

# Obesity And Outcome Of Pregnancy: A Comparative Study Of Obese Versus Non Obese Pregnant Women

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## **Abstract:**

**Aims And Objective:** To compare the outcome of pregnancy in obese and non obese pregnant women so that associated complications and problems can be reduced in obese pregnant women in future.

**Material And Methods:** 150 obese versus 150 non obese nullipara pregnant women studied and observed from early pregnancy till delivery.

**Results And Conclusion:** complications like early pregnancy loss, preterm deliveries, need for induction of labor, cesarean section rates, fetal distress, failed induction, gestational hypertension, big baby, antepartum hemorrhage, malpresentations were significantly high in obese pregnant women indicating potentially deleterious impact of obesity on course and outcome of pregnancy.

**Keywords:** obesity, early pregnancy loss, induction of labor.

## I. INTRODUCTION

Though obesity has long been a matter of concern for women in terms of cosmetic and lifestyle issues but it is increasingly evident that obesity is also a matter of health. Although it has been better studied in developed countries, obesity is now emerging as a problem in developing countries as well. According to WHO, a global pandemic of obesity is unfolding. Obesity is a growing global health problem resulting in new challenges for all healthcare professionals especially those working with pregnant women and neonates.

Overweight and obesity are defined as abnormal or excessive fat accumulation that may cause adverse health outcomes (World Health Organization, 2012). The World Health Organization has described obesity as one of today's most neglected public health problems, affecting every region of the globe.<sup>3</sup> The most commonly used measurement for defining obesity is BMI, which refers to an individual's weight in kilograms divided by the square of his or her height in meters. In adults, Body Mass Index) is used to classify an individual as

underweight (BMI < 18.5 kg/m<sup>2</sup>), normal weight (BMI 18.5-24.9 kg/m<sup>2</sup>), overweight (BMI 25.0-29.9 kg/m<sup>2</sup>) or obese (BMI ≥30.0 kg/m<sup>2</sup>). Obesity is further classified into three levels: Class I obesity (BMI 30.0-34.9 kg/m<sup>2</sup>), Class II obesity (BMI 35.0-39.9, kg/m<sup>2</sup>) and Class III (BMI ≥ 40.0 kg/m<sup>2</sup>).

Obesity is associated with profound metabolic and physiological changes in pregnancy. Adipose tissue is not an inert fat store but rather a hormonally active tissue, producing cytokines, as well as active materials produced predominantly in fat tissue, the adipokines. These materials result in the association of obesity with increased inflammation, insulin resistance and oxidative stress. The pathophysiological changes induced by obesity that are relevant to cardiovascular disease or preeclampsia all would be expected to increase ADMA. The incidence of preterm labor is high probably because of early interventions due to pre-eclampsia. This is consistent with the findings in literature that there is significantly increased incidence of elective pre term labor in obese women.<sup>9,10</sup> There is a significantly higher incidence of induction of labour and caesarean section in the group of

women with increased BMI. Usha et al (2005) reported one to two fold higher risk of cesarean section. Stringent anti obesity measures need to be implemented in women to prevent the complications of obesity in reproductive years. Nutritional education, behaviour modification, drug treatment and dietary therapy have been studied in obese adults. Maternal obesity is a risk factor for spontaneous abortion (for both spontaneous conceptions and conceptions achieved through assisted reproductive technology), as well as for unexplained stillbirth (intrauterine fetal demise). A recent meta-analysis of 9 studies revealed that obese pregnant women have an estimated risk of stillbirth that is twice that of normal weight pregnant women.

## II. AIMS AND OBJECTIVES

- ✓ To compare the fetomaternal outcome in obese and non-obese pregnant women.
- ✓ To reduce the complications and associated problems in obese pregnant women in future.

## III. METHOD AND MATERIAL

This hospital based comparative study was conducted in Department of Obstetrics and Gynecology, SMS Medical College, Jaipur during the year April 2013 to December 2014. Study comprising of 150 obese pregnant women as study group (BMI >30 kg/m<sup>2</sup>) and 150 non-obese pregnant women as control group (BMI 18.5 -24.9 kg/m<sup>2</sup>). Sample size is calculated at 80% study power and  $\alpha$  level of 0.05. All nullipara pregnant women were included in the study. Women with medical disorder like chronic hypertension, anemia, pre-pregnant diabetes, Scarred uterus, Placenta praevia and vasa praevia, Cardiovascular disease, Multiple pregnancy were excluded. Each patient was observed from the time of reporting to ANC (<8 week), during pregnancy till delivery. Women were counseled and assured that data collected would be kept confidential. A written consent was taken from patients before including in her study.

As this was an observational study with no unethical interventions, or danger to the patient due to the study itself, it is an ethically sound study. Ethical clearance was taken by the hospital committee for the same.

All routine investigation carried out with ultrasonography for fetal well being, if needed specific investigations were also carried out. All subjects were managed by labour room staff as standard practice. Maternal outcomes were recorded and analyzed statistically. The strength of association had been expressed as the odd ratio of obese versus control along with 95% confidence interval values. A p-value <0.05 was considered statistically significant.

## IV. RESULTS AND CONCLUSION

Early Pregnancy Loss ( $\leq 20$ wks)	Obese Group		Control Group	
	No.	%	No.	%
Seen	9	6.00	2	1.33

Not Seen	141	94.00	148	98.67
<b>Total</b>	<b>150</b>	<b>100.00</b>	<b>150</b>	<b>100.00</b>

P-value < .05

Table 1: Distribution of Cases According to Early Pregnancy Loss ( $\leq 20$  wks)

Early pregnancy loss is statistically significantly high (6.00%) in obese group compared to control group (1.33%).

Mode of Onset of Labour	Obese Group (n-141)		Control Group (n-148)		P-value
	No.	%	No.	%	
Induced	60	42.55	32	21.62	<.001 (HS)
Spontaneous	69	48.94	111	75.00	<.001 (HS)

Table 2: Distribution of Cases According to Mode of Onset of Labour

Above table showed a statistically highly significant need for induction of labour in obese group compared to non obese group.

Indication for Induction	Obese Group		Control Group	
	No.	%	No.	%
Pregnancy Induced Hypertensive Disorder	20	33.33	4	12.5
Rupture of Membrane	16	26.67	17	53.13
Postdate Pregnancy	13	21.67	10	31.25
Gestational Diabetes	11	18.33	1	3.12
<b>Total</b>	<b>60</b>	<b>100.00</b>	<b>32</b>	<b>100.00</b>

Table 3: Distribution of Cases According to Indication of Induction of Labour

Pregnancy induced hypertensive disorder (33.33% v/s 12.5%), gestational diabetes (18.33 v/s 3.12%) as indication of induction of labour were more common in obese group women compared to control group.

Mode of Delivery	Obese Group		Control Group		P-value
	No.	%	No.	%	
Vaginal Delivery	53	35.33	95	62.84	<.001 (HS)
Forceps Delivery	10	6.67	2	1.35	<.05
LSCS	87	58.00	53	35.81	<.001 (HS)
<b>Total</b>	<b>150</b>	<b>100.00</b>	<b>150</b>	<b>100.00</b>	

Table 4: Distribution of Cases According to Mode of Delivery

Results of our study show significantly higher rates of cesarean section in obese group as compared to those with control group (60.29% versus 35.81%).

Our study also reported increase incidence of forceps delivery (6.38% v/s 1.35%) in obese group compared to control group.

Period of Gestation	Obese Group		Control Group		P-value
	No.	%	No.	%	

<b>Preterm (&lt;37 wks)</b>	37	24.67	12	8.10	<.005 (HS)
<b>Term (37-40 wks)</b>	99	66.00	128	85.14	<.005 (HS)
<b>Postdate (&gt;40 wks)</b>	14	9.33	10	6.76	>.05
<b>Total</b>	<b>150</b>	<b>100.00</b>	<b>150</b>	<b>100.00</b>	

Table 5: Distribution of Cases According to Period of Gestation at Delivery

Preterm deliveries were significantly higher in obese group.

Indication for LSCS	Obese Group		Control Group	
	No.	%	No.	%
<b>Fetal Distress</b>	23	27.06	12	22.64
<b>Failed Induction</b>	21	24.71	10	18.87
<b>Non-Progress of Labour</b>	14	16.47	5	9.43
<b>Pregnancy Induced Hypertensive Disorder</b>	11	12.94	3	5.66
<b>Big Baby (Relative CPD)</b>	4	4.70	1	1.89
<b>Antepartum Hemorrhage</b>	3	3.53	5	9.44
<b>Malpresentation</b>	5	5.88	8	15.09
<b>Oligohydramnios</b>	4	4.71	9	16.98
<b>Total</b>	<b>85</b>	<b>100.00</b>	<b>53</b>	<b>100.00</b>

Table 6: Distribution of Cases According to Indication for LSCS

Fetal distress and failed induction were more frequent indications for cesarean section in obese group compared to control group.

From our study we concluded that maternal obesity has significant deleterious effect on course and the outcome of pregnancy and leads to maternal complications. With proper management of pregnant women with a higher BMI, improvement in awareness among them and in society and increasing their accessibility to medical facilities, maternal and perinatal morbidity and mortality can be minimized. Lastly as primordial prevention, dietary modifications from early life and life style changes can be helpful in achieving the goal we all strive for, a healthy mother and a healthy baby.

## REFERENCES

- [1] Hall LF, Neubert G. Obesity and Pregnancy.(2005) Obstetrics Gynecology Survey, vol 60 : 253-60.
- [2] WHO(2012).(<<http://www.who.int/mediacentre/factsheets/fs311/en>>2)
- [3] Pednaker MS (2008) association of body mass index with all cause and cause specific mortality. Finding from a cohort prospective study from Mumbai, India. Int Journal of Epidemiology, vol 37: 524-35.
- [4] World Health Organization updated january2015. Obesity and Overweight. (<http://www.who.int/mediacentre/factsheets/fs311/en/index.html>.)
- [5] Briana DD, Malamitsi-Puchner A.(2009) Adipocytokines in Normal and Complicated Pregnancies. Reproductive Sciences,vol 16 : 921-937.
- [6] Greenberg AS, Obin MS.(2006) Obesity and the role of adipose tissue in inflammation and metabolism. American Journal of Clinical Nutrition, vol 83: 461S-465S.
- [7] Berg AH, Scherer PE. (2005) Adipose tissue, inflammation, and cardiovascular disease. Circulation Research, vol 96: 939-49.
- [8] Ehrenberg HM, Mercer BM, Catalano PM (2004) The influence of obesity and diabetes on the prevalence of macrosomia. American Journal of Obstetrics and Gynecology, vol 191(3): 964-968.
- [9] Hendler I, Goldenberg RL, Mercer BM, Iams JD, Meis PJ, Moawad AH, MacPherson CA et al(2005). The Preterm Prediction Study: association between maternal body mass index and spontaneous and indicated preterm birth. American Journal of Obstetrics and Gynecology, vol 192(3): 882-886.
- [10] Smith GC, Shah I, Pell JP, Crossley JA, Dobbie R.(2007) Maternal obesity in early pregnancy and risk of spontaneous and elective preterm deliveries: a retrospective cohort study. American Journal of Public Health, vol 97(1): 157-162.
- [11] Usha Kiran TS, Hemmadi S, Bethel J, Evans J.(2005) Outcome of pregnancy in a woman with an increased body mass index. BJOG, vol 112(6): 768-772.
- [12] Swati Vyas, Ghani L, Khazaezadeh N, Oteng NE.(2008) Pregnancy and Obesity. Studd J, Tan LS, Chervenak AF. Progress in obstetrics and Gynaecology, Churchill Livingstone Elsevier, Vol 18: 11-28.
- [13] Abrams B, Altman SL, Pickett KE.(2000) Pregnancy weight gain: still controversial. American Journal of Clinical Nutrition, vol 71(5 Suppl): 1233S-1241S.
- [14] Chu SY, Kim SY, Lau C et al.(2007) Maternal obesity and risk of stillbirth: a metaanalysis. American Journal of Obstetrics Gynecology, vol 197: 223-228.