STALL FOR RESEARCE	Original Research Paper	Medical Science
17/ternational	Study of Effect of Maternal Bmi on P Women Admitted to Labour Ward o	rogress of Labour in f New Civil Hospital.
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ABSTRACT	udy the Effect of maternal BMI on labour outcome. erial and method Five hundred women who had singleton pregnance	cy who were admitted to the labour room

of new civil hospital categorised into three categories on basis of their BMI and the labour and neonatal outcome were noted in all this groups. This observational study on" Maternal BMI and its influence on feto-maternal outcome" enrolled 500 eligible consenting women delivering in the labour room of new civil hospital, Surat during the study period after approval from HREC.

KEYWORDS : BMI (body mass index)

INTRODUCTION

The increasing rate of maternal obesity provides a major challenge to obstetric practice. Maternal obesity can result in negative outcomes for both women and foetuses. The worldwide prevalence of obesity has increased substantially over the past few decades; Economic, technological and lifestyle changes have created an abundance of cheap, high-caloric food coupled with decreased requirement of physical activity. Metabolic dysregulation among obese individuals has also been linked with a number of possible environmental factors, including contaminants from modern industry. Obesity is a significant public health concern and is likely to remain so for the foreseeable future.

Obesity, the silent epidemic worldwide has reached a stage where approximately 2.3 billion adults will be overweight and more than 700 million adults will be obese by 2015, as projected by WHO(1). National Family Health Surveys in India indicated an increase in obesity from 10.6% in 1998-1999 to 14.8% in 2005-06(2).

The currently recommended cut-offs of BMI by WHO are (1):

NORMAL : 18.5 - 24.9 kg/m² OVERWEIGHT: 25.0 - 29.9 kg/m² OBESITY : ≥30kg/m² Obesity is further divided into -Class 1 - 30-34.9 kg/m² Class 2 - 35-39.9 kg/m² Class 3 -≥40 kg/m²

OBESITY AND PREGNANCY

Maternal obesity increases the risk of a number of pregnancy complications starting from infertility to obesity in their offsprings. This requires adjustment in routine prenatal care.

Hypertensive disorders are significantly more prevalent in obese pregnant women than in their lean counterparts. Even when overweight is moderate, the occurrence of hypertension and preeclampsia is significantly higher. (3)

The development of GDM which is strongly associated with obesity has a number of adverse maternal and foetal implications, includes an increased risk of hyperglycaemia, caesarean delivery, and diabetes in later life, with more than 50% of women with GDM acquiring diabetes within 20 years of delivery (4).

Obesity is associated with slow progress of labour, need for induction of labour, failed induction, increase incidence of caesarean delivery and instrumental delivery. (5)

OBJECTIVES

To evaluate the impact of maternal body mass index on progress of labour

Inclusion criteria:

Labouring women admitted to labour room of new civil hospital with full term singleton pregnancy with cephalic presentation and no contraindication to vaginal delivery.

Exclusion criteria:

Labouring women with multiple pregnancies, abnormal presentation, and previous caesarean section not eligible for VBAC, known case of DM, and hypertension.

RESULTS

The BMI distribution of our subjects as per the WHO Classification is presented below in Table-1a:

Table-1a

BMI	Number of subjects(n=500)	%
<24.9kg/m ²	276	55.2%
25-29.9kg/m ²	179	35.8%
>30kg/m ²	45	9%

Majority i.e. 55.2% of our subjects had BMI of less than 25 kg/m², 35.8% had normal BMI at full term/near term pregnancy; while 9% of subjects were obese i.e. had a BMI of over 30. This is probably because our hospital caters to women of lower socio-economic status.

Table- 1h

	BMI<24.9 Kg/m ²	$BMI > 30 \text{ Kg/ m}^2$		
	(n=276)	(n=45)		
Age				
≤19(n=31)	25	6		
20-25(n=240)	218	22		
>25(n=50)	33	17		
Parity				
Primi(n=151)	143	8		
Multi(n=170)	133	37		
Complications in previous pregnancy				
Abortion(n=11)	8	3		
Stillbirth (n=6)	3	3		
Neonatal death(n=12)	4	8		
Complications in antenatal period of current pregnancy				
Anaemia(n=23)	19	4		
Hypertension(n=33)	7	26		
GDM(n=3)	0	3		
PROM(n=17)	12	5		
Placenta previa(n=1)	0	1		
Abruption(n=1)	0	0		
Gestational age at delive	ery			
<37 weeks(n=86)	75	11		

GJRA - GLOBAL JOURNAL FOR RESEARCH ANALYSIS ★ 298

37-40 weeks(n=217)	197	20
>40 weeks(n=18)	4	14

Obesity was noted in 15% of subjects under 19 years, 6.37% of 20-25 years and 14.78% of more than 25 years age groups.

65.59% primis/nullis had normal BMI and 3.6% were obese; on the other hand 47.16% multis had normal BMI and 13.1% were obese. BMI of obese range was seen more frequently in the multiparous subjects (p-value <0.001).

86.4% subjects with normal BMI had an uneventful antenatal period while 13.6 % of subjects with obesity had an uneventful antenatal period. Subjects with normal BMI were more likely to have an uneventful antenatal period as compared to obese subjects. (p<0.001) Hypertension in obese was seen in 57.7% versus 2.5% in subjects with normal BMI. Subjects with obesity were more like-ly to have hypertension as compared to non-obese subjects. (p<0.001)

PROM in obese was seen in 11.1% versus 4.3% in subjects with normal BMI. Subjects with obesity were more likely to have PROM as compared to non-obese subjects. (p<0.05)

Prevalence of anaemia was similar in the both BMI groups.

GDM was seen in obese subjects only.

APH due to placenta previa was noted in only obese subjects (1 subject).

Post-datism was noted in 31.1% subjects with obesity versus 1.4 % subjects with normal BMI and the difference was statistically significant. (p<0.001)

Table 2

	BMI<24.9Kg/ m ² (n=276)	BMI>30 Kg/ m ² (n=45)		
Onset of labour (n=500)				
Spontaneous(n=292)	269	23		
Induced(n=29)	7	22		
Indication of induction(n=39)				
PROM(n=9)	4	5		
Oligohydramnios(n=6)	2	4		
Post datism(n=9)	1	8		
PET/PIH(n=5)	0	5		
Outcome(n=500)				
Vaginal delivery (n=191)	188	3		
Instrumental(n=7)	3	4		
LSCS(n=123)	85	38		
Duration of active labour(n=304)			
<1hr(n=0)	-	-		
1-2hr(n=8)	7	1		
2-3hr(n=101)	98	3		
3-4hr(n=87)	86	1		
>4hr(n=2)	0	2		
Duration of second stage of labour(n=304)				
≤30min(n=97)	97	0		
30-60min(n=100)	94	6		
>60min(n=1)	0	1		

 Induction of labour was needed in 2.5% of normal and 48.88% obese subjects. Obese subjects were found to need induction of labour more frequently as compared to nonobese subjects.(p-value <0.001)

68.11% of subjects with normal BMI had vaginal delivery, 1.08% had instrumental deliveries while 30.79% had LSCS.

- 6.66 % had normal delivery, 8.8% had operative vaginal delivery and 84.44% in the obese group had CS.
- The difference in vaginal delivery rates in obese versus nonobese subjects was statistically significant. (p value<0.001)
- The difference in numbers of subjects needing LSCS in obese versus non-obese subjects was also statistically

significant.(p value<0.001)

- Instrumental delivery was needed in 1.08% and 8.8% of subjects with BMI in normal and obese range respectively.
- The mean duration of active labour in the two groups (normal and obese respectively) was found to be 2.8hrs and 3.57hrs. The difference of duration of active labour in the obese and non-obese subjects was found to be statistically significant. (p value <0.001).

Table3

	BMI<24.9Kg/m ² (n=276)	BMI>30 Kg/ m ² (n=45)
LSCS indication(n=196)		
CPD(n=57)	52	5
Fetal distress(n=46)	30	16
Failed induction(n=8)	2	6
Failed progress(n=7)	1	6
Severe PET/Eclampsia(n=5)	0	5
VBAC results (n=15)		
Successful(n=8)	7	1
Unsuccessful(n=1)	0	1
Intra-natal and Post-natal problem	ms (n=304)	
Shoulder dystocia(n=198)	0	1
Perineal tear (n=198)	3	2
Blood loss >500 ml(n=198)	1	3
Pyrexia(n=321)	7	6
CS wound infection (n=196)	0	3
Episiotomy wound infection(n=114)	5	0
Prolonged hospital stay(n=321)	8	22

One obese subject had shoulder dystocia.

- Perineal tears were noted in two of the seven (28.57%) obese subjects delivering vaginally ,versus three of the 191(1.57%) non obese subjects delivering vaginally .**The difference in numbers of subjects having Perineal tears in obese versus non-obese was statistically significant.(p value<0.001)**
- Puerperal pyrexia was noted in 6 of the 45 (13.3%) obese subjects and 7of the 276(2.53%) non- obese subjects. The difference in numbers of subjects having puerperal pyrexia in obese versus non-obese was statistically significant. (p value<0.05)
- LSCS wound infection was found in 3 obese subjects.
- Prolonged hospital stay was noted in 22 of the 45 (48.8%) obese subjects and 8 of the 276 (2.89%) non- obese subjects. The difference in numbers of subjects having prolonged hospital stay in obese versus non-obese was statistically significant.(p value<0.05)
- Obese subjects accounted for 60% cases needing LSCS for failed progress, while subjects with normal BMI accounted for 10% cases needing LSCS for failed progress.

BMI and VBAC success:

- 50% obese subjects undergoing VBAC trial succeeded in delivering vaginally, while 100% non-obese subjects succeeded in delivering vaginally.
- ZThe difference in numbers of subjects having failure of VBAC in obese versus non-obese was statistically significant.(p value<0.001)

Conclusion:

Though obesity is not a very common problem amongst the pregnant women population in the middle and lower socio-economic status, its implications in terms of adverse pregnancy outcome are grave. So measurement of maternal BMI at antenatal booking visit should receive priority at all levels of antenatal care to avoid adverse pregnancy outcome.

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