

MATERNAL OBESITY AND ADVERSE PREGNANCY OUTCOMES IN MALAYSIA.

Fonseka M¹, Lim ESS¹, Karalasingam SD², Jeganathan R², Rampal KG¹

¹Perdana University Graduate School of Medicine, Serdang; ²Clinical Research Centre, Kuala Lumpur

INTRODUCTION

There are 15-20% obese adults worldwide and its prevalence is rapidly growing. Women generally have higher rates of obesity than men. Women in their reproductive age are becoming pregnant with heavier weights and are also more likely to retain gestational weight with each successive pregnancy. These factors impact pregnancy outcomes in obese women. Thus, maternal obesity, a natural extension of obesity in general population, is now regarded as a public health concern in many countries, including Malaysia. However, there is a genuine lack of local information in this area. The aims of the study are to determine the prevalence of obesity and its implications on adverse pregnancy outcomes among pregnant women in Malaysia.

RESULTS

CHARACTERISTICS	CATEGORIES	FREQUENCY	PERCENT (%)
BMI	Normal weight (18.5-24.9)	12905	30.9
	Underweight (<18.5)	2732	7.3
	Overweight (25.0-29.9)	7882	21.3
	Obese I (30.0-34.9)	14297	38.7
	Obese II (>35.0)	9112	24.8
Age	10-19	2118	4.7
	20-29	29222	54.8
	30-39	18387	30.7
Ethnicity	Malay	34810	74.1
	Chinese	4468	9.7
	Indian	5009	10.8
Parity	0	104	0.2
	1	4609	9.9
	2	2588	5.9
Mother's Marital Status	Married	49325	95.8
	Single	1061	2.1
	Divorced	295	0.6
Mother's Gravida	1st Gravida	467	0.9
	2nd Gravida	478	0.9
	3rd Gravida	1060	2.1

Table 1: Socio-demographic Characteristics of Study Sample

VALUES (%)	CATEGORIES	FREQUENCY	PERCENT (%)
Hypertension	None	43246	92.8
	Pre-existing	540	1.3
	Chronic Hypertension with Superimposed Preeclampsia	2573	5.5
Diabetes	None	10817	86.5
	Pre-existing	158	0.3
Heart Disease	None	16603	99.3
	None/MI	106	0.2
Previous Obstetric History	Caesarean	6455	12.0
	Preterm Labor/Delivery	104	0.2
	Still Birth	179	0.3
Current Obstetric History	None	1897	0.6
	Preeclampsia/Eclampsia	12628	25.0
	Placental Problems	1729	3.4
Fetal Distress	None	180	0.3
	Shoulder Dystocia	171	0.3
	Fetal Distress	1014	2.0
Alliquations Percentage	None	170	0.3
	Shoulder Dystocia	100	0.2

Table 2: Past Medical and Obstetric History (Previous and Current Pregnancy)

CHARACTERISTICS	UNDERWEIGHT BMI < 18.5 n = 3732	NORMAL WEIGHT BMI 18.5 - 24.9 n = 15645	OVERWEIGHT BMI 25.0 - 29.9 n = 7822	OBESITY I BMI 30.0 - 34.9 n = 14797	OBESITY II BMI >= 35.0 n = 9411
Age at Delivery (years)	25.6 (4.9)*	27.3 (5.3)*	28.6 (5.7)*	29.6 (5.7)*	30.2 (5.3)*
Married	3567 (96.4)	14897 (96.0)	7490 (96.0)	14229 (97.0)*	9142 (97.8)*
Malaysian (including PR)	3554 (95.2)*	14641 (93.6)*	7320 (93.9)*	14008 (94.7)*	9069 (96.4)*
Multigravida	1877 (50.3)*	9476 (60.6)*	5277 (67.6)*	11000 (74.3)*	7474 (79.4)*
Pre-existing Diabetes	9 (0.3)	65 (0.5)	55 (0.8)*	152 (1.3)*	167 (2.5)*
Pre-existing Hypertension	4 (0.1)*	62 (0.4)	41 (0.6)	186 (1.3)*	247 (3.3)*
Previous C-section	221 (5.9)*	1270 (8.1)	852 (10.8)*	2080 (14.1)*	1732 (18.4)*
Previous Still Birth	17 (0.5)	84 (0.5)	62 (0.8)*	115 (0.8)*	101 (1.1)*

Table 3: Socio-demographic and Past Medical and Obstetric History of Mothers in each BMI Group.

PREGNANCY OUTCOMES	UNDERWEIGHT BMI < 18.5 n = 3732	NORMAL WEIGHT BMI 18.5 - 24.9 n = 15645	OVERWEIGHT BMI 25.0 - 29.9 n = 7822	OBESITY I BMI 30.0 - 34.9 n = 14797	OBESITY II BMI >= 35.0 n = 9411
Gestational Diabetes	189 (5.1)*	1093 (7.0)	765 (10.0)*	1969 (13.3)*	1936 (20.7)*
Gestational Hypertension	52 (1.4)*	333 (2.1)	284 (3.6)*	817 (5.5)*	1380 (14.6)*
Chronic Hypertension superimposed with Pre-eclampsia	4 (0.1)	24 (0.2)	20 (0.3)	83 (0.7)*	126 (1.3)*
Anemia	1084 (29.3)	4191 (26.8)	2109 (27.1)*	3415 (23.1)*	1889 (20.1)*
Premature Rupture of Membrane	157 (4.2)*	540 (3.5)	281 (3.6)	467 (3.2)	294 (3.1)*
IUGR	61 (1.7)*	134 (0.9)	81 (1.0)*	78 (0.5)*	55 (0.6)*
Postdates	298 (2.7)*	1458 (9.3)	780 (10.0)	1545 (10.4)*	814 (8.6)*
Vaginal Delivery	3001 (80.9)*	11285 (78.6)	5673 (75.3)*	10734 (72.5)*	6009 (64.0)*
Emergency C-section	4365 (11.6)	2231 (14.3)	1763 (22.6)*	3777 (25.5)*	2700 (28.8)*
Preterm Labour	175 (4.7)	241 (1.5)	225 (2.9)*	378 (2.6)*	239 (2.5)*
Prolonged Labour	23 (0.6)	126 (0.8)	87 (1.1)	134 (0.9)	121 (1.3)*
Postpartum Hemorrhage	14 (0.4)	10 (0.1)	54 (0.7)	141 (1.0)*	187 (2.0)*
Eclampsia	8 (0.2)	26 (0.2)	24 (0.3)	50 (0.3)*	45 (0.5)*
Shoulder Dystocia	1 (0.0)	18 (0.1)	10 (0.1)	30 (0.2)	33 (0.4)*
Fetal Distress	111 (3.0)	588 (3.8)	331 (4.3)	756 (5.1)*	400 (4.2)*

Table 4: Obstetric Complications and Adverse Pregnancy Outcomes of Mothers in each BMI Group.

METHODOLOGY

Retrospective cohort study using data from National Obstetrics Registry Malaysia

73 095 deliveries between July - December 2009
14 government hospitals (Peninsular & East M'sia)

Data cleaned using STATA - women delivering only singletons - 51 467 cases (70.4%)

Categorized according to BMI based on WHO definitions for Asian populations:
Underweight: BMI < 18.5 Kg/m²
Normal: BMI of 18.5 - 22.9 Kg/m²
Overweight: BMI of 23 - 24.9 Kg/m²
Obese I: BMI of 25 - 29.9 Kg/m²
Obese II: >= BMI of 30.0 Kg/m²

Analyzed data on socio-demographic characteristics, past medical and obstetric history and current pregnancy outcomes

Data analyzed using SPSS version 20

CONCLUSION

Maternal obesity (Obesity I and Obesity II, with BMI >= 25.0) is associated with increased incidence of :

- Gestational diabetes
- Gestational hypertension
- Chronic hypertension superimposed with preeclampsia
- Caesarean and instrument delivery
- Preterm labor
- Postpartum hemorrhage
- Eclampsia
- Fetal distress
- Shoulder Dystocia

DISCUSSION

This study showed that obese pregnant women in Malaysia are at risk of similar obstetric complications, as in previous studies. The mean age of mothers at delivery is 28 years with mean BMI of 25.0, which is the upper border of the obese class I category. In terms of ethnicity, approximately half of Indian mothers are obese, at 50.8% followed closely by Malay mothers at 49.1%. Chinese mothers on the other hand are largely within normal range of BMI (39.5%). The prevalence of complications arising from the pregnancy and delivery, is on the high side at 70.6% which translates into 36 349 cases, reporting one or more complications. This study has several limitations that needs to be stated. Firstly, the registry did not specify the gestational age of the women at their first booking date. So, we could only assume that the booking was done before their 10th week and as such, there has not been excessive weight gain. Study would have been more accurate if the registry included either the women's pre-pregnancy BMI or their gestational age at booking. The other limitation and possibly with important consequences, is the BMI categorization. We used the WHO's BMI definition for Asian population which states BMI >=25 kg/m² as obese. This poses a problem when comparisons between studies are made.

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