Prevalence of Low Birth Weight babies among the Obstetric population from Malaysian tertiary hospitals: A cross sectional study from the National Obstetrics Registry, Malaysia

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OBJECTIVES

LBW indirectly measures the health of mother and newborn. Birth weight (BW) is an important determinant of child survival. Low birth weight (LBW) is defined by WHO as BW < 2500g. Very low birth weight (VLBW) is less than 1500g and extremely low birth weight (ELBW) is less than 1000g. Global data on LBW shows that it is highest in South Asian region. This study was to look at the prevalence and risk factors for LBW among the obstetric population in Malaysian tertiary hospitals and to look at remedial measures to reduce the incidence.

METHODS

This is a retrospective cohort study using data from the National Obstetrics Registry (NOR). NOR is a clinical data base that compiles obstetric data from 14 tertiary hospitals in Peninsular and East Malaysia. All newborns delivered between 1st Jan 2011 to 31st Dec 2012 with birthweight <2500g were included in this study. Variables analysed were maternal demographics as well as clinical parameters were analysed. The analysis was performed using STATA statistical software. Descriptive statistics was obtained initially followed by multinomial regression to explore odd ratio of risk of LBW. P value<0.001 was taken as significant.

RESULTS

There were a total of 260,959 deliveries captured in NOR during the study period. The prevalence of LBW was 16.59% (n=43,402) which includes 1.1% (n=2889) VLBW and 0.93% (n=2433) ELBW. 1.3 %(n=3313) were excluded due to incomplete data. Women aged 10-19 years had a higher risk of LBW (Crude odd ratio (OR) 1.72 (1.64, 1.80) p<0.001). Incidence of LBW is statistically significant in first time mothers. CS was 1.5 times higher in the study group. 77% of all babies > 2500 gms had a CS. Other factors that contributed to LBW were ethnicity, income, BMI, smoking, marital status, anaemia, hypertensive disorder in pregnancy and prematurity. as seen in Table

Table : Results showing maternal factor affecting LBW and neonatal outcome

Variable	2500-1500 (low birthwt) (n=37980) n	(%)	2500-1500 (low birthwt) Crude OR	(95% CI)	P value[a]	1500-1000 (very low birthwt) (n=2889) n	(%)	1500-1000 (very low birthwt) Crude OR	(95% CI)	P value[a]	<=1000 (extrem low birthwt) (n=2433) n	(%)	<=1000 (extrem low birthwt) Crude OR	(95% CI)	P value[a]
Age															
10-19	2877	7.58	1.72	(1.64 1.80)	<0.001	234	8.10	2.12	(1.85 2.44)	<0.001	174	7.15	1.82	(1.55 2.14)	<0.001
20-29	20688	54.47	1.00			1362	47.14	1.00			1182	48.58	1.00		
30-39	12899	33.96	0.88	(0.86 0.90)		1124	38.91	1.17	(1.08 1.26)		950	39.05	1.14	(1.04 1.24)	
>=40	1516	3.99	1.07	(1.01 1.13)		169	5.85	1.81	(1.54 2.13)		127	5.22	1.57	(1.30 1.89)	
Ethnicity															
Malay	24,809	83.83	1.00		<0.001	1,879	79.96	1.00		<0.001	1,586	81.71	1.00		<0.001
Chinese	2,284	7.72	1.04	(1.00 1.09)		273	11.62	1.65	(1.45 1.87)		188	9.69	1.34	(1.15 1.56)	
Indian	2,501	8.45	1.55	(1.48 1.62)		198	8.43	1.62	(1.39 1.87)		167	8.60	1.62	(1.38 1.90)	
Parity															
1	16,366	43.16	1.00		<0.001	1,215	42.07	1.00		<0.001	993	40.88	1.00		<0.001
2-5	19,633	51.77	0.63	(0.62 0.65)		1,521	52.67	0.66	(0.61 0.71)		1,328	54.67	0.71	(0.65 0.77)	
>5	1,921	5.07	0.67	(0.64 0.71)		152	5.26	0.72	(0.61 0.85)		108	4.45	0.62	(0.51 0.76)	
Income															
<RM1000	17004	11.87	1.18	(1.14 1.23)	<0.001	3417	13.94	1.34	(1.18 1.53)	<0.001	217	13.88	1.22	(1.05 1.41)	<0.001
RM1001-RM3000	95151	66.40	1.00			16146	65.86	1.00			996	63.72	1.00		
RM3001-RM5000	25508	17.80	0.89	(0.86 0.93)		3862	15.75	1.02	(0.90 1.15)		256	16.38	0.96	(0.84 1.10)	
RM5001-RM7000	3588	2.50	0.91	(0.84 1.00)		557	2.27	1.34	(1.03 1.74)		39	2.50	1.04	(0.75 1.43)	
>RM7000	736	0.51	0.98	(0.81 1.18)		122	0.50	1.74	(1.05 2.86)		30	1.92	3.89	(2.69 5.64)	
No Income	1317	7.19	1.84	(1.64 2.06)		411	25.69	1.94	(1.36 2.77)		25	2.65	1.81	(1.21 2.71)	
Maternal BMI															
<16.0	621	1.64	2.24	(2.03 2.47)	<0.001	44	1.53	2.37	(1.74 3.23)	<0.001	19	0.79	1.20	(0.76 1.90)	<0.001
16.0-18.4	3,301	8.74	1.47	(1.40 1.53)		197	6.85	1.31	(1.12 1.53)		167	6.92	1.30	(1.10 1.54)	
18.5-22.9	12,345	32.69	1.00			826	28.74	1.00			704	29.18	1.00		
23.0-27.4	11,755	31.12	0.76	(0.74 0.78)		924	32.15	0.89	(0.81 0.98)		781	32.37	0.88	(0.80 0.98)	
27.5-32.5	6,749	17.87	0.64	(0.62 0.66)		566	19.69	0.81	(0.72 0.90)		479	19.85	0.80	(0.71 0.90)	
32.6-37.5	2,183	5.78	0.61	(0.58 0.64)		244	8.49	1.02	(0.88 1.18)		190	7.87	0.93	(0.79 1.09)	
>37.5	814	2.16	0.57	(0.53 0.62)		73	2.54	0.77	(0.60 0.97)		73	3.03	0.90	(0.70 1.14)	
Type of Delivery															
Vaginal	24,909	66.07	1.00		<0.001	1,314	45.99	1.00		<0.001	1,709	70.85	1.00		<0.001
Instrumental	977	2.59	0.71	(0.67 0.76)		6	0.21	0.08	(0.04 0.18)		15	0.62	0.16	(0.10 0.26)	
Caesarean	11,814	31.34	1.50	(1.47 1.54)		1,537	53.80	3.70	(3.44 3.99)		688	28.52	1.27	(1.17 1.39)	
Smoking															
Yes	304	0.81	1.22	(1.08 1.39)	0.001	20	0.70	1.06	(0.68 1.64)	0.809	19	0.79	1.20	(0.76 1.89)	0.433
No	37,294	99.19	1.00			2,842	99.30	1.00			2,378	99.21	1.00		
Maritul Status															
Unmarried	1,302	3.78	2.11	(1.98 2.25)	<0.001	121	4.52	2.54	(2.11 3.06)	<0.001	102	4.44	2.49	(2.04 3.05)	<0.001
Married	33,103	96.22	1.00			2,556	95.48	1.00			2,197	95.56	1.00		
Medical History															
DM															
Yes	2,837	7.47	0.81	(0.78 0.85)	<0.001	246	8.52	0.94	(0.82 1.07)	0.347	187	7.69	0.84	(0.72 0.98)	0.022
No	35,143	92.53	1.00			2,643	91.48	1.00			2,246	92.31	1.00		
HPT															
Yes	2,584	6.80	2.08	(1.98 2.17)	<0.001	475	16.44	5.60	(5.06 6.19)	<0.001	263	10.81	3.45	(3.03 3.93)	<0.001
No	35,396	93.20	1.00			2,414	83.56	1.00			2,170	89.19	1.00		
Anemia Delivery															
<=11	5,462	37.16	1.11	(1.07 1.16)	<0.001	437	37.03	1.11	(0.98 1.25)	0.089	328	36.20	1.07	(0.93 1.23)	0.331
>11	9,238	62.84	1.00			743	62.97	1.00			578	63.80	1.00		
Mother Complication															
Pre-eclampsia															
Yes	681	26.35	3.05	(2.72 3.43)	<0.001	191	40.21	5.74	(4.71 6.99)	<0.001	97	36.88	4.98	(3.84 6.47)	<0.001
No	1,903	73.65	1.00			284	59.79	1.00			166	63.12	1.00		
PIH															
Yes	1,857	4.89	2.00	(1.90 2.11)	<0.001	324	11.21	4.92	(4.37 5.54)	<0.001	172	7.07	2.96	(2.53 3.47)	<0.001
No	36,123	95.11	1.00			2,565	88.79	1.00			2,261	92.93	1.00		
No antenatal care															
Yes	669	1.76	2.29	(2.09 2.51)	<0.001	114	3.95	5.25	(4.32 6.37)	<0.001	119	4.89	6.57	(5.43 7.95)	<0.001
No	37,311	98.24	1.00			2,775	96.05	1.00			2,314	95.11	1.00		
Complication of baby															
Apgar score;															
At 1min; <7	2,986	8.05	1.83	(1.75 1.90)	<0.001	881	34.20	10.84	(9.96 11.79)	<0.001	726	44.05	16.42	(14.87 18.13)	<0.001
>7	34,109	91.95	1.00			1,695	65.80	1.00			922	55.95	1.00		
At 5 min; <7	797	2.16	2.08	(1.92 2.26)	<0.001	358	14.11	15.53	(13.78 17.50)	<0.001	476	29.71	39.96	(35.61 44.83)	<0.001
>7	36,170	97.84	1.00			2,179	85.89	1.00			1,126	70.29	1.00		
Prematurity															
22-36	10,978	36.77	8.02	(7.78 8.27)	<0.001	1,984	87.29	100.09	(87.77 114.13)	<0.001	1,441	72.78	39.83	(35.83 44.29)	<0.001
36-40	17,745	59.43	1.00			257	11.31	1.00			469	23.69	1.00		
>40	1,136	3.80	0.49	(0.46 0.52)		32	1.41	0.96	(0.66 1.38)		70	3.54	1.15	(0.89 1.47)	

Note : [a] Simple Multinomia)R = odds ratio;   95% CI = 95% confidence interval.
The reference category is: >2500 (normal)
[b] The assumptions of Logistics Regression were not me, there must be at least two cases for each category of the dependent.

CONCLUSIONS

Risk of Caesarean Section was high in this study. First time mothers have a higher risk of LBW babies. Educating women on importance of antenatal care, advice on quitting smoking and educating adolescents to delay child bearing is essential. The fact that LBW babies were high among Indians, we would like to postulate that LBW is related to high incidence of anaemia and this has been reported in the 2nd NOR report,2010. Efforts must be made to improve maternal nutritional status particularly anaemia and management of high risk pregnancies. There were insufficient numbers to conclude if multiple pregnancies, alcohol and drug abuse as variables leading to LBW.

REFERENCES

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2. 2nd NOR report 2010 , Editors R Jeganathan, SD Karalasingam ,Chapter 8, Pg 61