	0	0.11	2	0	0	0	0.00
Asthma	2,443	173	528	0	39.78	2,074	170	456	1	36.84
Renal Disease	37	4	9	0	0.74	46	8	14	0	1.29

Table 2.6 CS in relation to accoucher 2011-2012

Accoucher	Caesarean 2011										Total	
	LSCS		Classical		Hysterotomy		Hysterectomy		Others			
	n	%	n	%	n	%	n	%	n	%	n	%
Specialist	1,799	5.65	33	24.81	9	52.94	33	62.26	2	20.00	1,876	5.86
MO>6 months O&G experience	28,619	89.95	97	72.93	8	47.06	19	35.85	8	80.00	28,751	89.77
MO<6 months O&G experience	1,075	3.38	2	1.50	0	0.00	0	0.00	0	0.00	1,077	3.36
MO no O&G experience	16	0.05	0	0.00	0	0.00	0	0.00	0	0.00	16	0.05
Other MO	45	0.14	0	0.00	0	0.00	0	0.00	0	0.00	45	0.14
Other MO (HO)	54	0.17	1	0.75	0	0.00	0	0.00	0	0.00	55	0.17
	Caesarean 2012										Total	
	LSCS		Classical		Hysterotomy		Hysterectomy		Others			
	n	%	n	%	n	%	n	%	n	%	n	%
Specialist	1,932	6.25	38	27.34	15.00	68.18	37	72.55	0.00	0.00	2,022	6.49
MO>6 months O&G experience	27,948	90.36	92	66.19	7.00	31.82	13	25.49	10.00	100.00	28,070	90.11
MO<6 months O&G experience	794	2.57	5	3.60	0.00	0.00	0	0.00	0.00	0.00	799	2.57
MO no O&G experience	46	0.15	1	0.72	0.00	0.00	0	0.00	0.00	0.00	47	0.15
Other MO	12	0.04	0	0.00	0	0.00	1	1.96	0.00	0.00	13	0.04
Other MO (HO)	63	0.20	0	0.00	0	0.00	0	0.00	0.00	0.00	63	0.20

Graph 2.2 Indications for CS 2011 and 2012

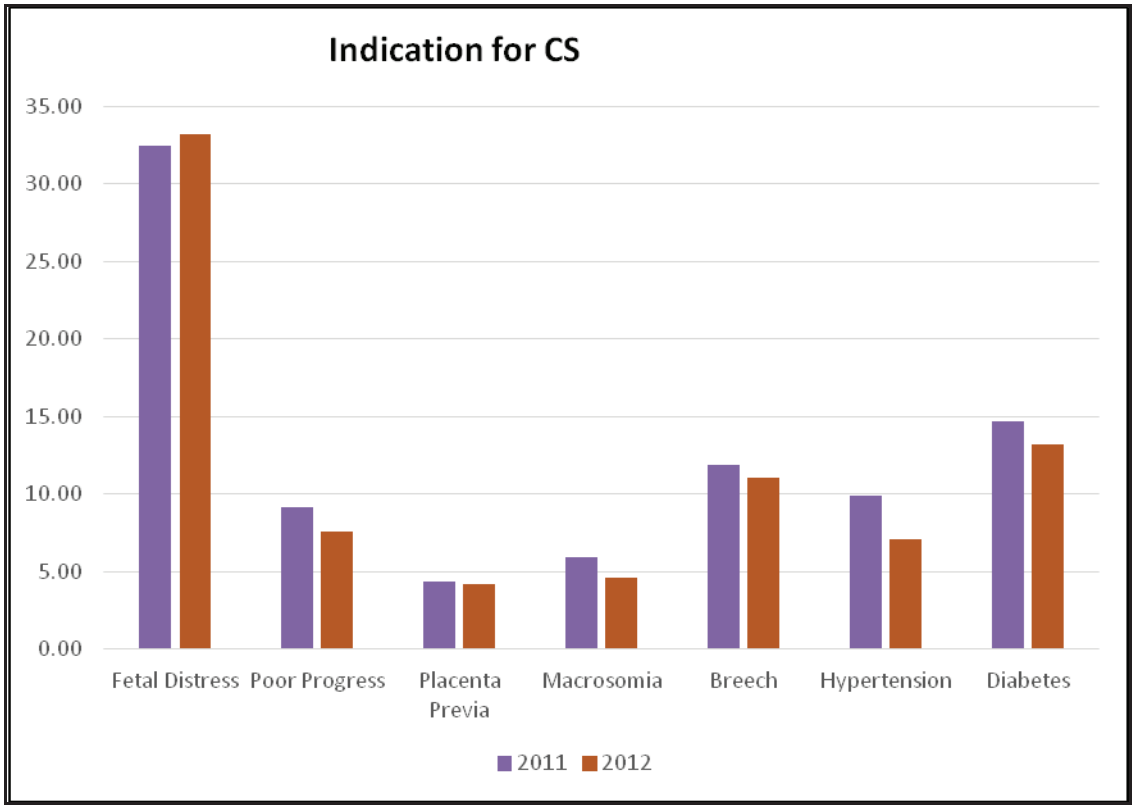

Table 2.7 Apgar score in relation to CS 2011 and 2012

	Caesarean 2011											
Apgar at 1 min	**CS**	**Classical**		**Hysterotomy**		**Hysterectomy**		**Others**		**Total**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
≤ 7	3,359	10.56	26	19.55	3	17.65	18	33.96	1	10.00	3,407	10.64
> 7	27,886	87.65	104	78.20	10	58.82	34	64.15	9	90.00	28,043	87.56
NA	571	1.79	3	2.26	4	23.53	1	1.89	0	0.00	579	1.81
Total	31,816	100	133	100	17	100	53	100	10	100	32,029	100
Apgar at 5 min												
≤ 7	717	2.25	11	8.27	1	5.88	8	15.09	1	10.00	738	2.30
> 7	30,293	95.21	118	88.72	12	70.59	44	83.02	9	90.00	30,476	95.15
NA	806	2.53	4	3.01	4	23.53	1	1.89	0	0.00	815	2.54
Total	31,816	100	133	100	17	100	53	100	10	100	32,029	100
Apgar at 1 min	**Caesarean 2012**											
≤ 7	2,946	9.53	18	12.95	11	50.00	23	45.10	1	10.00	2,999	9.63
> 7	27,817	89.94	117	84.17	8	36.36	22	43.14	9	90.00	27,973	89.80
NA	165	0.53	4	2.88	3	13.64	6	11.76	0	0.00	178	0.57
Total	30,928	100	139	100	22	100	51	100	10	100	31,150	100
Apgar at 5 min												
≤ 7	646	2.09	5	3.60	7	31.82	7	13.73	0	0.00	665	2.13
> 7	30,081	97.26	130	93.53	11	50.00	37	72.55	10	100.00	30,269	97.17
NA	201	0.65	4	2.88	4	18.18	7	13.73	0	0.00	216	0.69
Total	30,928	100	139	100	22	100	51	100	10	100	31,150	100

CHAPTER 3

MASSIVE PRIMARY POSTPARTUM HAEMORRHAGE

CHAPTER 3 MASSIVE PRIMARY POSTPARTUM HAEMORRHAGE

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SUMMARY

The standards set by MOH for Massive Primary PPH was achieved by all 14 hospitals in 2011. In 2011 HSB Kedah had the highest incidence of Massive Primary PPH at 0.40% whilst in 2012 HTF Perlis had the highest rate of Massive Primary PPH at 0.54%. It was higher in women aged 40-45 years and parity ≥6. Macrosomia, multiple pregnancy and prolonged labour contributed to Massive primary PPH.

3.1 INTRODUCTION

KPI for Massive Primary PPH set by MOH, Malaysia is ≤ 0.5% of total deliveries. The total number of deliveries for 2011 was 135,380 and 0.14% of deliveries were complicated by Massive Primary PPH from the 14 tertiary hospitals that provide data to NOR. HL, Sabah had not reported any cases of Massive Primary PPH in 2011 but in 2012 there were 2 cases.The total number of deliveries for 2012 was 122,634 and 0.10 % of deliveries were complicated by Massive Primary PPH from the SDP. The highest rate was seen from HTF Perlis at 0.54% followed by HKL and HSNZ Terengganu at 0.19%.

3.2 PATIENT DERMOGRAPHICS

In 2011 Massive Primary PPH was highest among the Ibans at 0.23% followed by the Chinese at 0.21%. Women aged 40-45 years had a high rate of Massive Primary PPH at 0.52% and parity ≥ 6 had a rate of 0.33%.Similar findings were seen in 2012 where Massive Primary PPH was high in women aged 40-45 years at 0.35% and in parity ≥ 6 at 0.18 %.

3.3 RISK FACTORS FOR MASSIVE PRIMARY PPH

In both years risk factors for Massive Primary PPH were macrosomia, multiple pregnancy and prolonged labour.

3.4 CAUSES OF POSTPARTUM HAEMORRHAGE

Uterine atony accounted for 24.74% of Massive Primary PPH in 2011 where else uterine rupture accounted for 20.0% of Massive PPH in 2012 followed by uterine atony at 9.52%.

3.5 MODE OF DELIVERY

Massive Primary PPH was higher with CS as compared to vaginal and instrumental delivery. In both years Classical CS contributed to the highest rate at 3.08% and 0.76% respectively.

3.6 CONCLUSION

The incidence of Massive Primary PPH from the SDP was 0.14% in 2011 and 0.10% in 2012 and this was higher than what was reported in the 2nd NOR report 2010. Women aged 40-44 years and Parity≥ 6 had the highest rate of Massive Primary PPH. Rates were higher following CS as compared to vaginal and instrumental deliveries and Classical CS contributed to the highest rate in both years.

3.7 RECOMMENDATION

1. Regular audit and discussion of cases with Massive Primary PPH should be carried out at Departmental level.
2. SDPs should capture all data accurately for a complete and comprehensive analysis.

3.8 REFERENCE

1. Manual National Indicator Approach and Key Performance Indicators. Obstetrics and Gynaecology, Ministry of Health 2010.
2. 2nd NOR Report 2010. Editors: Dr Ravichandran Jeganathan, Dr Shamala Devi Karalasingam

Table 3.1 Massive Primary PPH by SDP 2011 and 2012

SDP	Total women who delivered	Primary PPH						Total women who delivered	Primary PPH					
		<1500 mls		≥1500 mls		NA			<1500 mls		≥1500 mls		NA	
		n	%	n	%	n	%		n	%	n	%	n	%
HTJ ,Perlis	4,087	77	1.88	16	0.39	3	0.07	3,920	59	1.51	21	0.54	1	0.03
HSB, Kedah	10,396	64	0.62	42	0.40	1	0.01	10,307	40	0.39	13	0.13	0	0.00
HPP	3,336	12	0.36	0	0.00	1	0.03	3,010	4	0.13	0	0.00	0	0.00
HRPB, Perak	6,217	8	0.13	13	0.21	0	0.00	4,507	3	0.07	2	0.04	0	0.00
HTAR, Selangor	12,351	12	0.10	8	0.06	1	0.01	12,056	42	0.35	5	0.04	1	0.01
HKL	11,729	99	0.84	15	0.13	4	0.03	11,843	79	0.67	22	0.19	0	0.00
HTJ, Negeri Sembilan	4,841	4	0.08	2	0.04	1	0.02	6,192	7	0.11	0	0.00	1	0.02
Hospital Melaka	10,833	24	0.22	10	0.09	0	0.00	10,746	15	0.14	6	0.06	0	0.00
HSA, Johor	12,467	46	0.37	15	0.12	1	0.01	12,295	65	0.53	11	0.09	2	0.02
HTAA, Pahang	9,333	11	0.12	6	0.06	1	0.01	8,728	2	0.02	1	0.01	0	0.00
HSNZ, Terengganu	12,019	65	0.54	27	0.22	3	0.02	12,803	85	0.66	24	0.19	8	0.06
HRPZ 11, Kelantan	13,066	39	0.30	22	0.17	1	0.01	10,955	21	0.19	11	0.10	0	0.00
HU,Sarawak	9,854	86	0.87	20	0.20	5	0.05	1,513	13	0.86	0	0.00	0	0.00
HL, Sabah	14,851	1	0.01	0	0.00	0	0.00	13,759	8	0.06	2	0.01	0	0.00
Total	135,380	548	0.40	196	0.14	22	0.02	122,634	443	0.36	118	0.10	13	0.01

Table 3.2 Massive Primary PPH by ethnicity 2011 and 2012

Ethnicity	2011							2012						
	Total women who delivered	Primary PPH						Total women who delivered	Primary PPH					
		<1500 mls		≥1500 mls		NA			<1500 mls		≥1500 mls		NA	
		n	%	n	%	n	%		n	%	n	%	n	%
Malay	92,649	423	0.46	149	0.16	17	0.02	85,391	345	0.40	94	0.11	11	0.01
Chinese	8,428	28	0.33	18	0.21	1	0.01	7,417	36	0.49	3	0.04	1	0.01
Indian	6,400	10	0.16	3	0.05	0	0.00	6,128	11	0.18	2	0.03	1	0.02
Kadazan/Dusun	4,003	2	0.05	0	0.00	0	0.00	3,685	2	0.05	1	0.03	0	0.00
Murut	345	1	0.29	0	0.00	0	0.00	262	1	0.38	0	0.00	0	0.00
Bajau	3,151	2	0.06	1	0.03	0	0.00	2,930	4	0.14	0	0.00	0	0.00
Melanau	123	0	0.00	0	0.00	0	0.00	38	0	0.00	0	0.00	0	0.00
Iban	2,149	15	0.70	5	0.23	0	0.00	760	2	0.26	0	0.00	0	0.00
Bidayuh	1,573	20	1.27	0	0.00	2	0.13	360	1	0.28	0	0.00	0	0.00
OA (Peninsular Malaysia)	909	2	0.22	1	0.11	0	0.00	748	1	0.13	0	0.00	0	0.00
Other indigenous group in Sabah & Sarawak	2,695	2	0.07	1	0.04	0	0.00	2,338	0	0.00	1	0.04	0	0.00
Other	1,209	5	0.41	1	0.08	0	0.00	1,467	3	0.20	3	0.20	0	0.00
Foreigners	11,333	37	0.33	17	0.15	2	0.02	10,593	36	0.34	14	0.13	0	0.00
NA	413	1	0.24	0	0.00	0	0.00	517	1	0.19	0	0.00	0	0.00
Total	135,380	548	0.40	196	0.14	22	0.02	122,634	443	0.36	118	0.10	13	0.01

Table 3.3 Massive Primary PPH by age 2011 and 2012

Age	2011							2012						
	Total women who delivered	Primary PPH						Total women who delivered	Primary PPH					
		<1500 mls		≥1500 mls		NA			<1500 mls		≥1500 mls		NA	
	n	n	%	n	%	n	%	n	n	%	n	%	n	%
10-14	127	0	0.00	0	0.00	0	0.00	126	0	0.00	0	0.00	0	0.00
15-19	6,731	24	0.36	2	0.03	0	0.00	5,736	8	0.14	0	0.00	0	0.00
20-24	26,048	80	0.31	19	0.07	3	0.01	22,513	55	0.24	3	0.01	1	0.00
25-29	46,963	158	0.34	32	0.07	5	0.01	43,421	145	0.33	23	0.05	4	0.01
30-34	33,305	147	0.44	66	0.20	9	0.03	30,830	120	0.39	46	0.15	4	0.01
35-39	17,052	106	0.62	51	0.30	4	0.02	15,404	84	0.55	33	0.21	2	0.01
40-44	4,765	30	0.63	25	0.52	1	0.02	4,262	31	0.73	13	0.31	1	0.02
45-49	362	3	0.83	1	0.28	0	0.00	314	0	0.00	0	0.00	1	0.32
50-54	26	0	0.00	0	0.00	0	0.00	26	0	0.00	0	0.00	0	0.00
55-59	1	0	0.00	0	0.00	0	0.00	2	0	0.00	0	0.00	0	0.00
Total	135,380	548	0.40	196	0.14	22	0.02	122,634	443	0.36	118	0.10	13	0.01

Table 3.4 Parity and Massive Primary PPH 2011 and 2012

Parity	2011							2012						
	Total women who delivered	Primary PPH						Total women who delivered	Primary PPH					
		<1500 mls		≥1500 mls		NA			<1500 mls		≥1500 mls		NA	
		n	%	n	%	n	%		n	%	n	%	n	%
1	46,158	155	0.34	36	0.08	6	0.01	42,679	147	0.34	19	0.04	2	0.01
2 - 5	81,166	355	0.44	134	0.17	15	0.02	73,336	263	0.36	87	0.12	6	0.01
≥ 6	7,840	38	0.48	26	0.33	1	0.01	6,537	33	0.50	12	0.18	5	0.08
NA	216	0	0.00	0	0.00	0	0.00	82	0	0.00	0	0.00	0	0.00
Total	135,380	548	0.40	196	0.14	22	0.02	122,634	443	0.36	118	0.10	13	0.01

Table 3.5: Risk factors for Massive Primary PPH 2011 and 2012

Risk Factor for PPH	2011							2012						
	Total women who delivered	Primary PPH						Total women who delivered	Primary PPH					
		<1500 mls		≥1500 mls		NA			<1500 mls		≥1500 mls		NA	
		n	%	n	%	n	%		n	%	n	%	n	%
Anaemia (At Booking)	42,096	153	0.36	57	0.14	8	0.02	35,859	108	0.30	34	0.09	3	0.01
Macrosomia	4,515	36	0.80	13	0.29	0	0.00	4,249	29	0.68	12	0.28	0	0.00
Multiple Pregnancy	2,695	42	1.56	14	0.52	4	0.15	2,584	26	1.01	12	0.46	0	0.00
Prolonged Labour	544	10	1.84	5	0.92	0	0.00	308	5	1.62	4	1.30	1	0.32

Table 3.6: Cause of Massive Primary PPH 2011 and 2012

Cause of PPH	2011							2012						
	Total women who delivered	Primary PPH						Total women who delivered	Primary PPH					
		<1500 mls		≥1500 mls		NA			<1500 mls		≥1500 mls		NA	
	n	n	%	n	%	n	%	n	n	%	n	%	n	%
Uterine atony	97	43	44.33	24	24.74	0	0.00	42	19	45.24	4	9.52	1	2.38
Uterine inversion	2	0	0.00	0	0.00	0	0.00	6	0	0.00	0	0.00	0	0.00
Placenta preavia	1,422	39	2.74	42	2.95	1	0.07	1,425	25	1.75	31	2.18	1	0.07
Abruption placenta	299	8	2.68	7	2.34	0	0.00	323	8	2.48	7	2.17	0	0.00
Retained placenta	266	11	4.14	3	1.13	1	0.38	220	11	5.00	4	1.82	2	0.91
Genital trauma	29,056	138	0.47	12	0.04	6	0.02	27,640	76	0.27	12	0.04	2	0.01
Uterine rupture	7	2	28.57	0	0.00	0	0.00	10	0	0.00	2	20.00	0	0.00

Table 3.7: Massive Primary PPH in relation to mode of delivery 2011 and 2012

Mode of Delivery	Total women who delivered	2011						Total women who delivered	2012					
		Primary PPH							Primary PPH					
		<1500 mls		≥1500 mls		NA			<1500 mls		≥1500 mls		NA	
	n	n	%	n	%	n	%	n	n	%	n	%	n	%
Vaginal	96,272	252	0.26	26	0.03	11	0.01	86,219	168	0.19	17	0.02	4	0.00
Instrumental	4,923	26	0.53	3	0.06	1	0.02	4,589	22	0.48	3	0.07	1	0.02
Caesarean	31,241	255	0.82	164	0.52	10	0.03	30,325	245	0.81	98	0.32	8	0.03
LSCS	31,029	253	0.82	159	0.51	10	0.03	30,138	242	0.80	97	0.32	8	0.03
Classical	130	0	0.00	4	3.08	0	0.00	132	1	0.76	1	0.76	0	0.00
Hysterotomy	17	1	5.88	0	0.00	0	0.00	22	2	9.09	0	0.00	0	0.00
Total	135,380	533	0.39	193	0.14	22	0.02	122,634	435	0.35	118	0.10	13	0.01

CHAPTER 4

DIABETES MELLITUS IN PREGNANCY

CHAPTER 4 DIABETES MELLITUS IN PREGNANCY

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SUMMARY

The incidence of Diabetes in pregnancy was 8.66% in 2011 and in 2012 there was a slight increase to 8.83% seen from the 14 tertiary hospitals in Malaysia. Highest incidence of Diabetic pregnancy was seen in Indians in both years. Diabetic pregnancy was high in age group 45-49 years in 2011 at 23.76% as compared to 2012 there was a higher incidence at 21.12% in age 40-44 years. Fetal macrosomia was high in both years which led to an increased CS rates.

4.1 INTRODUCTION

The incidence of Diabetic pregnancy was 8.66% in 2011 and 8.83% in 2012.This was slightly lower compared to previous report at 11.1% in 2009 and 9.9 % in 2010. In 2011, tertiary hospital HSA,HTAA and Hospital Melaka had the highest incidence of Diabetes in pregnancy at around 12% and in 2012, higher incidence was seen in HKL, HSA and HTAA around 12%. GDM rates were higher than pre-existing diabetes for both years.

4.2 PATIENT DERMOGRAPHICS

Diabetes in pregnancy in 2011 in age group 40-44 years was 21.30% and in age group 45-49 years was at 23.76% . In 2012 , women aged 40-44 years had a rate of 21.12% whilst women in age group 45-49 years at 17.83%. Diabetes in pregnancy was higher among the Indians for both years in 2011 at 13.55% and 13.05 % in 2012. Incidence in Malays was 9.82% in 2011 and at 9.87% in 2012.Diabetic pregnancy was more common in para 6 and more for both years at 14.58% and 14.62%

4.3 OUTCOMES

CS rates in this group of patients were high in 2011 at 13.42% and at 13.1% in 2012. In both years approximately 16% babies born to Diabetic mothers weighed 4 kg and more. There was a 2 fold increase in macrosomia in diabetic patients in both years as compared to non-diabetics and this could have contributed to the increased CS rates in Diabetic patients. There was no difference in shoulder dystocia rates in Diabetics and

non-diabetic patients. Stillbirth rates in this group of patients were 8.05 per 1000 live births in 2011 and 8.27 per 1000 live births in 2012.

4.4 CONCLUSIONS

The incidence of Diabetic pregnancy remained constant for both years at 8.7% in 2011 and 8.8% in 2012. This rate was lower compared to what was reported in 2009 and 2010. The overall prevalence of Diabetes mellitus in the National Health Morbidity Survey III was 11.6%. Indians had a higher prevalence at 13.55% in 2011 and 13.05 % in 2012, followed by the Malays at 9.82% in 2011 and 9.87% in 2012

4.5 RECOMMENDATION

1. Pre-pregnancy counselling is advocated in this group of women to ensure good glycaemic control before they embark on pregnancy.
2. We recommend universal screening instead of selective screening for GDM.

4.6 REFERRENCES

1. NICE Clinical Guideline 63 – Diabetes in Pregnancy, March 2008.
2. Prevalence of Diabetes in the Malaysian National Health Morbidity Survey III 2006.
3. National Obstetric Registry Report 2009 and 2010.

Graph 4.1 Types of Diabetic Pregnancy in Malaysia

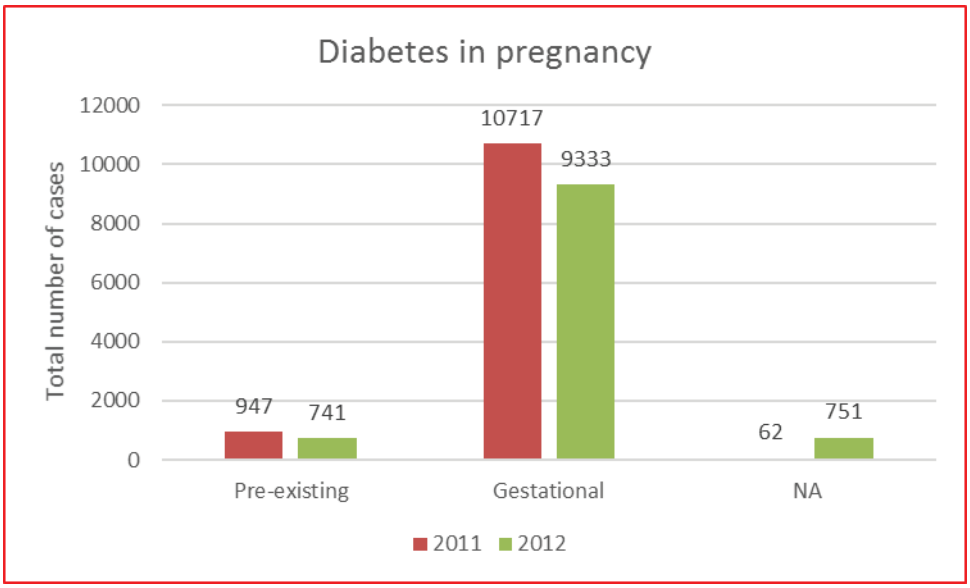

Table 4.1 Incidence of Diabetic pregnancy by SDP 2011 and 2012

SDP	2011									2012								
	Total women who delivered	Diabetic pregnancy						Total DM		Total women who delivered	Diabetic pregnancy						Total DM	
		Pre-existing		Gestational		NA					Pre-existing		Gestational		NA			
	n	n	%	n	%	n	%	n	%	n	n	%	n	%	n	%	n	%
HTF Perlis	4,087	51	1.25	403	9.86	2	0.05	456	11.16	3,920	31	0.79	342	8.72	1	0.03	374	9.54
HSB Kedah	10,396	48	0.46	689	6.63	5	0.05	742	7.14	10,307	60	0.58	672	6.52	3	0.03	735	7.13
HPP	3,336	4	0.12	151	4.53	1	0.03	156	4.68	3,010	5	0.17	127	4.22	0	0.00	132	4.39
HRPB Perak	6,217	38	0.61	591	9.51	7	0.11	636	10.23	4,507	27	0.60	428	9.50	2	0.04	457	10.14
HTAR Selangor	12,351	181	1.47	1,151	9.32	0	0.00	1332	10.78	12,056	173	1.43	1,039	8.62	2	0.02	1214	10.07
HKL	11,729	69	0.59	1,049	8.94	4	0.03	1122	9.57	11,843	72	0.61	951	8.03	2	0.02	1025	8.65
HTJ Negeri Sembilan	4,841	38	0.78	461	9.52	10	0.21	509	10.51	6,192	31	0.50	752	12.14	5	0.08	788	12.73
Hospital Melaka	10,833	60	0.55	1,245	11.49	2	0.02	1307	12.06	10,746	76	0.71	960	8.93	0	0.00	1036	9.64
HSA Johor	12,467	124	0.99	1,387	11.13	4	0.03	1515	12.15	12,295	101	0.82	1,395	11.35	1	0.01	1497	12.18
HTAA Pahang	9,333	48	0.51	1,059	11.35	16	0.17	1123	12.03	8,728	10	0.11	385	4.41	731	8.38	1126	12.90
HSNZ Terengganu	12,019	122	1.02	808	6.72	4	0.03	934	7.77	12,803	53	0.41	967	7.55	2	0.02	1022	7.98
HRPZ II, Kelantan	13,066	89	0.68	916	7.01	5	0.04	1010	7.73	10,955	77	0.70	997	9.10	0	0.00	1074	9.80
HU Sarawak	9,854	71	0.72	705	7.15	1	0.01	777	7.89	1,513	18	1.19	111	7.34	0	0.00	129	8.53
HL Sabah	14,851	4	0.03	102	0.69	1	0.01	107	0.72	13,759	7	0.05	207	1.50	2	0.01	216	1.57
Total	135,380	947	0.70	10717	7.92	62	0.05	11726	8.66	122,634	741	0.60	9333	7.61	751	0.61	10825	8.83

Table 4.2 Diabetic pregnancy by Age 2011 and 2012

Age	2011									2012								
	Total women who delivered	Diabetic pregnancy						Total DM		Total women who delivered	Diabetic pregnancy						Total DM	
		Pre-existing		Gestational		NA					Pre-existing		Gestational		NA			
		n	%	n	%	n	%	n	%		n	%	n	%	n	%	n	%
10-14	127	0	0.00	1	0.79	0	0.00	2	1.57	126	0	0.00	2	1.59	0	0.00	2	1.59
15-19	6,731	8	0.12	95	1.41	2	0.03	106	1.57	5,736	3	0.05	80	1.39	6	0.10	89	1.55
20-24	26,048	70	0.27	850	3.26	4	0.02	939	3.60	22,513	57	0.25	700	3.11	79	0.35	836	3.71
25-29	46,963	244	0.52	3,003	6.39	23	0.05	3,313	7.05	43,421	187	0.43	2,697	6.21	207	0.48	3,091	7.12
30-34	33,305	292	0.88	3,159	9.49	15	0.05	3,529	10.60	30,830	208	0.67	2,859	9.27	230	0.75	3,297	10.69
35-39	17,052	243	1.43	2,609	15.30	15	0.09	2,905	17.04	15,404	211	1.37	2,185	14.18	156	1.01	2,552	16.57
40-44	4,765	82	1.72	919	19.29	3	0.06	1,015	21.30	4,262	67	1.57	762	17.88	71	1.67	900	21.12
45-49	362	8	2.21	77	21.27	0	0.00	86	23.76	314	8	2.55	46	14.65	2	0.64	56	17.83
50-54	26	0	0.00	4	15.38	0	0.00	4	15.38	26	0	0.00	2	7.69	0	0.00	2	7.69
55-59	1	0	0.00	0	0.00	0	0.00	0	0.00	2	0	0.00	0	0.00	0	0.00	0	0.00
Total	135,380	947	0.70	10717	7.92	62	0.05	11,726	8.66	122,634	741	0.60	9333	7.61	751	0.61	10,825	8.83

Table 4.3 Diabetic pregnancy by Ethnicity 2011 and 2012

Ethnicity	2011									2012								
	Total women who delivered	Diabetic pregnancy						Total DM		Total women who delivered	Diabetic in pregnancy						Total DM	
		Pre-existing		Gestational		NA					Pre-existing		Gestational		NA			
		n	%	n	%	n	%	n	%		n	%	n	%	n	%	n	%
Malay	92649	748	0.81	8,297	8.96	51	0.06	9,096	9.82	85391	581	0.68	7,170	8.40	681	0.80	8,432	9.87
Chinese	8428	56	0.66	702	8.33	3	0.04	761	9.03	7417	38	0.51	599	8.08	20	0.27	657	8.86
Indian	6400	78	1.22	786	12.28	3	0.05	867	13.55	6128	60	0.98	727	11.86	13	0.21	800	13.05
Kadazan/Dusun	4003	2	0.05	59	1.47	0	0.00	61	1.52	3685	3	0.08	84	2.28	1	0.03	88	2.39
Murut	345	1	0.29	5	1.45	0	0.00	6	1.74	262	1	0.38	10	3.82	0	0.00	11	4.20
Bajau	3151	1	0.03	30	0.95	0	0.00	31	0.98	2930	0	0.00	51	1.74	3	0.10	54	1.84
Melanau	123	1	0.81	8	6.50	0	0.00	9	7.32	38	2	5.26	5	13.16	0	0.00	7	18.42
Iban	2149	6	0.28	135	6.28	2	0.09	143	6.65	760	4	0.53	62	8.16	2	0.26	68	8.95
Bidayuh	1573	9	0.57	83	5.28	0	0.00	92	5.85	360	3	0.83	25	6.94	0	0.00	28	7.78
OA (Peninsular Malaysia)	909	1	0.11	45	4.95	2	0.22	48	5.28	748	1	0.13	24	3.21	6	0.80	31	4.14
Other indigenous group in Sabah & Sarawak	2695	1	0.04	34	1.26	0	0.00	35	1.30	2338	3	0.13	32	1.37	1	0.04	36	1.54
Other	1209	7	0.58	55	4.55	0	0.00	62	5.13	1467	10	0.68	51	3.48	2	0.14	63	4.29
Foreigners	11333	33	0.29	462	4.08	1	0.01	496	4.38	10593	34	0.32	482	4.55	13	0.12	529	4.99
NA	413	3	0.73	16	3.87	0	0.00	19	4.60	517	1	0.19	11	2.13	9	1.74	21	4.06
Total	135380	947	0.70	10,717	7.92	62	0.05	11,726	8.66	122634	741	0.60	9,333	7.61	751	0.61	10,825	8.83

Table 4.4 Diabetic pregnancy by Parity 2011 and 2012

Parity	2011									2012								
	Total women who delivered	Diabetic pregnancy						Total DM		Total women who delivered	Diabetic in preganacy						Total DM	
		Pre-existing		Gestational		NA					Pre-existing		Gestational		NA			
		n	%	n	%	n	%	n	%		n	%	n	%	n	%	n	%
1	46,158	253	0.55	2,681	5.81	24	0.05	2,958	6.41	42,679	193	0.45	2,457	5.76	196	0.46	2,846	6.67
2-5	81,166	600	0.74	6,981	8.60	33	0.04	7,614	9.38	73,336	482	0.66	6,060	8.26	477	0.65	7,019	9.57
≥ 6	7,840	94	1.20	1,045	13.33	4	0.05	1,143	14.58	6,537	65	0.99	813	12.44	78	1.19	956	14.62
NA	216	0	0.00	10	4.63	1	0.46	11	5.09	82	1	1.22	3	3.66	0	0.00	4	4.88
Total	135,380	947	0.70	10,717	7.92	62	0.05	11,726	8.66	122,634	741	0.60	9,333	7.61	751	0.61	10,825	8.83

Table 4.5 Mode of delivery in Diabetic pregnancy 2011 and 2012

Mode of Delivery	2011									2012								
	Total women who delivered	Diabetic pregnancy						Total DM		Total women who delivered	Diabetic pregnancy						Total DM	
		Pre-existing		Gestational		NA					Pre-existing		Gestational		NA			
		n	%	n	%	n	%	n	%		n	%	n	%	n	%	n	%
Vaginal	96272	509	0.53	6,350	6.60	31	0.03	6890	7.16	86219	326	0.38	5,498	6.38	489	0.57	6,313	7.3
SVD	95815	504	0.53	6326	6.60	31	0.03	6861	7.16	85560	325	0.38	5472	6.40	489	0.57	6,286	7.3
Breech	435	5	1.15	23	5.29	0	0.00	28	6.44	357	1	0.28	21	5.88	0	0.00	22	6.2
Instrumental	4923	42	0.85	375	7.62	2	0.04	419	8.51	4589	21	0.46	342	7.45	34	0.74	397	8.7
Vacuum	4366	37	0.85	316	7.24	2	0.05	355	8.13	4160	16	0.38	307	7.38	32	0.77	355	8.5
Forceps	565	5	0.88	59	10.44	0	0.00	64	11.33	433	5	1.15	36	8.31	2	0.46	43	9.9
Caesarean	31241	373	1.19	3,796	12.15	24	0.08	4193	13.42	30325	378	1.25	3,359	11.08	228	0.75	3,965	13.1
LSCS	31029	368	1.19	3768	12.14	23	0.07	4159	13.40	30138	373	1.24	3341	11.09	227	0.75	3,941	13.1
Classical	130	5	3.85	16	12.31	1	0.77	22	16.92	132	3	2.27	13	9.85	1	0.76	17	12.9
Hysterotomy	17	0	0.00	3	17.65	0	0.00	3	17.65	22	0	0.00	3	13.64	0	0.00	3	13.6
Others	8	0	0.00	1	12.50	0	0.00	1	12.50	10	0	0.00	1	10.00	0	0.00	1	10.0
NA	2944	23	0.78	196	6.66	5	0.17	224	7.61	1501	16	1.07	134	8.93	0	0.00	150	10.0
Total	135380	947	0.70	10717	7.92	62	0.05	11726	8.66	122634	741	0.60	9333	7.61	751	0.61	10,825	8.8

Table 4.6 Birth weight in relation to Diabetic pregnancy 2011 and 2012

Birth Weight	2011									2012								
	Total delivery	Diabetic pregnancy						Total DM		Total delivery	Diabetic pregnancy						Total DM	
		Pre-existing		Gestational		NA					Pre-existing		Gestational		NA			
		n	%	n	%	n	%	n	%		n	%	n	%	n	%	n	%
≤ 1000	1,246	13	1.04	85	6.82	0	0.00	98	7.87	1,187	8	0.67	77	6.49	4	0.34	89	7.50
1001 - 1500	1,501	15	1.00	121	8.06	0	0.00	136	9.06	1,388	13	0.94	93	6.70	4	0.29	110	7.93
1501 - 2000	3,843	28	0.73	269	7.00	0	0.00	297	7.73	3,451	23	0.67	237	6.87	16	0.46	276	8.00
2001 - 2500	16,194	96	0.59	1,058	6.53	11	0.07	1,165	7.19	14,492	83	0.57	939	6.48	77	0.53	1,099	7.58
2501 - 3000	50,450	293	0.58	3,483	6.90	12	0.02	3,788	7.51	44,894	234	0.52	3,016	6.72	218	0.49	3,468	7.72
3001 - 3500	46,106	327	0.71	3,779	8.20	27	0.06	4,133	8.96	42,375	220	0.52	3,332	7.86	281	0.66	3,833	9.05
3501 - 3999	12,948	117	0.90	1,434	11.08	4	0.03	1,555	12.01	12,040	114	0.95	1,168	9.70	136	1.13	1,418	11.78
≥ 4000	4,575	68	1.49	651	14.23	8	0.17	727	15.89	4,269	52	1.22	598	14.01	31	0.73	681	15.95
Total	136,863	957	0.70	10880	7.95	62	0.05	11,899	8.69	124,096	747	0.60	9460	7.62	767	0.62	10,974	8.84

Table 4.7 Macrosomia in Diabetic pregnancy 2011 and 2012

Birth Weight	2011				2012			
	DM		Non DM		DM		Non DM	
	n	%	n	%	n	%	n	%
≥ 4 kg	727	6.1	3848	3.1	681	6.2	3588	3.2
< 4 kg	11172	93.9	121116	96.9	10293	93.8	109534	96.8

Table 4.8 Shoulder dystocia in Diabetic pregnancy 2011-2012

Birth Weight	2011					2012				
	Total delivery	Shoulder Dystocia				Total delivery	Shoulder Dystocia			
		With DM		Without DM			With DM		Without DM	
		n	%	n	%		n	%	n	%
≤ 1000	1,246	0	0.00	2	0.16	1,187	0	0.00	0	0.00
1001 - 1500	1,501	0	0.00	0	0.00	1,388	0	0.00	0	0.00
1501 - 2000	3,843	0	0.00	0	0.00	3,451	0	0.00	0	0.00
2001 - 2500	16,194	0	0.00	1	0.01	14,492	0	0.00	1	0.01
2501 - 3000	50,450	3	0.01	13	0.03	44,894	2	0.00	11	0.02
3001 - 3500	46,106	12	0.03	47	0.10	42,375	9	0.02	30	0.07
3501 - 3999	12,948	29	0.22	68	0.53	12,040	20	0.17	73	0.61
≥ 4000	4,575	24	0.52	36	0.79	4,269	18	0.42	61	1.43
Total	136,863	68	0.05	167	0.12	124,096	49	0.04	176	0.14

Table 4.9 Birth asphyxia in Diabetic pregnancy 2011-2012

Mode of Delivery	2011									2012							
	Total delivery	Apgar Score 1min ≤ 7				Apgar Score 5min ≤ 7				Total delivery	Apgar Score 1min ≤ 7				Apgar Score 5min ≤ 7			
		Pre-existing		Gestational		Pre-existing		Gestational			Pre-existing		Gestational		Pre-existing		Gestational	
Vaginal	96,871	26	0.03	227	0.23	6	0.01	63	0.07	86,837	17	0.02	187	0.22	9	0.01	48	0.06
Instrumental	4,947	6	0.12	53	1.07	1	0.02	11	0.22	4,616	6	0.13	56	1.21	0	0.00	11	0.24
NA	3007	0	0.00	22	0.73	0	0.00	4	0.13	1519	2	0.13	10	0.66	0	0.00	0	0.00
Total	104,825	32	0.03	302	0.29	16	0.02	152	0.15	92,972	59	0.06	532	0.57	18	0.02	129	0.14

Table 4.10 Fetal outcomes in Diabetic pregnancy 2011-2012

Fetal Outcome	2011							2012						
	Total delivery	Diabetic pregnancy						Total delivery	Diabetic pregnancy					
		Pre-existing		Gestational		NA			Pre-existing		Gestational		NA	
	n	n	%	n	%	n	%	n	n	%	n	%	n	%
MSB	463	9	1.94	83	17.93	1	0.22	410	11	2.68	86	20.98	0	0.00
LCM present	93	4	4.30	8	8.60	0	0.00	79	2	2.53	8	10.13	1	1.27
LCM absent	366	4	1.09	41	11.20	0	0.00	332	3	0.90	40	12.05	0	0.00
NA	136404	949	0.70	10831	7.94	62	0.05	123685	742	0.60	9412	7.61	766	0.62
FSB	250	6	2.40	33	13.20	0	0.00	201	2	1.00	32	15.92	0	0.00
LCM present	58	1	1.72	5	8.62	0	0.00	51	1	1.96	2	3.92	0	0.00
LCM absent	160	1	0.63	11	6.88	0	0.00	113	6	5.31	4	3.54	0	0.00
NA	136645	955	0.70	10864	7.95	62	0.05	123932	740	0.60	9454	7.63	767	0.62

CHAPTER 5
BREECH

CHAPTER 5 BREECH

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SUMMARY

The incidence of breech presentation in 2011 was 3.1% and in 2012 was 3.4 %. The rate of CS with breech presentation was 11.49 % in 2011 and 11.19 % in 2012 Birth asphyxia in vaginal breech delivery among babies of less than 1000gms was higher as compared to Caesarean breech deliveries. More than 80% of cases with breech presentation had no ECV.

5.1 INTRODUCTION

The incidence of breech deliveries was 3.1 % in 2011 and 3.4% in 2012 and this is similar to 2010 reported in the 2nd NOR report. Majority of the cases were delivered by CS. ECV is advocated to reduce the CS rates due to breech presentation. The data collected here may not be accurate since ECV is done between 36-37 weeks and may have come in labour in cephalic presentation and delivered vaginally.

5.2 PATIENT DERMOGRAPHICS

Breech presentation was common among OA (Peninsular Malaysia) in both the years. Breech presentation was higher with increasing age in both years hence increase in CS rates among women aged 45-50 years.

5.3 OUTCOMES

8.3% of breech less than 1000 grams were delivered vaginally in 2011 and 9.1% in 2012. Overall the incidence of breech with extremely low birth weight was 10.4 % in 2011 and 12.1 % in 2012. Further analysis need to be done to see if these babies were premature. Breech babies weighing less than 1000 grams had a poorer outcome in both the years. Babies weighing more than 2000 grams delivered either vaginally or by CS had a good outcome.

5.4 COMPLICATIONS

There were no births injuries reported for vaginal breech delivery and this was similar to the findings reported in NOR 2010 report. In both years slightly more than 5% of premature breech were delivered by CS.

11.8% in 2011 and 10.3% in 2012 of these babies died in utero and were delivered vaginally. Surprising to note that some of the breech with IUD were also delivered by CS. Further details need to be obtained before any conclusion can be made.

5.5 RECOMMENDATION

1. Accurate documentation of ECV by SDPs.
2. ECV to be offered to suitable patients.

5.6 REFERENCES

1. NOR report 2010

Table 5.1 Delivery by SDP 2011 and 2012

SDP	2011			2012		
	Total delivery	Breech		Total delivery	Breech	
	n	n	%	n	n	%
HTF Perlis	4,119	117	2.8	3,954	113	2.9
HSB Kedah	10,502	354	3.4	10,419	352	3.4
HPP	3,383	137	4.0	3,046	172	5.6
HRPB Perak	6,320	271	4.3	4,603	288	6.3
HTAR Selangor	12,477	430	3.4	12,212	417	3.4
HKL	11,868	412	3.5	11,995	405	3.4
HTJ Negeri Sembilan	4,886	108	2.2	6,273	171	2.7
Hospital Melaka	10,939	297	2.7	10,877	289	2.7
HSA Johor	12,641	433	3.4	12,466	427	3.4
HTAA Pahang	9,431	291	3.1	8,823	303	3.4
HSNZ Terengganu	12,181	410	3.4	12,945	392	3.0
HRPZ 11 Kelantan	13,220	380	2.9	11,096	298	2.7
HU Sarawak	9,941	342	3.4	1,522	52	3.4
HL Sabah	14,955	162	1.1	13,865	186	1.3
Total	136,863	4,144	3.1	124,096	3,865	3.4

Table 5.2 Breech delivery by ethnicity 2011 and 2012

Ethnicity	Total women who delivered	2011						Total women who delivered	2012					
		Vaginal Breech		Caesarean Breech		Total Breech			Vaginal Breech		Caesarean Breech		Total Breech	
	n	n	%	n	%	n	%	n	n	%	n	%	n	%
Malay	92,649	310	0.3	2,589	2.8	2,899	3.1	85,391	268	0.3	2,396	2.8	2,664	3.1
Chinese	8,428	21	0.2	276	3.3	297	3.5	7,417	20	0.3	293	4.0	313	4.2
Indian	6,400	26	0.4	162	2.5	188	2.9	6,128	23	0.4	155	2.5	178	2.9
Kadazan/ Dusun	4,003	8	0.2	41	1.0	49	1.2	3,685	2	0.1	62	1.7	64	1.7
Murut	345	0	0.0	7	2.0	7	2.0	262	1	0.4	3	1.1	4	1.5
Bajau	3,151	5	0.2	20	0.6	25	0.8	2,930	2	0.1	36	1.2	38	1.3
Iban	2,149	9	0.4	70	3.3	79	3.7	760	1	0.1	24	3.2	25	3.3
Melanau	123	0	0.0	2	1.6	2	1.6	38	1	2.6	1	2.6	2	5.3
Bidayuh	1,573	8	0.5	52	3.3	60	3.8	360	2	0.6	10	2.8	12	3.3
OA (Peninsular Malaysia)	909	1	0.1	39	4.3	40	4.4	748	3	0.4	54	7.2	57	7.6
Other indigenous group in Sabah & Sarawak	2,695	0	0.0	34	1.3	34	1.3	2,338	1	0.0	29	1.2	30	1.3
Foreigner	11,333	33	0.3	259	2.3	292	2.6	10,593	31	0.3	290	2.7	321	3.0
Others	1,209	10	0.8	32	2.6	42	3.5	1,467	1	0.1	27	1.8	28	1.9
NA	413	4	1.0	8	1.9	12	2.9	517	1	0.2	12	2.3	13	2.5
Total	135,380	435	0.3	3,591	2.7	4,026	3.0	122,634	357	0.3	3,392	2.8	3,749	3.1

Table 5.3 Breech delivery by age 2011 and 2012

Age	2011							2012						
	Total women who delivered	Vaginal Breech		Caesarean Breech		Total Breech		Total women who delivered	Vaginal Breech		Caesarean Breech		Total Breech	
	n	n	%	n	%	n	%	n	n	%	n	%	n	%
10-14	127	1	0.8	2	1.6	3	2.4	126	0	0.0	3	2.4	3	2.4
15-19	6,731	30	0.4	127	1.9	157	2.3	5,736	20	0.3	106	1.8	126	2.2
20-24	26,048	74	0.3	642	2.5	716	2.7	22,513	64	0.3	539	2.4	603	2.7
25-29	46,963	124	0.3	1,224	2.6	1,348	2.9	43,421	116	0.3	1,203	2.8	1,319	3.0
30-34	33,305	104	0.3	879	2.6	983	3.0	30,830	92	0.3	880	2.9	972	3.2
35-39	17,052	63	0.4	522	3.1	585	3.4	15,404	48	0.3	510	3.3	558	3.6
40-44	4,765	36	0.8	174	3.7	210	4.4	4,262	16	0.4	130	3.1	146	3.4
45-49	362	3	0.8	21	5.8	24	6.6	314	1	0.3	19	6.1	20	6.4
50-54	26	0	0.0	0	0.0	0	0.0	26	0	0.0	1	3.8	1	3.8
55-59	1	0	0.0	0	0.0	0	0.0	2	0	0.0	1	50.0	1	50.0
Total	135,380	435	0.3	3,591	2.7	4,026	3.0	122,634	357	0.3	3,392	2.8	3,749	3.1

Table 5.4 Breech delivery by Weight for 2011 and 2012

Weight	Total delivery	Vaginal Breech		Apgar score				Caesarean Breech		Apgar score			
				1min ≤7		5min ≤7				1min ≤7		5min ≤7	
		n	%	n	%	n	%	n	%	n	%	n	%
2011													
<1000	1,246	103	8.3	35	2.8	24	1.9	26	2.1	15	1.2	11	0.9
1001-1500	1,501	69	4.6	21	1.4	11	0.7	63	4.2	40	2.7	21	1.4
1501-2000	3,843	72	1.9	14	0.4	5	0.1	152	4.0	41	1.1	11	0.3
2001-2500	16,194	99	0.6	17	0.1	5	0.0	655	4.0	93	0.6	18	0.1
2501-3000	50,450	123	0.2	22	0.0	5	0.0	1,465	2.9	114	0.2	13	0.0
3001-3500	46,106	46	0.1	13	0.0	2	0.0	954	2.1	74	0.2	7	0.0
3501-4000	12,948	9	0.1	0	0.0	0	0.0	234	1.8	20	0.2	2	0.0
>4000	2,853	3	0.1	0	0.0	0	0.0	71	2.5	4	0.1	0	0.0
NA	1,722	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2012													
<1000	1,187	108	9.1	36	3.0	28	2.4	36	3.0	18	1.5	11	0.9
1001-1500	1,388	60	4.3	21	1.5	15	1.1	46	3.3	22	1.6	11	0.8
1501-2000	3,451	56	1.6	18	0.5	7	0.2	189	5.5	47	1.4	12	0.3
2001-2500	14,492	81	0.6	15	0.1	2	0.0	684	4.7	72	0.5	9	0.1
2501-3000	44,894	85	0.2	19	0.0	3	0.0	1,323	2.9	104	0.2	5	0.0
3001-3500	42,375	42	0.1	12	0.0	3	0.0	883	2.1	52	0.1	3	0.0
3501-4000	12,040	3	0.0	2	0.0	1	0.0	217	1.8	17	0.1	0	0.0
>4000	2,678	2	0.1	1	0.0	1	0.0	50	1.9	4	0.1	1	0.0
NA	1,591	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Table 5.5 Breech and incidence of ECV 2011 and 2012

	Vaginal Breech	ECV							
		Successful		Not Successful		NA		Not Done	
	n	n	%	n	%	n	%	n	%
2011	3,591	10	0.3	236	6.6	327	9.1	3,018	84.0
2012	3,392	5	0.1	201	5.9	412	12.1	2,774	81.8

Table 5.6: Vaginal Breech delivery in relation to complications 2011 and 2012

Complications of pregnancy and delivery	2011			2012		
	Total delivery	Vaginal Breech		Total delivery	Vaginal Breech	
		n	%		n	%
Congenital Abnormality	314	30	9.6	281	20	7.1
Prematurity	14,967	234	1.6	14,641	261	1.8
IUD	1,055	125	11.8	981	101	10.3
Genital tract trauma	29,244	86	0.3	27,821	84	0.3
Birth injuries	32	0	0.0	34	0	0.0
Total	45,612	475	1.0	43,758	466	1.1

Table 5.7: Caesarean Breech delivery in relation to complications 2011 and 2012

Complications of pregnancy and delivery	2011			2012		
	Total delivery	Caesarean Breech		Total delivery	Caesarean Breech	
		n	%		n	%
Congenital Abnormality	314	12	3.82	281	11	3.91
Prematurity	14,967	832	5.56	14,641	826	5.64
IUD	1,055	8	0.76	981	15	1.53
Birth injuries	32	1	3.13	34	0	-
Total	16,368	133	0.81	15,937	133	0.83

CHAPTER 6
STILLBIRTHS

CHAPTER 6 STILLBIRTHS

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SUMMARY

The stillbirth rate in 2011 was 6.85 per 1000 births and in 2012 the rates were slightly higher at 6.99 per 1000 births.

6.1 INTRODUCTION

Stillbirth is defined as birth of an infant with a birth weight equal to or more than 500gm (or 22 weeks of pregnancy if birth weight is not known) with no signs of life. Overall, the number of MSB were almost two fold more than FSB. The national stillbirth for 2010 was 4.5 per 1000 births. The rates from the 14 tertiary hospitals were higher and this is probably due to the fact that they are referral centres, and deal with high risk cases.

HKL recorded the highest stillbirth rates at 10.47 per 1000 births in 2011 and 10.19 per 1000 births in 2012 and these findings were similar to the findings from the previous 2 reports. HL Sabah had the lowest stillbirth rates at 2.95 per 1000 births in 2011 and HRPB Perak in 2012 at 4.36 per 1000 births.

6.2 PATIENT DERMOGRAPHICS

Women in the late 30's and beyond had increased incidence of stillbirth over the past few decades. As age increases beyond 40, the risk of stillbirth increases by 3 to 4 folds. This could be due to low uteroplacental perfusion caused by poor uterine vasculature in older women or chronic diseases, medical and obstetric complications experienced by these women .

The details of stillbirth among mothers of various ethnic groups in Malaysia is shown in Table 6.3. The highest stillbirth rate was seen among Orang Asli Peninsular Malaysia in 2011 and in the subsequent year it was higher in Bidayuhs at 16.17%. Among the 3 major ethnic groups, Indian mothers were found to have the highest stillbirth rates in both the years.

The stillbirth rate among mothers with hypertension was 16.94 per 1000 live birth as compared to diabetic mothers at 8.05 per 1000 live births in 2011 however in 2012 the rates were higher with diabetic mothers at 8.27 per 1000 live births and with hypertension in pregnancy the rates were 17.58 per 1000 live births. Pre-pregnancy counselling and optimization of these medical conditions may help to reduce stillbirth rates in women. Those diagnosed during pregnancy need close surveillance and good glycemic control.

6.3 STILLBIRTH AND RISK LEVEL AT BOOKING

Colour coding at antenatal booking according to the risks levels and their association with stillbirth is shown in table 6.5. The highest stillbirth rates were among mothers who were coded red which was 18.47 per 1000 births in 2011 and 17.58 per 1000 births in 2012.

6.4 STILLBIRTH AND BIRTHWEIGHT

The highest rate of stillbirths were among babies with a birth weight of less than 1000g followed by babies weighing 1000-1500g.Babies weighing more than 4000g had a stillbirth rate of 8.16 per 1000 births in 2011 and in 2012 stillbirth rates were 4.64 per 1000 births

6.5 CONCLUSION

The stillbirth rate of 6.85 per 1000 births in 2011 and 6.99 per 1000 births although higher than the national rate, has reduced compared to the rate of 7.60 per 1000 births in 2010. HKL had the highest rate whereas HL Sabah had the lowest. The Orang Asli Peninsular Malaysia had the highest stillbirth rate, which was similar to the previous report. Women with hypertensive disorders had twice the number of stillbirth as compared to Diabetes. Maternal age of above 40 and infants weighing less than 2kg are risk factors for stillbirth. Women who had been tagged red at booking are at risk of delivering a stillbirth infant.

6.6 RECOMMENDATIONS

1. More awareness should be created regarding prenatal assessment and counselling to optimize medical conditions before pregnancy.
2. Advice contraception or sterilization to women above 40 who are at high risk of having a stillbirth.
3. Provide more awareness and health education to the Indian and Orang Asli women about care during pregnancy and contraception.

6.7 REFERENCE

1. Huang L, Sauve R, Birkett N, Fergusson D, van Walraven C. Maternal age and risk of stillbirth: a systematic review. Cmaj. 2008;178(2):165-72. Epub 2008/01/16.

Table 6.1 Stillbirth rate from SDP 2011 and 2012

SDP	2011					2012				
	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 births	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 births
	n	n	n	n		*n*	*n*	*n*	n	
HTF Perlis	4,119	3	19	4,097	5.37	3,954	6	21	3,927	6.88
HSB Kedah	10,502	28	46	10,428	7.10	10,419	28	58	10,333	8.32
HPP	3,383	7	10	3,366	5.05	3,046	4	10	3,032	4.62
HRPB Perak	6,320	16	15	6,289	4.93	4,603	5	15	4,583	4.36
HTAR Selangor	12,477	35	63	12,379	7.92	12,212	41	59	12,112	8.26
HKL	11,868	46	77	11,745	10.47	11,995	24	97	11,874	10.19
HTJ Negeri Sembilan	4,886	5	15	4,866	4.11	6,273	12	20	6,241	5.13
Hospital Melaka	10,939	21	39	10,879	5.52	10,877	17	65	10,795	7.60
HSA Johor	12,641	33	76	12,532	8.70	12,466	34	60	12,372	7.60
HTAA Pahang	9,431	19	48	9,364	7.16	8,823	14	15	8,794	3.30
HSNZ Terengganu	12,181	27	79	12,075	8.78	12,945	33	84	12,828	9.12
HRPZ II Kelantan	13,220	14	90	13,116	7.93	11,096	17	45	11,034	5.62
HU Sarawak	9,941	21	35	9,885	5.67	1,522	3	7	1,512	6.61
HL Sabah	14,955	23	21	14,911	2.95	13,865	31	36	13,798	4.86
Total	136,863	298	633	135,932	6.85	124,096	269	592	123,235	6.99

Table 6.2 Distribution of stillbirth by age 2011 and 2012

Age	2011					2012				
	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 livebirth	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 livebirth
	n	n	n	n		n	n	n	n	
10-14	129	0	2	127	15.75	126	0	0	126	0.00
15-19	6,776	20	27	6,729	6.98	5,786	17	22	5,747	6.79
20-24	26,282	57	94	26,131	5.78	22,731	55	86	22,590	6.24
25-29	47,462	86	192	47,184	5.89	43,913	74	188	43,651	6.00
30-34	33,727	66	140	33,521	6.15	31,264	61	151	31,052	6.83
35-39	17,286	45	121	17,120	9.70	15,618	44	95	15,479	8.98
40-44	4,807	20	49	4,738	14.56	4,314	18	45	4,251	14.82
45-49	367	3	8	356	30.90	316	0	5	311	16.08
50-54	26	0	0	26	0.00	26	0	0	26	0.00
55-59	1	1	0	0	-	2	0	0	2	0.00
Total	136,863	298	633	135,932	6.85	124,096	269	592	123,235	6.99

Table 6.3 Distribution of stillbirth by ethnicity 2011 and 2012

Ethnicity	2011					2012				
	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 births	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 births
	n	n	n	n		n	n	n	n	
Malay	93,665	180	471	93,014	7.00	86,407	174	419	85,814	6.91
Chinese	8,572	16	30	8,526	5.40	7,552	17	30	7,505	6.26
Indian	6,477	29	37	6,411	10.29	6,218	21	49	6,148	11.39
Kadazan/ Dusun	4,048	7	9	4,032	3.97	3,718	10	3	3,705	3.51
Murut	349	3	0	346	8.67	263	0	1	262	3.82
Bajau	3,166	5	2	3,159	2.22	2,956	7	9	2,940	5.44
Iban	2,168	8	7	2,153	6.97	771	1	1	769	2.60
Melanau	123	0	0	123	0.00	38	0	0	38	0.00
Bidayuh	1,586	4	9	1,573	8.26	365	4	2	359	16.71
OA (Peninsular Malaysia)	924	6	6	912	13.16	761	1	7	753	10.62
Other indigenous group in Sabah & Sarawak	2,720	1	3	2,716	1.47	2,351	4	7	2,340	4.70
Foreigner	11,429	37	53	11,339	7.94	10,694	26	58	10,610	7.92
Others	1,221	0	3	1,218	2.46	1,481	3	6	1,472	6.11
NA	415	2	3	410	12.20	521	1	0	520	1.92
Total	136,863	298	633	135,932	6.85	124,096	269	592	123,235	6.99

Table 6.4 Stillbirth in relation to Diabetes and Hypertension

Medical disorders	2011					2012				
	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 births	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 births
	n	n	n	n		n	n	n	n	
Diabetes	11,899	19	76	11,804	8.05	10974	24	66	10,884	8.27
Pre-existing	957	2	14	941	17.00	747	9	6	732	20.49
Gestational	10,880	17	62	10,801	7.31	9,460	14	58	9,388	7.67
Hypertension	5,943	29	70	5,844	16.94	4,803	24	59	4,720	17.58
Pre-existing	1,060	6	15	1,039	20.21	805	3	14	788	21.57
Gestational	4,356	20	47	4,289	15.62	3,464	16	38	3,410	15.84
Pre-Eclampsia	950	4	19	927	24.81	799	6	11	782	21.74
Eclampsia	49	2	0	47	42.55	57	2	1	54	55.56

Table 6.5 Stillbirth rate in relation to risk levels at booking

Risk Level at Booking	2011					2012				
	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 births	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 births
	n	n	n	n		n	n	n	n	
Red	3,088	16	40	3,032	18.47	3,123	18	42	3,063	19.59
Yellow	14,560	30	81	14,449	7.68	18,915	38	97	18,780	7.19
Green	72,316	139	283	71,894	5.87	71,481	125	291	71,065	5.85
White II	4,997	7	29	4,961	7.26	7,118	13	16	7,089	4.09
White I	16,851	25	63	16,763	5.25	14,371	16	66	14,289	5.74
No Code	6,467	35	47	6,385	12.84	4,303	25	41	4,237	15.58
NA	18,584	46	90	18,448	7.37	4,785	34	39	4,712	15.49
Total	136,863	298	633	135,932	6.85	124,096	269	592	123,235	6.99

Table 6.6 Stillbirth rate in relation to birth weight

Birth Weight	2011					2012				
	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 births	Total delivery	FSB	MSB	Live birth	Stillbirth rate per 1000 births
	n	n	n	n		n	n	n	n	
< 1000	1,246	108	226	912	366.23	1,187	96	233	858	383.45
1000 - 1500	1,501	36	99	1,366	98.83	1,388	36	84	1,268	94.64
1501 - 2000	3,843	36	88	3,719	33.34	3,451	37	85	3,329	36.65
2001 - 2500	16,194	33	68	16,093	6.28	14,492	32	72	14,388	7.23
2501 - 3000	50,450	41	68	50,341	2.17	44,894	35	56	44,803	2.03
3001 - 3500	46,106	30	38	46,038	1.48	42,375	21	36	42,318	1.35
3501 - 4000	13,570	8	20	13,542	2.07	12,632	8	13	12,611	1.67
> 4000	3,953	6	26	3,921	8.16	3,677	4	13	3,660	4.64
Total	136,863	298	633	135,932	6.85	124,096	269	592	123,235	6.99

CHAPTER 7
PREMATURITY

CHAPTER 7 PREMATURITY

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SUMMARY

The incidence of preterm birth in 2011 and 2012 was 10.4 and 11.3 respectively and we see a rising trend from our previous reports. Main contributor to premature births were preeclampsia, eclampsia and heart disease with NYHA 111.It was more among the OA Peninsular Malaysia and Indian women and in women in their first pregnancy as well as in women who are para 6 and more.

7.1 INTRODUCTION.

HKL had the highest preterm births in 2010. In 2011 HKL had the highest preterm births at 14.2% and in 2012 HRPB Perak had the highest rate at 15.1%. HL Sabah had the lowest preterm birth rate for both years.

7.2 PATIENT DEMOGRAPHICS

Preterm births were higher in women in extremes of age. In 2011 preterm births was high in women aged 10-14 years at 20.2% and in 2012 in women aged 55 at 50%. Preterm births were high in women with parity 6 and more in both years. It was high among the OA Peninsular Malaysia followed by Indians in both the years. 28.9% of babies that were premature had weight less than 2000g in 2011 and there was a slight increase at 30.4% in 2012.

7.3 CONTRIBUTING FACTORS TO PRETERM DELIVERIES

The main contributing factor for prematurity was preeclampsia and eclampsia. In women with heart disease the premature deliveries were higher due to women's worsening cardiac status

7.4 MODE OF DELIVERY

Majority of the preterm deliveries were conducted by MOs with more than 6 months O&G experience followed by staff nurses and HOs. About one third of the preterm babies were delivered by CS.

7.5 OUTCOMES

Slightly less than 50% of the babies were admitted to NICU and the nursery for monitoring while the others were discharged to the mothers. There was fetal demise in 4% of these babies in 2011 and 4.4% in 2012.

7.6 CONCLUSION

Preventing preterm births is a challenge. The causes can be numerous and complex and not well understood. Prematurity is one of the major problems and it causes long term effects on the newborn. Two thirds of the babies were discharged to the mothers. To reduce preterm deliveries in adolescents and women above 40 years, women need access to contraception.

7.7 RECOMMENDATION

1. To prevent prematurity, women should be in good health before they embark on pregnancy and early antenatal care is important.
2. We should look into the association of smoking, drugs and assisted reproduction in relation prematurity in subsequent reports.

7.8 REFERRENCE

1. Green Top guideline No1b February 2011 RCOG.

Table 7.1: Total number of premature births for 2010 and 2012

Preterm birth	2010		2011		2012	
	n	%	n	%	n	%
Total preterm delivery	11,219	8.1	14,181	10.4	14,060	11.3
Total delivery	138,315	100.0	136,863	100.0	124,096	100.0

Graph 7.1: Percentage of preterm births 2010-2012

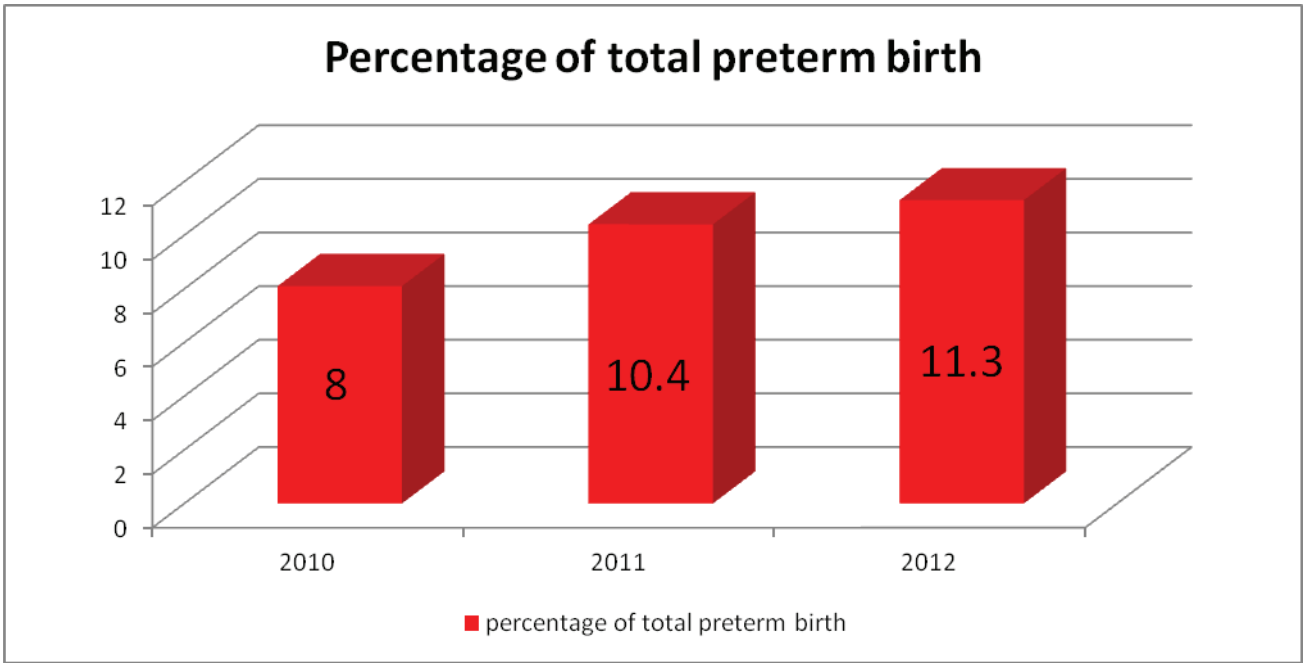

Table 7.2 Preterm delivery by SDP 2011 and 2012

SDP	2011			2012		
	Total delivery	Preterm delivery		Total delivery	Preterm delivery	
	n	n	%	n	n	%
HTF Perlis	4,119	496	12.0	3,954	413	10.4
HSB Kedah	10,502	783	7.5	10,419	1,261	12.1
HPP	3,383	390	11.5	3,046	353	11.6
HRPB Perak	6,320	748	11.8	4,603	695	15.1
HTAR Selangor	12,477	1,285	10.3	12,212	1,635	13.4
HKL	11,868	1,686	14.2	11,995	1,577	13.1
HTJ Negeri Sembilan	4,886	538	11.0	6,273	842	13.4
Hospital Melaka	10,939	1,030	9.4	10,877	1,187	10.9
HSA Johor	12,641	1,674	13.2	12,466	1,613	12.9
HTAA Pahang	9,431	1,220	12.9	8,823	432	4.9
HSNZ Terengganu	12,181	1,266	10.4	12,945	1,573	12.2
HRPZ 11 Kelantan	13,220	1,409	10.7	11,096	1,305	11.8
HU Sarawak	9,941	1,130	11.4	1,522	180	11.8
HL Sabah	14,955	526	3.5	13,865	994	7.2
Total	136,863	14,181	10.4	124,096	14,060	11.3

Table 7.3 Distribution of preterm deliveries by age and parity 2011 and 2012

Age	2011				2012			
	Total delivery		Preterm Delivery		Total delivery		Preterm Delivery	
	n	%	n	%	n	%	n	%
10-14	129	0.1	26	20.2	126	0.1	22	17.5
15-19	6,776	5.1	933	13.8	5,786	4.7	849	14.7
20-24	26,282	19.3	2,803	10.7	22,731	14.1	2,719	12.0
25-29	47,462	34.7	4,548	9.6	43,913	20.6	4,533	10.3
30-34	33,727	24.6	3,613	10.7	31,264	17.8	3,568	11.4
35-39	17,286	12.6	2,238	12.9	15,618	10.8	2,191	14.0
40-44	4,807	3.5	745	15.5	4,314	3.4	695	16.1
45-49	367	0.2	56	15.3	316	0.3	59	18.7
50-54	26	0.0	5	19.2	26	0.0	4	15.4
55-59	1	0.0	-	0.0	2	0.0	1	50.0
Parity								
1	46,573	34.0	5,051	10.8	43,121	34.7	5,268	12.2
2 - 5	82,133	60.0	7,939	9.7	74,266	59.8	8,177	11.0
≥ 6	7,940	5.8	992	12.5	6,626	5.3	989	14.9
NA	217	0.2	10	4.6	83	0.1	6	7.2

Table 7.4 Distribution of preterm delivery by ethnicity 2011 and 2012

Ethnicity	2011			2012		
	Total delivery	Preterm delivery		Total delivery	Preterm delivery	
	n	n	%	n	n	%
Malay	93,665	10,183	10.9	86,407	10,100	11.7
Chinese	8,572	896	10.5	7,552	870	11.5
Indian	6,477	893	13.8	6,218	892	14.3
Kadazan/ Dusun	4,048	171	4.2	3,718	283	7.6
Murut	349	12	3.4	263	21	8.0
Bajau	3,166	124	3.9	2,956	254	8.6
Melanau	123	9	7.3	38	2	5.3
Iban	2,168	286	13.2	771	101	13.1
Bidayuh	1,586	201	12.7	365	40	11.0
OA (Peninsular Malaysia)	924	175	18.9	761	117	15.4
Other indigenous group in Sabah & Sarawak	2,720	94	3.5	2,351	153	6.5
Foreigner	11,429	1,007	8.8	10,694	1,035	9.7
Others	1,221	93	7.6	1,481	141	9.5
NA	415	37	8.9	521	51	9.8

Table 7.5: Preterm delivery in relation to accoucher 2011 and 2012

Accoucher	2011			2012		
	Total delivery	Preterm delivery		Total delivery	Preterm delivery	
		n	%		n	%
Specialist	3,454	781	22.6	3,582	965	26.9
MO with > 6 months O&G experience	41,071	5,971	14.5	42,245	6,079	14.4
MO with < 6 months O&G experience	6,597	864	13.1	3,782	524	13.9
MO with no O&G experience	325	37	11.4	128	20	15.6
Staff Nurse	51,087	3,507	6.9	40,390	3,232	8.0
Community Nurse / Government Midwife / JD	16,061	1,173	7.3	17,388	1,377	7.9
Trained Traditional Birth Attendant	143	13	9.1	268	14	5.2
Untrained Traditional Birth Attendant	10	1	10.0	14	2	14.3
Unattended	136	20	14.7	117	19	16.2
Other MO	213	24	11.3	173	32	18.5
HO	12,454	1,245	10.0	12,919	1,473	11.4
Others	1,778	147	8.3	886	48	5.4
NA	3,534	398	11.3	2,204	275	12.5
Total	136,863	14,181	10.4	124,096	14,060	11.3

Table 7.6 Distribution of preterm in relation to medical disorders 2011 and 2012

Medical Problems	2011			2012		
	Total delivery	Total Preterm delivery		Total delivery	Total Preterm delivery	
	n	n	%	n	n	%
Diabetes	11,899	1,484	12.5	10,974	1,319	12.0
Pre-existing	957	151	15.8	747	131	17.5
Gestational	10,880	1,324	12.2	9,460	1,161	12.3
Hypertension	5,943	1,388	23.4	4,803	1,203	25.0
Pre-existing	1,060	238	22.5	805	193	24.0
Gestational	4,356	970	22.3	3,464	849	24.5
PIH without Proteinuria	2,995	488	16.3	2,365	375	15.9
Pre-Eclampsia	950	414	43.6	799	407	50.9
Eclampsia	49	26	53.1	57	22	38.6
Chronic HPT with superimpose PE	407	153	37.6	305	139	45.6
Unclassified	49	12	24.5	36	6	16.7
Heart Disease	907	135	14.9	689	117	17.0
NYHA I	518	56	10.8	379	52	13.7
NYHA II	113	25	22.1	82	17	20.7
NYHA III	17	9	52.9	12	5	41.7
NYHA IV	1	1	100.0	4	0	0.0
TB	77	13	16.9	73	14	19.2
Blood Disorder	1,079	128	11.9	987	105	10.6
Collagen Disease	5	2	40.0	2	0	0.0
Asthma	2,443	306	12.5	2,074	245	11.8
Renal Disease	37	17	45.9	46	25	54.3
Others	3,140	428	13.6	2,695	324	12.0

Table 7.7 Birth weight and preterm delivery 2011 and 2012

Birth weight	2011		2012	
	n	%	n	%
≤ 1000	768	5.4	820	5.8
1001 - 1500	1,100	7.8	1,120	8.0
1501 - 2000	2,230	15.7	2,330	16.6
2001 - 2500	3,763	26.5	3,971	28.2
2501 - 3000	3,865	27.3	3,654	26.0
3001 - 3500	1,741	12.3	1,554	11.1
3501 - 4000	414	2.9	341	2.4
≥ 4001	300	2.1	270	1.9

Table 7.8 Mode of delivery and preterm delivery 2011 and 2012

Delivery Type	2011			2012		
	Total delivery	Preterm delivery		Total delivery	Preterm delivery	
	n	n	%	n	n	%
Vaginal	96,858	8,457	59.6	86,825	8,473	60.3
SVD	96,310	8,217	57.9	86,079	8,182	58.2
Breech	525	234	1.7	437	261	1.9
Not Available	24	6	0.0	16	3	0.0
Instrumental	4,943	238	1.7	4,616	236	1.7
Forceps	567	43	0.3	437	38	0.3
Vacuum	4,384	196	1.4	4,183	198	1.4
Caesarean	32,036	5,107	36.0	31,122	5,145	36.6
Classical	133	32	0.2	139	42	0.3
Hysterotomy	17	8	0.1	22	16	0.1
LSCS	31,816	5,050	35.6	30,928	5,079	36.1
Others	19	8	0.1	15	8	0.1
NA	3,007	371	2.6	1,518	198	1.4

Table 7.9 Preterm outcome 2011 and 2012

Outcome	2011			2012		
	Total delivery	Total Preterm delivery		Total delivery	Total Preterm delivery	
	n	n	%	n	n	%
Mother	105,680	6,572	46.3	93,305	6,281	44.7
Admitted to NICU	10,503	3,432	24.2	10,556	3,580	25.5
Nursery	16,355	3,210	22.6	17,136	3,304	23.5
Mortuary	1,003	566	4.0	938	621	4.4
NA	3,322	401	12.1	2,161	274	12.7
Total	136,863	14,181	100	124,096	14,060	100

CHAPTER 8
ANAEMIA

CHAPTER 8 ANAEMIA

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SUMMARY

Anaemia at booking was 22.1% in 2009 and 29.03% in 2010, 2011 and 2012, there was a marked increase of anaemia at booking at 65.1% and 66.9% respectively and at delivery the rate reduced to 24.3% and 25.2% respectively. Indigenous groups had the highest rate of anaemia. The incidence of anaemia was higher among women in ages 25-29 years and in women para 5 and below in both years.

8.1 INTRODUCTION

WHO classification for anemia is haemoglobin <11g/ dL. The prevalence of anaemia in pregnancy varies considerably because of differences in socioeconomic conditions, lifestyles across different cultures. The most common causes of anaemia are poor nutrition and iron deficiency.

8.2 PATIENT DERMOGRAPHICS

There was a marked increase of anaemia in pregnancy across all centers when compared to data from 2010. We cannot explain the sudden increase seen in 2011 and 2012. We postulate that the implementation of compulsory data fields in the NOR has increased the detection rate. It may also be due to increasing awareness, that anemia is diagnosed when the haemoglobin was <11g/dl and not as <10g/dl as previously practiced.

The centers with the highest incidence of anaemia at booking in 2011 was HSB Kedah and in 2012 was HSNZ Terengganu. Anaemia incidence in HTF, Perlis for both years didn’t improve at delivery.

Bidayuh women had the highest rate of anaemia at booking in both years. Bajau women had the highest rate of anaemia at delivery in 2011 while other indigenous group in Sabah and Sarawak had the highest rate of anaemia in 2012. The lower socio-economic background, poor dietary intake and lack of access to health care providers

may explain the high incidence rate among the indigenous groups in Sabah and Sarawak.

The distribution of anaemia among different age groups is fairly constant.. Primigravida had the highest incidence of anaemia at booking in both 2011 and 2012 but at delivery this was reduced to 25.2% in 2011 and 26.3% in 2012.

8.3 OUTCOMES

Anaemia is a risk factor for PPH. Approximately 32% of patients who had PPH were anaemic at delivery in 2011 and in 2012 approximately 34% women who had PPH were anaemic at delivery. 63.5% of women in 2011 and 62.2% in 2012 who went into preterm labour were anemic at booking

8.4 CONCLUSIONS

In both years the incidence of anaemia was higher as compared to 2010. Indigenous groups had the highest rate of anaemia incidence of anaemia by age groups and parity was not significant.

8.5 RECOMMENDATION

1. Anaemia should be corrected before a women embarks on her next pregnancy. Counselling should be given to all women during their postnatal follow up.

8.6 REFERENCE

1. Antenatal care: routine care for the healthy pregnant woman, NICE Clinical Guideline (March 2008)
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Table 8.1 Distribution of anaemia at booking and at delivery by SDP 2011 and 2012

SDP	2011					2012				
	Total women who delivered	Anaemia at booking		Anaemia at delivery		Total women who delivered	Anaemia at booking		Anaemia at delivery	
	n	n	%	n	%	n	n	%	n	%
HTF, Perlis	4,087	2,835	69.4	2,935	71.8	3,920	2,748	70.1	2,938	74.9
HSB,Kedah	10,396	7,815	75.2	3,074	29.6	10,307	7,725	74.9	2,650	25.7
HPP	3,336	2,148	64.4	1,936	58.0	3,010	1,964	65.2	1,559	51.8
HRPB, Perak	6,217	4,077	65.6	2,111	34.0	4,507	3,076	68.2	1,944	43.1
HTAR, Selangor	12,351	7,398	59.9	1,650	13.4	12,056	7,441	61.7	1,333	11.1
HKL	11,729	6,889	58.7	4,488	38.3	11,843	7,138	60.3	4,544	38.4
Hospital Melaka	10,833	7,327	67.6	2,973	27.4	10,746	7,279	67.7	3,128	29.1
HTJ, Negeri Sembilan	4,841	3,241	66.9	390	8.1	6,192	4,290	69.3	325	5.2
HSA, Johor	12,467	8,235	66.1	114	0.9	12,295	8,364	68.0	22	0.2
HTAA, Pahang	9,333	6,705	71.8	2,137	22.9	8,728	6,071	69.6	719	8.2
HSNZ, Terengganu	12,019	8,911	74.1	3,788	31.5	12,803	9,692	75.7	4,184	32.7
HRPZ II, Kelantan	13,066	8,835	67.6	1,227	9.4	10,955	7,492	68.4	1,066	9.7
HU, Sarawak	9,854	7,234	73.4	556	5.6	1,513	1,012	66.9	63	4.2
HL, Sabah	14,851	6,459	43.5	5,464	36.8	13,759	7,751	56.3	6,394	46.5
Total	135,380	88,109	65.1	32,843	24.3	122,634	82,043	66.9	30,869	25.2

Table 8.2 Distribution of anaemia at booking and at delivery by ethnicity 2011 and 2012

Ethnicity	2011					2012				
	Total women who delivered	Anaemia at booking		Anaemia at delivery		Total women who delivered	Anaemia at booking		Anaemia at delivery	
	n	n	%	n	%	n	n	%	n	%
Malay	92,649	64,303	69.4	22,223	24.0	85,391	59,795	70.0	20,054	23.5
Chinese	8,428	5,657	67.1	1,656	19.6	7,417	4,988	67.3	1,457	19.6
Indian	6,400	3,439	53.7	1,282	20.0	6,128	3,416	55.7	1,078	17.6
Kadazan/ Dusun	4,003	1,773	44.3	1,431	35.7	3,685	2,056	55.8	1,613	43.8
Murut	345	135	39.1	104	30.1	262	146	55.7	110	42.0
Bajau	3,151	1,445	45.9	1,155	36.7	2,930	1,582	54.0	1,237	42.2
Iban	2,149	1,570	73.1	225	10.5	760	531	69.9	99	13.0
Melanau	123	82	66.7	13	10.6	38	23	60.5	10	26.3
Bidayuh	1,573	1,165	74.1	128	8.1	360	254	70.6	44	12.2
OA (Peninsular Malaysia)	909	552	60.7	199	21.9	748	445	59.5	112	15.0
Other indigenous group in Sabah & Sarawak	2,695	1,210	44.9	981	36.4	2,338	1,487	63.6	1,251	53.5
Foreigner	11,333	5,868	51.8	2,958	26.1	10,593	6,139	58.0	3,116	29.4
Others	1,209	716	59.2	423	35.0	1,467	864	58.9	582	39.7
NA	413	194	47.0	65	15.7	517	317	61.3	106	20.5
Total	135,380	88,109	65.1	32,843	24.3	122,634	82,043	66.9	30,869	25.2

Graph 8.1: Anaemia at booking and Anaemia at delivery 2011 and 2012

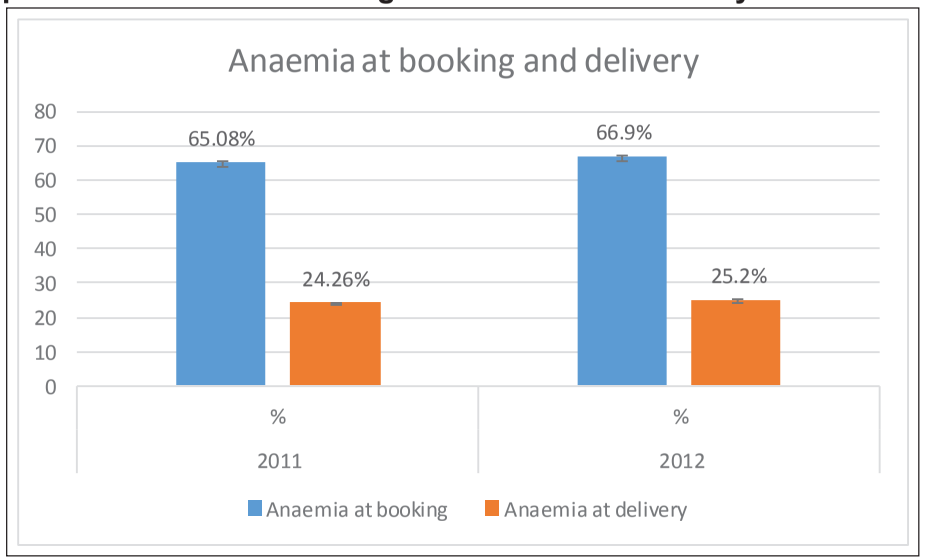

Table 8.3 Anaemia at booking and at delivery by Parity 2011 and 2012

Parity	2011					2012				
	Total women who delivered	Anaemia at booking		Anaemia at delivery		Total women who delivered	Anaemia at booking		Anaemia at delivery	
	n	n	%	n	%	n	n	%	n	%
1	46,158	30,429	65.9	11,652	25.2	42,679	28,965	67.9	11,216	26.3
2 - 5	81,166	53,138	65.5	19,542	24.1	73,336	49,318	67.2	18,169	24.8
≥ 6	7,840	4,440	56.6	1638	20.9	6,537	3,726	57.0	1472	22.5
NA	216	102	47.2	11	5.1	82	34	41.5	12	14.6
Total	135,380	88,109	65.1	32,843	24.3	122,634	82,043	66.9	30,869	25.2

Table 8.4 Distribution of anaemia at booking and at delivery by age 2011 and 2012

Age	2011					2012				
	Total women who delivered	Anaemia at booking		Anaemia at delivery		Total women who delivered	Anaemia at booking		Anaemia at delivery	
	n	n	%	n	%	n	n	%	n	%
10-14	127	59	46.5	24	18.9	126	49	38.9	29	23.0
15-19	6,731	3,278	48.7	1,361	20.2	5,736	2,807	48.9	1,249	21.8
20-24	26,048	16,165	62.1	6,119	23.5	22,513	14,415	64.0	5,701	25.3
25-29	46,963	32,228	68.6	11,962	25.5	43,421	30,520	70.3	11,309	26.0
30-34	33,305	22,200	66.7	8,098	24.3	30,830	21,220	68.8	7,644	24.8
35-39	17,052	11,013	64.6	4,055	23.8	15,404	10,136	65.8	3,780	24.5
40-44	4,765	2,944	61.8	1,121	23.5	4,262	2,689	63.1	1,060	24.9
45-49	362	207	57.2	96	26.5	314	189	60.2	83	26.4
50-54	26	14	53.8	7	26.9	26	16	61.5	12	46.2
55-59	1	1	100.0	0	0.0	2	2	100.0	2	100.0
Total	135,380	88,109	65.1	32,843	24.3	122,634	82,043	66.9	30,869	25.2

Table 8.5 Distribution of anaemia at booking and at delivery by mode of delivery 2011 and 2012

Mode of Delivery	2011					2012				
	Total women who delivered	Anaemia at booking		Anaemia at delivery		Total women who delivered	Anaemia at booking		Anaemia at delivery	
	n	n	%	n	%	n	n	%	n	%
Vaginal	96,272	61,997	64.4	21,811	22.7	86,219	57,257	66.4	20,923	24.3
SVD	95,815	61,720	64.4	21,727	22.7	85,560	57,189	66.8	20,727	24.2
Breech	434	257	59.2	80	18.4	357	272	76.2	62	17.4
NA	23	20	87.0	4	17.4	16	9	56.3	2	12.5
Instrumental	4,923	3,290	66.8	931	18.9	4,589	3,178	69.3	833	18.2
Vacuum	4,366	2,932	67.2	849	19.4	4,160	2,903	69.8	767	18.4
Forceps	565	365	64.6	86	15.2	433	278	64.2	67	15.5
Caesarean	31,241	20,902	66.9	9,548	30.6	30,325	20,579	67.9	8,932	29.5
Classical	130	92	70.8	46	35.4	132	82	62.1	57	43.2
Hysterotomy	17	9	52.9	3	17.6	22	12	54.5	8	36.4
LSCS	31,029	20,768	66.9	9,488	30.6	30,138	20,464	67.9	8,863	29.4
Others	8	3	37.5	2	25.0	10	6	60.0	2	20.0
NA	2944	1920	65.2	553	18.8	1501	1029	68.6	181	12.1
Total	135,380	88,109	65.1	32,843	24.3	122,634	82,043	66.9	30,869	25.2

Table 8.6 Distribution of anaemia at booking and at delivery and complications of delivery 2011 and 2012

Complications	2011					2012				
	Total women who delivered	Anaemia at booking		Anaemia at delivery		Total women who delivered	Anaemia at booking		Anaemia at delivery	
	n	n	%	n	%	n	n	%	n	%
PPH < 1500 mls	548	372	67.9	180	32.8	443	318	71.8	151	34.1
PPH ≥ 1500 mls	196	132	67.3	64	32.7	118	76	64.4	42	35.6
IUGR	826	551	66.7	217	26.3	798	504	63.2	198	24.8
Prematurity	14,181	8,998	63.5	3,273	23.1	14,060	8,746	62.2	3,186	22.7
Fetal Demise	1,010	286	28.3	67	6.6	1,010	286	28.3	67	6.6

Table 8.7 Distribution of anaemia at booking and at delivery and Apgar scores 2011 and 2012

Apgar score	2011					2012				
	Total delivery	Anaemia at booking		Anaemia at delivery		Total delivery	Anaemia at booking		Anaemia at delivery	
	n	n	%	n	%	n	n	%	n	%
Apgar at 1 min										
≤ 7	8,281	5,233	63.2	2,223	26.8	6,705	4,456	66.5	1,739	25.9
> 7	123,984	80,680	65.1	29,813	24.0	115,305	77,140	66.9	29,112	25.2
NA	4,598	3,091	67.2	1,137	24.7	2,086	1,352	64.8	389	18.6
Apgar at 5 min										
≤ 7	2,587	1,443	55.8	721	27.9	1,733	1,124	64.9	432	24.9
> 7	128,874	83,910	65.1	31,200	24.2	120,203	80,421	66.9	30,407	25.3
NA	5,402	3,651	67.6	1,252	23.2	2,160	1,403	65.0	401	18.6

CHAPTER 9

HYPERTENSIVE DISORDERS IN PREGNANCY

CHAPTER 9 HYPERTENSIVE DISORDERS IN PREGNANCY

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SUMMARY

The incidence of HDP is 4.31% in 2011 and 3.83% in 2012 from the tertiary hospitals. Gestational Hypertension is the commonest type of hypertension in pregnancy.

9.1 INTRODUCTION

From 1997-2008 the average incidence of HDP related maternal death is 13.6%. It is the 4th leading cause of maternal mortality in Malaysia. It encompasses pre-existing hypertension, gestational hypertension and chronic hypertension with superimposed pre-eclampsia. These conditions range in severity from a mild increase in blood pressure to multisystem involvement. Therefore strategies and management is crucial to improve the maternal and fetal outcome.

The incidence of HDP in 2011 was 4.31% and in 2012 it was slightly lower at 3.83%. In both years, HRPB, Perak had the highest incidence of HDP.

9.2 PATIENT DERMOGRAPHICS

The mean age of patient with HDP was 28.6 years old in 2011 and 2012. Pre-existing hypertension and Gestational hypertension incidence was high in Malay women and in women aged 40 and more in both years.

9.3 MODE OF DELIVERY

The commonest mode of delivery in preexisting hypertension and Gestational hypertension in both years was CS.

9.4 OUTCOMES

Eclampsia was the commonest complication at 3.26% in 2011 and 3.24% in 2012 respectively, followed by postpartum haemorrhage at 1.40% in 2011 and 0.83 % in 2012. Incidence of abruption placenta in 2012 was 1.08%

Intrauterine growth restriction was the commonest fetal complication for hypertensive disorders in pregnancy at 20.34% in 2011 & 15.29% in 2012 followed by prematurity at 9.60% in 2011 and 8.31% in 2012. The stillbirth rate in women with hypertensive disorder is 16.94 per 1000 live births in 2011 and 17.58 per 1000 live births in 2012.
In 2011, there was a higher incidence of fetal birthweight ranging 1001-1500 grams in women with preexisting and gestational hypertension. Babies of mothers with preexisting hypertension contributed to 1.24% of all low Apgar score ≤ 7 in 2011 and 1.00% in 2012. In 2011, babies of mothers with gestational hypertension contributed to 4.41% of all low Apgar score whilst in 2012 the incidence was 4.97%.

9.5 CONCLUSIONS

Gestational hypertension is the commonest type of Hypertensive disorder in Pregnancy. Hypertensive disorders was common in Malays followed by Chinese. Majority of babies were delivered with good Apgar score. The commonest fetal complication was intrauterine growth restriction followed by prematurity. There was a higher incidence of birth weight ranging from 1001 gm to 1500gm. Eclampsia remained the commonest maternal complication .

9.6 RECOMMENDATION

1. Early detection and optimal treatment for HDP plays a vital role in reducing both maternal and fetal morbidity and mortality.

9.7 REFERENCES

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Table 9.1 Incidence of HDP by SDP 2011 and 2012

SDP	2011			2012		
	Total women who delivered	n	%	Total women who delivered	n	%
HTF, Perlis	4,087	151	3.69	3,920	123	3.14
HSB,Kedah	10,396	431	4.15	10,307	366	3.55
HPP	3,336	57	1.71	3,010	44	1.46
HRPB, Perak	6,217	475	7.64	4,507	312	6.92
HTAR, Selangor	12,351	483	3.91	12,056	504	4.18
HKL	11,729	526	4.48	11,843	444	3.75
HTJ, Negeri Sembilan	4,841	201	4.15	6,192	240	3.88
Hospital Melaka	10,833	455	4.20	10,746	410	3.82
HSA,Johor	12,467	767	6.15	12,295	559	4.55
HTAA, Pahang	9,333	603	6.46	8,728	462	5.29
HSNZ, Terengganu	12,019	634	5.27	12,803	633	4.94
HRPZ11,Kelantan	13,066	475	3.64	10,955	386	3.52
HU,Sarawak	9,854	466	4.73	1,513	69	4.56
HL,Sabah	14,851	106	0.71	13,759	143	1.04
Total	135,380	5830	4.31	122,634	4695	3.83

Table 9.2 Type of HDP from 2011 and 2012

Type of hypertensive disorder	2011		2012	
	n	%	n	%
Pre-existing	1082	18.56	824	17.55
Gestational	4238	72.69	3354	71.44
PIH without proteinuria	3127	53.64	2431	51.78
Pre-eclampsia	921	15.80	771	16.42
Eclampsia	190	3.26	152	3.24
Chronic hypertension with superimposed pre-eclampsia	390	6.69	294	6.26
Unclassified	49	0.84	34	0.72
NA	71	1.22	189	4.03

Table 9.3 HDP by ethnicity from 2011 and 2012

Ethnicity	Total women who delivered	Pre-existing		Gestational		Chronic hypertension with superimposed PE		Unclassified		NA	
2011	**n**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Malay	92,649	864	0.93	3,347	3.61	306	0.33	38	0.04	58	0.06
Chinese	8,428	58	0.69	255	3.03	27	0.32	2	0.02	3	0.04
Indian	6,400	35	0.55	149	2.33	15	0.23	2	0.03	2	0.03
Other indigenous group in Sabah & Sarawak	14,948	71	0.47	253	1.69	22	0.15	5	0.03	5	0.03
Foreigner	12,955	54	0.42	234	1.81	20	0.15	2	0.02	3	0.02
2012											
Malay	85391	631	0.74	2711	3.17	250	0.29	31	0.04	167	0.20
Chinese	7417	61	0.82	188	2.53	9	0.12	0	0.00	8	0.11
Indian	6128	20	0.33	110	1.80	9	0.15	1	0.02	1	0.02
Other indigenous group in Sabah & Sarawak	11121	56	0.50	137	1.23	6	0.05	1	0.01	4	0.04
Foreigner	12577	56	0.45	208	1.65	20	0.16	1	0.01	9	0.07

Table 9.4 HDP in relation to Parity 2011 and 2012

Parity	Total women who delivered	Pre-existing		Gestational		Chronic hypertension with superimposed PE		Unclassified		NA	
2011	**n**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
1	46,158	287	0.62	1,353	2.93	104	0.23	12	0.03	23	0.05
2-5	81,166	653	0.80	2,460	3.03	235	0.29	33	0.04	37	0.05
≥ 6	7,840	142	1.81	421	5.37	51	0.65	4	0.05	11	0.14
NA	216	0	0.00	4	1.85	0	0.00	0	0.00	0	0.00
2012											
1	42679	218	0.51	1089	2.55	82	0.19	10	0.02	55	0.13
2-5	73336	527	0.72	1944	2.65	171	0.23	19	0.03	120	0.16
≥ 6	6537	78	1.19	320	4.90	41	0.63	5	0.08	14	0.21
NA	82	1	1.22	1	1.22	0	0.00	0	0.00	0	0.00

Table 9. 5 HDP in relation to Age 2011 and 2012

Age	Total women who delivered	Pre-existing		Gestational		Chronic hypertension with superimposed PE		Unclassified		NA	
2011	**n**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
10-14	127	1	0.79	1	0.79	0	0.00	0	0.00	0	0.00
15-19	6,731	13	0.19	92	1.37	6	0.09	0	0.00	1	0.01
20-24	26,048	97	0.37	430	1.65	27	0.10	5	0.02	7	0.03
25-29	46,963	242	0.52	1,132	2.41	84	0.18	17	0.04	18	0.04
30-34	33,305	310	0.93	1,176	3.53	103	0.31	7	0.02	20	0.06
35-39	17,052	284	1.67	983	5.76	121	0.71	13	0.08	18	0.11
40-44	4,765	123	2.58	387	8.12	44	0.92	7	0.15	7	0.15
45-49	362	11	3.04	33	9.12	4	1.10	0	0.00	0	0.00
50-54	26	1	3.85	3	11.54	1	3.85	0	0.00	0	0.00
55-59	1	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00
2012											
10-14	126	0	0	4	3.17	0	0.00	0	0.00	0	0.00
15-19	5736	7	0.12	64	1.12	6	0.10	2	0.03	2	0.03
20-24	22513	61	0.27	327	1.45	21	0.09	2	0.01	11	0.05
25-29	43421	183	0.42	920	2.12	53	0.12	7	0.02	51	0.12
30-34	30830	243	0.79	964	3.13	90	0.29	11	0.04	58	0.19
35-39	15404	231	1.50	719	4.67	77	0.50	11	0.07	50	0.32
40-44	4262	87	2.04	338	7.93	41	0.96	1	0.02	17	0.40
45-49	314	11	3.50	18	5.73	6	1.91	0	0.00	0	0.00
50-54	26	1	3.85	0	0.00	0	0.00	0	0.00	0	0.00
55-59	2	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

Table 9.6 Mode of Delivery among HDP 2011 and 2012

Mode of Delivery	Total women who delivered	Pre-existing		Gestational		Chronic hypertension with superimposed PE		Unclassified		NA	
2011	**n**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
SVD	95815	451	0.47	2151	2.24	128	0.13	28	0.03	38	0.04
Breech	435	6	1.38	16	3.68	2	0.46	0	0.00	0	0.00
Vacuum	4366	43	0.98	116	2.66	14	0.32	2	0.05	2	0.05
Forceps	565	0	0.00	16	2.83	1	0.18	0	0.00	0	0.00
CS	31241	466	1.49	1863	5.96	234	0.75	19	0.06	28	0.09
NA	2944	26	0.88	76	2.58	11	0.37	0	0.00	3	0.10
2012											
SVD	85560	380	0.44	1615	1.89	100	0.12	17	0.02	98	0.11
Breech	357	1	0.28	16	4.48	2	0.56	1	0.28	0	0.00
Vacuum	4160	17	0.41	125	3.00	6	0.14	1	0.02	7	0.17
Forceps	433	3	0.69	14	3.23	2	0.46	0	0.00	1	0.23
CS	30325	411	1.36	1539	5.08	179	0.59	14	0.05	80	0.26
NA	1501	11	0.73	44	2.93	5	0.33	1	0.07	1	0.07

Table 9.7 HDP in relation to fetal weight 2011 and 2012

Birth weight	Total women who delivered	Pre-existing		Gestational		Chronic hypertension with superimposed PE		Unclassified		NA	
2011	**n**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
≤1000	1246	27	2.17	91	7.30	18	1.44	2	0.16	1	0.08
1001 - 1500	1501	38	2.53	181	12.06	51	3.40	2	0.13	1	0.07
1501 - 2000	3843	64	1.67	288	7.49	47	1.22	2	0.05	2	0.05
2001 - 2500	16194	163	1.01	698	4.31	82	0.51	7	0.04	12	0.07
2501 - 3000	50450	358	0.71	1,413	2.80	100	0.20	15	0.03	24	0.05
3001 - 3500	46106	293	0.64	1,106	2.40	59	0.13	13	0.03	19	0.04
3501 - 3999	12948	109	0.84	358	2.76	34	0.26	6	0.05	6	0.05
≥4000	2853	55	1.93	181	6.34	9	0.32	2	0.07	6	0.21
2012											
≤1000	1187	25	2.11	78	6.57	19	1.60	0	0.00	2	0.17
1001 - 1500	1388	25	1.80	139	10.01	29	2.09	1	0.07	8	0.58
1501 - 2000	3451	69	2.00	266	7.71	42	1.22	2	0.06	14	0.41
2001 - 2500	14492	149	1.03	586	4.04	58	0.40	5	0.03	28	0.19
2501 - 3000	44,894	277	0.62	1058	2.36	74	0.16	12	0.03	64	0.14
3001 - 3500	42,375	212	0.50	871	2.06	46	0.11	9	0.02	52	0.12
3501 - 3999	12,040	65	0.54	278	2.31	19	0.16	4	0.03	16	0.13
≥4000	2,678	28	1.05	151	5.64	11	0.41	2	0.07	9	0.34

Table 9.8 Apgar score and HDP in 2011 and 2012

Apgar Score 2011	Total delivery	Pre-existing		Gestational		Chronic hypertension with superimposed PE		Unclassified		NA	
Apgar scoreat 1 min	**n**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
≤ 7	8,281	103	1.24	365	4.41	57	0.69	2	0.02	9	0.11
>7	123,984	931	0.75	3755	3.03	326	0.26	44	0.04	58	0.05
NA	4,598	73	1.59	196	4.26	17	0.37	3	0.07	4	0.09
Apgar score at 5 min											
≤ 7	2,587	24	0.93	79	3.05	18	0.70	0	0.00	1	0.04
> 7	128,874	1005	0.78	4011	3.11	361	0.28	44	0.03	65	0.05
NA	5,402	78	1.44	226	4.18	21	0.39	5	0.09	5	0.09
2012											
Apgar score at 1 min											
≤ 7	6705	67	1.00	333	4.97	43	0.64	1	0.01	8	0.12
> 7	115305	757	0.66	3009	2.61	244	0.21	33	0.03	183	0.16
NA	2086	26	1.25	85	4.07	11	0.53	1	0.05	2	0.10
Apgar score at 5 min											
≤ 7	1733	21	1.21	90	5.19	14	0.81	0	0.00	3	0.17
> 7	120203	802	0.67	3243	2.70	272	0.23	34	0.03	187	0.16
NA	2,160	27	1.25	94	4.35	12	0.56	1	0.05	3	0.14

Table 9.9 Fetal Complications in HDP 2011 and 2012

Fetal outcome	2011			2012		
	Total delivery	n	%	Total delivery	n	%
1. Prematurity	13992	1343	9.60	14440	1200	8.31
2. Intrauterine growth restriction	826	168	20.34	798	122	15.29
3. Intrauterine death						
- FSB	250	21	8.40	201	18	8.96
- MSB	463	35	7.56	410	32	7.80

Table 9.10 Maternal complications in HDP 2011 and 2012

Complications	2011	%	2012	%
1. Abruptio placenta	31	0.52	52	1.08
2. Pulmonary embolism	6	0.10	1	0.02
3. Post-partum hemorrhage	83	1.40	40	0.83
4. DIVC	0	0.00	0	0.00
5.Pulmonary oedema	4	0.07	8	0.17
6.Maternal collapse	4	0.07	0	0.00

CHAPTER 10

HEART DISEASE IN PREGNANCY

CHAPTER 10: HEART DISEASE IN PREGNANCY

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SUMMARY

Heart disease in pregnancy was captured in general as acquired, congenital, IHD and unknown causes in this report. There were 2 maternal deaths due to heart disease in pregnancy during the study period.

10.1 INTRODUCTION

CEMD reports have shown that maternal deaths due to heart diseases is the main non obstetric cause of maternal mortality in Malaysia. From NOR we have captured one maternal death in 2011 and another in 2012 due to heart disease. The prevalence of heart disease in pregnancy from the tertiary hospitals in 2011 was 0.68% and in 2012 was 0.57%. HSNZ, Terengganu had the highest prevalence in both years.

10.2 PATIENT DERMOGRAPHICS

In 2012 the prevalence was high among the OA (Peninsular Malaysia) and Bidayuh at 1.20% and 1.11% respectively. Acquired heart disease was higher among women aged 40-44 years in 2011 whilst in 2012 it was higher in women aged 45-49 yrs. IHD was common in women aged 40-44 years in both years. Women who were para≥ 6 had a higher prevalence of acquired heart disease and IHD during the study period.

10.3 OUTCOMES

There were no reported case of women with cardiogenic shock, thromboembolism in 2011 and 2012 .The popular mode of delivery was instrumental delivery.

10.4 CONCLUSION

Heart disease in pregnancy prevalence was higher among OA (Peninsular Malaysia) and Bidayuh ethnic group in 2012.Women aged 40-49years and para more than 6 had a higher prevalence of acquired heart disease and IHD during the study period.

10.5 RECOMMENDATION

1. Involvement of cardiologist and anaesthetist in managing women with cardiac disease.
2. Implementation of pre conception clinics
3. In subsequent reports to capture the different types of heart disease complicating Pregnancy

10.6 REFERRENCES

1. CEMB 2006-2008

Table 10.1 Heart disease by SDP in 2011 and 2012

SDP	Total women who delivered		Heart disease in pregnancy			
	2011	2012	2011	%	2012	%
HTF, Perlis	4,087	3,920	29	0.71	23	0.59
HSB, Kedah	10,396	10,307	123	1.18	98	0.95
HPP	3,336	3,010	13	0.39	13	0.43
HRPB, Perak	6,217	4,507	34	0.55	23	0.51
HTAR, Selangor	12,351	12,056	85	0.69	90	0.75
HKL	11,729	11,843	78	0.67	86	0.73
HTJ, Seremban	4,841	6,192	17	0.35	25	0.40
Hospital Melaka	10,833	10,746	38	0.35	29	0.27
HSA, Johor	12,467	12,295	136	1.09	95	0.77
HTAA Pahang	9,333	8,728	87	0.93	17	0.19
HSNZ, Terengganu	12,019	12,803	158	1.31	132	1.03
HRPZ II, Kelantan	13,066	10,955	58	0.44	39	0.36
HU Sarawak	9,854	1,513	51	0.52	9	0.59
HL, Sabah	14,851	13,759	14	0.09	18	0.13
Total	135,380	122,634	921	0.68	697	0.57

Table 10.2: Types of heart disease and 2011 and 2012

Types of heart disease	Heart disease			
	2011		2012	
	n	%	n	%
Acquired	181	19.7	159	22.8
Congenital	179	19.4	133	19.1
IHD	39	4.2	37	5.3
NA	522	56.7	368	52.8
Total	921	100.0	697	100.0

Table 10.3 Heart disease by ethnicity 2011 and 2012

Ethnicity	2011			2012		
	Total women who delivered	Heart disease in pregnancy		Total women who delivered	Heart disease in pregnancy	
	n	n	%	n	n	%
Malay	92,649	731	0.79	85,391	553	0.65
Chinese	8,428	57	0.68	7,417	38	0.51
Indian	6,400	39	0.61	6,128	32	0.52
Kadazan/Dusun	4,003	5	0.12	3,685	11	0.30
Murut	345	1	0.29	262	1	0.38
Bajau	3,151	5	0.16	2,930	2	0.07
Melanau	123	0	0.00	38	0	0.00
Iban	2,149	17	0.79	760	5	0.66
Bidayuh	1,573	11	0.70	360	4	1.11
OA (Peninsular Malaysia)	909	6	0.66	748	9	1.20
Other indigenous group in Sabah & Sarawak	2,695	8	0.30	2,338	5	0.21
Other	1,209	3	0.25	1,467	8	0.55
Foreigners	11,333	34	0.30	10,593	27	0.25
NA	413	4	0.97	517	2	0.39
Total	135,380	921	0.68	122,634	697	0.57

Table 10.4 Heart disease by age 2011 and 2011

Age	2011									2012								
	Total women who delivered	Acquired		Congenital		IHD		NA		Total women who delivered	Acquired		Congenital		IHD		NA	
	n	n	%	n	%	n	%	n	%	n	n	%	n	%	n	%	n	%
10-14	127	0	0	0	0	0	0	2	2.33	126	0	0	0	0	0	0	0	0
15-19	6731	2	0.03	5	0.07	1	0.01	7	0.19	5736	5	0.09	6	0.1	0	0	16	0.28
20-24	26048	28	0.11	37	0.14	6	0.02	35	0.34	22513	18	0.08	25	0.11	5	0.02	68	0.31
25-29	46963	54	0.11	52	0.11	13	0.03	99	0.35	43421	56	0.13	45	0.1	9	0.02	108	0.25
30-34	33305	47	0.15	44	0.13	7	0.02	91	0.42	30830	43	0.14	36	0.12	11	0.04	91	0.3
35-39	17052	36	0.21	37	0.21	8	0.05	47	0.45	15404	28	0.18	17	0.12	7	0.04	64	0.42
40-44	4765	13	0.29	4	0.08	4	0.08	17	0.6	4262	8	0.19	4	0.09	5	0.14	19	0.44
45-49	362	1	0.27	0	0	0	0	2	1.09	314	1	0.32	0	0	0	0	2	0.63
50-54	26	0	0	0	0	0	0	1	3.85	26	0	0	0	0	0	0	0	0
55-59	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0

Table 10.5 Heart disease by parity 2011 and 2012

Parity	2011							2012						
	Total woman who delivered	Acquired		Congenital		IHD		Total women who delivered	Acquired		Congenital		IHD	
	n	n	%	n	%	n	%	n	n	%	n	%	n	%
1	46,158	42	0.09	68	0.15	8	0.02	42,679	37	0.09	45	0.11	8	0.02
2-5	81,166	120	0.15	105	0.13	27	0.03	73,336	107	0.15	82	0.11	24	0.03
≥ 6	7,840	19	0.24	6	0.08	4	0.05	6,537	14	0.21	6	0.09	5	0.08
NA	216	0	0.00	0	0.00	0	0.00	82	1	1.22	0	0.00	0	0.00
Total	135,380	181	0.13	179	0.13	39	0.03	122,634	159	0.13	133	0.11	37	0.03

Table 10.6 Mode of delivery in heart disease 2011 and 2012

Mode of delivery	2011							2012						
	Total women who delivered	Acquired		Congenital		IHD		Total women who delivered	Acquired		Congenital		IHD	
	n	n	%	n	%	n	%	n	n	%	n	%	n	%
Vaginal	96,272	113	0.12	104	0.11	22	0.02	86,219	99	0.11	70	0.08	19	0.02
Instrumental	4,923	14	0.28	18	0.37	3	0.06	4,589	20	0.44	17	0.37	2	0.04
CS	31,241	53	0.17	51	0.16	13	0.04	30,325	38	0.13	44	0.15	15	0.05
NA	2,944	1	0.03	6	0.20	1	0.03	1,501	2	0.13	2	0.13	1	0.07
Total	135,380	181	0.13	179	0.13	39	0.03	122,634	159	0.13	133	0.11	37	0.03

Table 10.7 Severity of heart disease 2011 and 2012

	NYHA 1		NYHA II		NYHA III		NYHA IV		NA		Total
2011	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**
Acquired	128	70.72	27	14.92	3	1.66	1	0.55	22	12.15	181
Congenital	98	54.75	29	16.2	10	5.59	0	0	42	23.46	179
IHD	26	66.67	7	17.95	1	2.56	0	0	5	12.82	39
Unknown	260	49.81	49	9.39	3	0.57	0	0	210	40.23	522
2012											
Acquired	113	71.07	19	11.95	6	3.77	2	1.26	19	11.95	159
Congenital	67	50.38	27	20.3	1	0.75	0	0	38	28.57	133
IHD	14	37.84	7	18.92	3	8.11	1	2.7	12	32.43	37
NA	182	49.46	28	7.61	2	0.54	1	0.27	155	42.12	368

Table 10.8 Maternal and fetal complications in heart disease in pregnancy 2011 and 2012

Complications	2011							2012						
	Total women who delivered	Acquired		Congenital		IHD		Total women who delivered	Acquired		Congenital		IHD	
		n	%	n	%	n	%		n	%	n	%	n	%
None	102709	132	0.1	129	0.1	32	0.0	100335	118	0.1	105	0.1	29	0.0
Anaesthetic complication	3	0	0.0	0	0.0	0	0.0	1	0	0.0	0	0.0	0	0.0
Failed instrumentation	130	0	0.0	1	0.8	0	0.0	82	0	0.0	0	0.0	0	0.0
Preterm labour	10050	4	0.0	13	0.1	2	0.0	9386	5	0.1	9	0.1	4	0.0
PPH <1500mls	548	5	0.9	2	0.4	0	0.0	443	2	0.5	2	0.5	0	0.0
≥1500mls	196	0	0.0	0	0.0	1	0.5	118	0	0.0	0	0.0	0	0.0
NA	4	1	25.0	1	25.0	0	0.0	6	0	0.0	0	0.0	1	16.7
Pulmonary embolism	8	0	0.0	0	0.0	0	0.0	2	0	0.0	0	0.0	0	0.0
Shock –cardiogenic	0	0	0.0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0.0
Thromboembolism	0	0	0.0	0	0.0	0	0.0	2	0	0.0	0	0.0	0	0.0
Uterine atony	97	0	0.0	1	1.0	0	0.0	42	0	0.0	0	0.0	0	0.0

CHAPTER 11

SEXUALLY TRANSMITTED DISEASE IN PREGNANCY

CHAPTER 11 SEXUALLY TRANSMITTED DISEASE IN PREGNANCY

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SUMMARY

HIV in pregnancy incidence was low in 2011 at 0.26% and 0.22% in 2012 from the 14 participating hospitals in Malaysia. The incidence of syphilis in pregnancy was 0.15% in both years. HIV incidence was higher in unmarried women in 2011 and in 2012 it was seen more in women who were divorced.

11.1 INTRODUCTION

STIs in pregnancy can lead to prematurity, stillbirth, and neonatal infections. Screening and treatment for syphilis and HIV in pregnancy could prevent syphilis-related stillbirths, perinatal deaths and also prevention of vertical transmission mother to her foetus. In Malaysia women can opt out from doing a HIV screening.

HIV infection in pregnancy accounted for 0.24% of all deliveries in the 14 SDPs in Malaysia 0.26% in 2011 and 0.22% in 2012. HU, Sarawak had the highest incidence at 0.53% in 2011 and 0.59% in 2012. Lowest incidence was from HL, Sabah at 0.03% in 2011and 0.09 % in 2012.
Incidence of syphilis in pregnancy was 0.15% in both years from the 14 SDPs in Malaysia.

11.2 PATIENT DERMOGRAPHICS

HIV in pregnancy didn't show are age preference in both years.Syphilis in pregnancy was higher in women aged 50 years and more.HIV in pregnancy was higher among unmarried women in 2012 it was higher among divorcee. Incidence of HIV in pregnancy in Melanaus was 0.81% in 2011.HIV and Syphilis in pregnancy was high among the Melanaus in 2012.For both HIV and Syphilis in pregnancy there was no difference between parity in both years

11.3 CONCLUSION

Incidence of HIV and syphilis in pregnancy rate was low for both years. Continuous effort and advances need to detect, manage and prevent STDs that will move us closer to our goal of an HIV/AIDS-free generation. With the fields to capture HIV and Syphilis in pregnancy have been made mandatory, we may have a true incidence rate in subsequent report.

11.4 RECOMMENDATION

1. Future NOR reports should include documentation of other sexually transmitted disease in pregnancy

11.5 REFERRENCES

1. UNAIDS (2012) 'Global Report: UNAIDS Report on the Global AIDS Epidemic 2012'.
2. WHO Bulletin, March 2013. Early antenatal care: does it make difference to outcomes of Pregnancy associated with syphilis? A systematic review and meta-analysis.
3. NOR 2nd Report 2010.

Table 11.1 Incidence of HIV in pregnancy by SDP 2011 and 2012

SDP	HIV in pregnancy					
	2011			2012		
	Total women who delivered	n	%	Total women who delivered	n	%
HTF,Perlis	4,087	21	0.51	3,920	11	0.28
HSB,Kedah	10,396	35	0.34	10,307	42	0.41
HPP	3,336	12	0.36	3,010	4	0.13
HRPB,Perak	6,217	17	0.27	4,507	11	0.24
HTAR, Selangor	12,351	28	0.23	12,056	19	0.16
HKL	11,729	24	0.20	11,843	28	0.24
HTJ,Negeri Sembilan	4,841	12	0.25	6,192	9	0.15
Hospital Melaka	10,833	18	0.17	10,746	12	0.11
HSA, Johor	12,467	40	0.32	12,295	34	0.28
HTAA, Pahang	9,333	33	0.35	8,728	14	0.16
HSNZ, Terengganu	12,019	35	0.29	12,803	44	0.34
HRPZ 11, Kelantan	13,066	27	0.21	10,955	16	0.15
HU, Sarawak	9,854	52	0.53	1,513	9	0.59
HL, Sabah	14,851	4	0.03	13,759	12	0.09
Total	135,380	358	0.26	122,634	265	0.22

Table 11.2 Incidence of Syphilis in pregnancy by SDP 2011 and 2012

SDP	Syphilis in pregnancy					
	2011			2012		
	Total women who delivered	n	%	Total women who delivered	n	%
HTF, Perlis	4087	16	0.39	3920	7	0.18
HSB, Kedah	10396	31	0.30	10307	27	0.26
HPP	3336	4	0.12	3010	6	0.20
HRPB, Perak	6217	11	0.18	4507	6	0.13
HTAR, Selangor	12351	14	0.11	12056	18	0.15
HKL	11729	25	0.21	11843	31	0.26
HTJ, Negeri Sembilan	4841	8	0.17	6192	11	0.18
Hospital Melaka	10833	9	0.08	10746	10	0.09
HSA, Johor	12467	20	0.16	12295	20	0.16
HTAA,Pahang	9333	14	0.15	8728	4	0.05
HSNZ, Terengganu	12019	11	0.09	12803	19	0.15
HRPZ 11 Kelantan	13066	14	0.11	10955	2	0.02
HU,Sarawak	9854	21	0.21	1513	7	0.46
HL, Sabah	14851	1	0.01	13759	10	0.07
Total	135380	199	0.15	122634	178	0.15

Table 11.3 HIV and Syphilis in pregnancy by ethnicity 2011 and 2012

Ethnicity	2011			2012			2011		2012	
	Total women who delivered	HIV in pregnancy		Total women who delivered	HIV in pregnancy		Syphilis in pregnancy		Syphilis in pregnancy	
	n	n	%	n	n	%	n	%	n	%
Malay	92,649	251	0.27	85,391	184	0.22	133	0.14	111	0.13
Chinese	8,428	20	0.24	7,417	8	0.11	10	0.12	5	0.07
Indian	6,400	18	0.28	6,128	17	0.28	17	0.27	20	0.33
Kadazan/ Dusun	4,003	2	0.05	3,685	3	0.08	1	0.02	5	0.14
Murut	345	0	0.00	262	0	0.00	0	0.00	0	0.00
Bajau	3,151	0	0.00	2,930	2	0.07	0	0.00	1	0.03
Melanau	123	1	0.81	38	1	2.63	0	0.00	1	2.63
Iban	2,149	7	0.33	760	1	0.13	4	0.19	3	0.39
Bidayuh	1,573	7	0.45	360	2	0.56	1	0.06	2	0.56
OA (Peninsular Malaysia)	909	2	0.22	748	2	0.27	2	0.22	2	0.27
Other indigenous group in Sabah & Sarawak	2,695	1	0.04	2,338	0	0.00	2	0.07	1	0.04
Foreigner	11,333	44	0.39	10,593	37	0.35	28	0.25	22	0.21
Others	1,209	4	0.33	1,467	7	0.48	0	0.00	2	0.14
NA	413	1	0.24	517	1	0.19	1	0.24	3	0.58
Total	135,380	358	0.26	122,634	265	0.22	199	0.15	178	0.15

Table 11.4 HIV and Syphilis in pregnancy by age 2011 and 2012

Age	2011			2012			2011		2012	
	Total women who delivered	HIV in pregnancy		Total women who delivered	HIV in pregnancy		Syphilis in pregnancy		Syphilis in pregnancy	
	n	n	%	n	n	%	n	%	n	%
10-14	127	0	0.00	126	0	0.00	0	0.00	0	0.00
15-19	6731	19	0.28	5736	17	0.30	16	0.24	6	0.10
20-24	26048	74	0.28	22513	54	0.24	30	0.12	32	0.14
25-29	46963	131	0.28	43421	81	0.19	72	0.15	68	0.16
30-34	33305	87	0.26	30830	67	0.22	50	0.15	41	0.13
35-39	17052	34	0.20	15404	36	0.23	25	0.15	26	0.17
40-44	4765	17	0.36	4262	11	0.26	7	0.15	4	0.09
45-49	362	0	0.00	314	0	0.00	0	0.00	1	0.32
50-54	26	0	0.00	26	0	0.00	1	3.85	0	0.00
≥55	1	0	0.00	2	0	0.00	0	0.00	1	50.00
Total	135380	362	0.27	122634	266	0.22	201	0.15	179	0.15

Table 11.5 HIV and Syphilis in pregnancy by Parity 2011 and 2012

Parity	2011			2012			2011		2012	
	Total women who delivered	HIV in pregnancy		Total women who delivered	HIV in pregnancy		Syphilis in pregnancy		Syphilis in pregnancy	
	n	n	%		n	%	n	%	n	%
1	46,158	119	0.26	42,679	100	0.23	78	0.17	61	0.14
2-5	81,166	223	0.27	73,336	155	0.21	110	0.14	108	0.15
≥ 6	7,840	16	0.20	6,537	10	0.15	11	0.14	9	0.14
NA	216	0	0.00	82	0	0.00	0	0.00	0	0.00
Total	135,380	358	0.26	122,634	265	0.22	199	0.15	178	0.15

Table 11.6 HIV and Syphilis in pregnancy by mode of delivery 2011 and 2012

Type of Delivery	2011			2012			2011		2012	
	Total women who delivered	HIV in pregnancy		Total women who delivered	HIV in pregnancy		Syphilis in pregnancy		Syphilis in pregnancy	
	n	n	%	n	n	%	n	%	n	%
Vaginal	96,272	186	0.19	86,219	144	0.17	151	0.16	124	0.14
Instrumental	4,923	5	0.10	4,589	3	0.07	7	0.14	8	0.17
caesarean	31,241	161	0.52	30,325	111	0.37	38	0.12	46	0.15
NA	2944	6	0.20	1501	7	0.47	3	0.10	0	0.00
Total	135,380	358	0.26	122,634	265	0.22	199	0.15	178	0.15

Table 11.7 HIV and Syphilis in pregnancy by complications 2011 and 2012

Pregnancy complications	2011			2012			2011		2012	
	Total women who deliveried	HIV in pregnancy		Total women who delivered	HIV in pregnancy		Syphilis in pregnancy		Syphilis in pregnancy	
	n	n	%	n	n	%	n	%	n	%
Fetal distress	11,192	27	0.24	10,880	23	0.21	8	0.07	20	0.18
Prolonged labour	544	1	0.18	308	0	0.00	0	0.00	0	0.00
Abruptio placenta	299	1	0.33	323	1	0.30	1	0.33	0	0.00
Preterm labour	2,753	8	0.29	2,145	12	0.56	6	0.20	5	0.22
PPH	766	4	0.50	574	3	0.52	1	0.13	2	0.35
Genital tract trauma	27,555	58	0.21	26,823	45	0.16	45	0.16	35	0.13

CHAPTER 12

MEDICAL DISORDER IN PREGNANCY

CHAPTER 12 MEDICAL DISORDER IN PREGNANCY

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SUMMARY

Most women in pregnancy are healthy however those with medical disorders require expert care. Medical disorders in pregnancy is one of the principal causes of maternal deaths in this country along with obstetric embolism, postpartum haemorrhage and hypertensive disorders in pregnancy. There was one maternal death associated with Bronchial Asthma in 2011.

12.1 INTRODUCTION

More than half a million maternal deaths occur every year in the world due to complications related to pregnancy or childbirth. The maternal mortality ratio (MMR) is an important measure of women's health and indicative of the performance of health care systems of a country.

The incidence of all medical disorders complicating pregnancy in 2011 was 8.47% and in 2012 it was 7.8%.

This chapter looks at prevalence of thyroid disease, Bronchial Asthma, haematological disorder particularly Thalassemia and ITP, renal disease and mental disorders in pregnancy. Hypertension, Diabetes and Heart disease have been discussed in separate chapters in this report.

Bronchial asthma is the commonest chronic medical illness to complicate pregnancy.1.79% of pregnant women had history of Bronchial asthma in 2011 and 1.67% in 2012.Highest incidence was seen in HKL followed by HSA, Johor in both years.

12.2 PATIENT DERMOGRAPHICS

In both years more than 2/3rd of deliveries were among the Malays. Foreigners constituted to 8.37% and Chinese accounted for 6.23% of deliveries in 2011 and we see

similar trends in 2012.Highest incidence of Bronchial Asthma is seen in the Indian ethnicity in both years followed by the Melanau's. Thalassemia incidence was highest among the Chinese in both years. There was a very low incidence of renal disease and mental disorders in pregnancy in both years and this could be under reporting. Women aged between 35-39 years in 2011 had a higher incidence of Bronchial Asthma whilst in 2012 the incidence was higher among the adolescents aged 10-14 years. Bronchial Asthma was higher among women Para> 5 in both years.There were no association seen between parity and other medical disorders in both years.

12.3 OUTCOMES

In 2011, 2.16% of women with Bronchial Asthma had a preterm delivery but in 2012, most women with Bronchial Asthma had a term deliveries.1.91% of babies died and 1.78% were admitted to NICU in mothers with Bronchial Asthma in 2011 as compared to 1.68 % were admitted to NICU whilst 1.57 % died in 2012 in mothers with Bronchial Asthma. There was one maternal death due to Bronchial Asthma in 2011.

12.4 CONCLUSION

Pregnancy is considered high risk when complications affect health and safety of both mother and fetus. Among the medical disorders discussed in this chapter there was one maternal death associated with Bronchial Asthma. Bronchial Asthma contributed to preterm deliveries and it increased incidence of fetal morbidity and mortality in both years.

12.5 RECOMMENDATION

1. Pre-conception care should be provided to all women with medical conditions. They should be informed about the potential impact of their medical condition on pregnancy.
2. Combined care of pregnant women with medical disorders by Obstetricians and Physicians early to plan management.
3. There must be involvement of senior doctors in the care of these patients.
4. Contraceptive counselling for high risk patients is crucial as studies have shown than increasing the contraceptive prevalence rate reduces maternal mortality rate.

12.6 REFERRENCES

1. Report on the Confidential enquires into maternal deaths in Malaysia 2006-2008.

Table 12.1 Medical disorders in pregnancy by SDP 2011

SDP	Total women who delivered		Thyroid disease		Bronchial asthma		Hematological disorder				Renal disease		Mental disorder		Others	
							Thalassemia		ITP							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
HTF, Perlis	4,087	3.02	28	0.69	118	2.89	44	1.08	5	0.12	0	0.00	3	0.07	1	0.02
HSB, Kedah	10,396	7.68	30	0.29	230	2.21	51	0.49	2	0.02	3	0.03	5	0.05	3	0.03
HPP	3,336	2.46	5	0.15	34	1.02	16	0.48	2	0.06	1	0.03	1	0.03	1	0.03
HRPB, Perak	6,217	4.59	9	0.14	99	1.59	34	0.55	11	0.18	1	0.02	0	0.00	0	0.00
HTAR, Selangor	12,351	9.12	45	0.36	231	1.87	57	0.46	10	0.08	3	0.02	1	0.01	6	0.05
HKL	11,729	8.66	54	0.46	414	3.53	53	0.45	11	0.09	3	0.03	9	0.08	6	0.05
HTJ, Negeri Sembilan	4,841	3.58	12	0.25	53	1.09	14	0.29	5	0.10	2	0.04	3	0.06	1	0.02
Hospital Melaka	10,833	8.00	56	0.52	186	1.72	48	0.44	8	0.07	4	0.04	4	0.04	7	0.06
HSA Johor	12,467	9.21	48	0.39	393	3.15	47	0.38	15	0.12	7	0.06	7	0.06	1	0.01
HTAA, Pahang	9,333	6.89	27	0.29	140	1.50	32	0.34	5	0.05	6	0.06	1	0.01	2	0.02
HSNZ, Terengganu	12,019	8.88	53	0.44	243	2.02	43	0.36	10	0.08	1	0.01	5	0.04	7	0.06
HRPZ 11 Kelantan	13,066	9.65	19	0.15	129	0.99	31	0.24	0	0.00	1	0.01	1	0.01	1	0.01
HU, Sarawak	9,854	7.28	23	0.23	133	1.35	17	0.17	3	0.03	5	0.05	6	0.06	4	0.04
HL, Sabah	14,851	10.97	2	0.01	20	0.13	17	0.11	1	0.01	0	0.00	0	0.00	0	0.00
Total	135,380	100.00	411	0.30	2,423	1.79	504	0.37	88	0.07	37	0.03	46	0.03	40	0.03

Table 12.2 Medical disorders in pregnancy by SDP 2012

SDP	Total women who delivered		Thyroid disease		Bronchial asthma		Hematological disorder				Renal disease		Mental disorder		Others	
							Thalassemia		ITP							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
HTF, Perlis	3,920	3.20	16	0.41	98	2.50	54	1.38	8	0.20	2	0.05	1	0.03	3	0.08
HSB, Kedah	10,307	8.40	37	0.36	171	1.66	47	0.46	3	0.03	2	0.02	5	0.05	6	0.06
HPP	3,010	2.45	11	0.37	49	1.63	18	0.60	2	0.07	1	0.03	1	0.03	0	0.00
HRPB, Perak	4,507	3.68	14	0.31	55	1.22	13	0.29	5	0.11	0	0.00	0	0.00	2	0.04
HTAR, Selangor	12,056	9.83	39	0.32	192	1.59	43	0.36	5	0.04	9	0.07	6	0.05	0	0.00
HKL	11,843	9.66	52	0.44	348	2.94	44	0.37	10	0.08	10	0.08	8	0.07	10	0.08
HTJ, Negeri Sembilan	6,192	5.05	22	0.36	77	1.24	36	0.58	7	0.11	3	0.05	4	0.06	2	0.03
Hospital Melaka	10,746	8.76	51	0.47	141	1.31	44	0.41	2	0.02	1	0.01	2	0.02	4	0.04
HSA, Johor	12,295	10.03	52	0.42	346	2.81	68	0.55	19	0.15	5	0.04	9	0.07	4	0.03
HTAA, Pahang	8,728	7.12	42	0.48	161	1.84	49	0.56	4	0.05	1	0.01	0	0.00	2	0.02
HSNZ, Terengganu	12,803	10.44	52	0.41	241	1.88	97	0.76	6	0.05	5	0.04	4	0.03	2	0.02
HRPZ 11, Kelantan	10,955	8.93	19	0.17	96	0.88	15	0.14	0	0.00	5	0.05	1	0.01	3	0.03
HU, Sarawak	1,513	1.23	7	0.46	29	1.92	1	0.07	1	0.07	2	0.13	0	0.00	0	0.00
HL, Sabah	13,759	11.22	15	0.11	43	0.31	38	0.28	1	0.01	0	0.00	3	0.02	1	0.01
Total	122,634	100.00	429	0.35	2047	1.67	567	0.46	73	0.06	46	0.04	44	0.04	39	0.03

Table 12.3 Medical disorders in pregnancy by ethnicity 2011

Ethnicity	Total women who delivered		Thyroid disease		Bronchial asthma		Hematological disorder				Renal disease		Mental disorder		Others	
							Thalassemia		ITP							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Malay	92,649	68.44	322	0.35	1,975	2.13	365	0.39	56	0.06	27	0.03	33	0.04	34	0.04
Chinese	8,428	6.23	41	0.49	100	1.19	92	1.09	6	0.07	1	0.01	7	0.08	2	0.02
Indian	6,400	4.73	21	0.33	203	3.17	8	0.13	14	0.22	4	0.06	1	0.02	1	0.02
Kadazan/ Dusun	4,003	2.96	1	0.02	8	0.20	16	0.40	1	0.02	0	0.00	0	0.00	0	0.00
Murut	345	0.25	0	0.00	2	0.58	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Bajau	3,151	2.33	2	0.06	5	0.16	3	0.10	0	0.00	0	0.00	0	0.00	0	0.00
Melanau	123	0.09	0	0.00	3	2.44	0	0.00	0	0.00	0	0.00	0	0.00	1	0.81
Iban	2,149	1.59	2	0.09	24	1.12	0	0.00	0	0.00	4	0.19	1	0.05	0	0.00
Bidayuh	1,573	1.16	7	0.45	17	1.08	1	0.06	1	0.06	0	0.00	1	0.06	2	0.13
OA (Peninsular Malaysia)	909	0.67	3	0.33	7	0.77	1	0.11	1	0.11	0	0.00	2	0.22	0	0.00
Other indigenous group in Sabah & Sarawak	2,695	1.99	1	0.04	2	0.07	3	0.11	0	0.00	0	0.00	0	0.00	0	0.00
Foreigner	11,333	8.37	9	0.08	56	0.49	10	0.09	9	0.08	1	0.01	0	0.00	0	0.00
Others	1,209	0.89	2	0.17	16	1.32	5	0.41	0	0.00	0	0.00	0	0.00	0	0.00
Unknown	413	0.31	0	0.00	5	1.21	0	0.00	0	0.00	0	0.00	1	0.24	0	0.00

Table 12.4 Medical disorders in pregnancy by ethnicity 2012

Ethnicity	Total women who delivered		Thyroid disease		Bronchial asthma		Hematological disorder				Renal disease		Mental disorder		Others	
							Thalassemia		ITP							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Malay	85,391	69.63	333	0.39	1,680	1.97	426	0.50	42	0.05	40	0.05	27	0.03	31	0.04
Chinese	7,417	6.05	36	0.49	64	0.86	80	1.08	10	0.13	3	0.04	5	0.07	4	0.05
Indian	6,128	5.00	24	0.39	177	2.89	10	0.16	9	0.15	0	0.00	4	0.07	2	0.03
Kadazan/ Dusun	3,685	3.00	9	0.24	9	0.24	18	0.49	0	0.00	0	0.00	1	0.03	0	0.00
Murut	262	0.21	0	0.00	0	0.00	1	0.38	0	0.00	0	0.00	0	0.00	0	0.00
Bajau	2,930	2.39	1	0.03	11	0.38	10	0.34	0	0.00	0	0.00	1	0.03	0	0.00
Melanau	38	0.03	1	2.63	1	2.63	0	0.00	0	0.00	1	2.63	0	0.00	0	0.00
Iban	760	0.62	1	0.13	10	1.32	1	0.13	1	0.13	0	0.00	0	0.00	0	0.00
Bidayuh	360	0.29	1	0.28	9	2.50	0	0.00	1	0.28	0	0.00	0	0.00	0	0.00
OA (Peninsular Malaysia)	748	0.61	2	0.27	4	0.53	3	0.40	1	0.13	0	0.00	0	0.00	0	0.00
Other indigenous group in Sabah & Sarawak	2,338	1.91	1	0.04	9	0.38	6	0.26	2	0.09	0	0.00	1	0.04	0	0.00
Foreigner	10,593	8.64	15	0.14	51	0.48	8	0.08	6	0.06	2	0.02	4	0.04	1	0.01
Others	1,467	1.20	5	0.34	20	1.36	2	0.14	1	0.07	0	0.00	1	0.07	1	0.07
NA	517	0.42	0	0.00	2	0.39	2	0.39	0	0.00	0	0.00	0	0.00	0	0.00

Table 12.5 Medical disorders in pregnancy by age 2011 and 2012

Age	Total women who delivered		Thyroid disease		Bronchial asthma		Hematological disorder				Renal disease		Mental disorder		Others	
							Thalassemia		ITP							
2011	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
10-14	127	0.09	0	0.00	0	0.00	0	0.00	1	0.79	0	0.00	0	0.00	0	0.00
15-19	6,731	4.97	3	0.04	106	1.57	15	0.22	3	0.04	1	0.01	2	0.03	0	0.00
20-24	26,048	19.24	46	0.18	422	1.62	92	0.35	17	0.07	6	0.02	8	0.03	8	0.03
25-29	46,963	34.69	149	0.32	845	1.80	183	0.39	35	0.07	15	0.03	13	0.03	16	0.03
30-34	33,305	24.60	124	0.37	614	1.84	154	0.46	20	0.06	11	0.03	10	0.03	8	0.02
35-39	17,052	12.60	70	0.41	338	1.98	48	0.28	9	0.05	3	0.02	10	0.06	8	0.05
40-44	4,765	3.52	17	0.36	93	1.95	12	0.25	3	0.06	1	0.02	3	0.06	0	0.00
45-49	362	0.27	2	0.55	5	1.38	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
50-54	26	0.02	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
55-59	1	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2012																
10-14	126	0.10	4	3.17	4	3.17	0	0.00	1	0.79	0	0.00	0	0.00	0	0.00
15-19	5,736	4.68	94	1.64	95	1.66	15	0.26	3	0.05	2	0.03	0	0.00	1	0.02
20-24	22,513	18.36	329	1.46	334	1.48	86	0.38	24	0.11	5	0.02	3	0.01	6	0.03
25-29	43,421	35.41	682	1.57	691	1.59	223	0.51	23	0.05	17	0.04	16	0.04	15	0.03
30-34	30,830	25.14	540	1.75	550	1.78	154	0.50	17	0.06	13	0.04	14	0.05	11	0.04
35-39	15,404	12.56	301	1.95	302	1.96	72	0.47	4	0.03	8	0.05	9	0.06	5	0.03
40-44	4,262	3.48	91	2.14	92	2.16	17	0.40	1	0.02	1	0.02	2	0.05	1	0.02
45-49	314	0.26	6	1.91	6	1.91	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
50-54	26	0.02	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
55-59	2	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

Table 12.6 Medical disorders in pregnancy by Parity 2011 and 2012

Parity 2011	Total women who delivered		Thyroid disease		Bronchial asthma		Hematological disorder				Renal disease		Mental disorder		Others	
							Thalassemia		ITP							
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
1	46,158	34.10	105	0.23	729	1.58	176	0.38	32	0.07	16	0.03	15	0.03	17	0.04
2-5	81,166	59.95	283	0.35	1,528	1.88	310	0.38	53	0.07	19	0.02	24	0.03	21	0.03
≥ 6	7,840	5.79	23	0.29	166	2.12	16	0.20	3	0.04	2	0.03	7	0.09	2	0.03
NA	216	0.16	0	0.00	0	0.00	2	0.93	0	0.00	0	0.00	0	0.00	0	0.00
2012																
1	42,679	34.80	120	0.28	645	1.51	196	0.46	36	0.08	15	0.04	15	0.04	17	0.04
2-5	73,336	59.80	287	0.39	1,268	1.73	353	0.48	36	0.05	30	0.04	25	0.03	21	0.03
≥ 6	6,537	5.33	22	0.34	134	2.05	18	0.28	1	0.02	1	0.02	4	0.06	1	0.02
NA	82	0.07	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

Table 12.7 Medical disorders in pregnancy by gestation 2011 and 2012

Gestation (weeks)	Total women who delivered		Thyroid disease		Bronchial asthma		Hematological disorder				Renal disease		Mental disorder		Others	
							Thalassemia		ITP							
2011	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
22-36	12,756	9.32	43	0.34	275	2.16	41	0.32	16	0.13	16	0.13	9	0.07	10	0.08
37-40	77,022	56.28	282	0.37	1,475	1.92	345	0.45	56	0.07	12	0.02	22	0.03	19	0.02
>40	10,448	7.63	20	0.19	179	1.71	25	0.24	4	0.04	2	0.02	2	0.02	1	0.01
NA	36,637	26.77	74	0.20	514	1.40	105	0.29	16	0.04	7	0.02	13	0.04	10	0.03
2012																
22-36	13,319	10.73	68	0.51	228	1.71	48	0.36	12	0.09	23	0.17	4	0.03	11	0.08
37-40	89,983	72.51	337	0.37	1,596	1.77	453	0.50	54	0.06	18	0.02	34	0.04	26	0.03
>40	10,181	8.20	19	0.19	161	1.58	52	0.51	5	0.05	1	0.01	2	0.02	2	0.02
NA	10,613	8.55	16	0.15	89	0.84	19	0.18	3	0.03	4	0.04	4	0.04	0	0.00

Table 12.8 Medical disorders in pregnancy and fetal outcome 2011 and 2012

Outcomes of pregnancy	Total women who delivered		Thyroid disease		Bronchial asthma		Hematological disorder				Renal disease		Mental disorder		Others	
							Thalassemia		ITP							
2011	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Fetal mobidity NICU	134,056	97.95	367	0.27	2,387	1.78	510	0.38	87	0.06	36	0.03	43	0.03	37	0.03
Fetal mortality	1,046	0.76	4	0.38	20	1.91	4	0.38	3	0.29	1	0.10	2	0.19	2	0.19
NA	1,761	1.29	0	0.00	0	0.00	2	0.11	2	0.11	0	0.00	0	0.00	1	0.06
2012																
Fetal mobidity NICU	122,030	98.34	432	0.35	2,048	1.68	564	0.46	72	0.06	45	0.04	44	0.04	38	0.03
Fetal mortality	956	0.77	6	0.63	15	1.57	4	0.42	0	0.00	1	0.10	0	0.00	1	0.10
NA	1,110	0.89	2	0.18	1	0.09	4	0.36	2	0.18	0	0.00	0	0.00	0	0.00

Table 12.9 Medical disorders in pregnancy and maternal outcome 2011 and 2012

Outcomes of pregnancy	Total women who delivered		Thyroid disease		Bronchial asthma		Hematological disorder				Renal disease		Mental disorder		Others	
							Thalassemia		ITP							
2011	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Maternal morbidity ICU	131,739	96.26	402	0.31	2,362	1.79	497	0.38	84	0.06	37	0.03	45	0.03	39	0.03
Maternal mortality	21	0.02	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
NA	3,620	2.64	9	0.25	61	1.69	7	0.19	4	0.11	0	0.00	0	0.00	1	0.03
2012																
Maternal morbidity ICU	120,013	96.71	425	0.35	2,017	1.68	557	0.46	69	0.06	45	0.04	43	0.04	39	0.03
Maternal mortality	28	0.02	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
NA	2,593	2.09	4	0.15	30	1.16	10	0.39	4	0.15	0	0.00	0	0.00	0	0.00

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