



A Comparative Study of Maternal And Fetal Outcome in Obese and Non Obese Pregnant Women

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ABSTRACT

This study was undertaken to compare fetomaternal outcomes in obese and non obese pregnant women so that associated problems and complications in obese pregnant women can be reduced in future. 150 obese versus 150 non obese pregnant women were studied from early pregnancy till puerperium to compare and analyze fetomaternal outcomes statistically. Complications like gestational hypertension, preterm labor, gestational diabetes, non progression of labor, fetal distress, shoulder dystocia, perineal tear, post partum hemorrhage, macrosomic baby, APGAR score < 7/10, NICU admissions, puerperal pyrexia, wound infection were more in obese pregnant women in comparison to non obese women indicating significant deleterious effect of obesity on pregnancy outcome.

KEYWORDS

obesity, gestational hypertension, gestational diabetes mellitus, pregnancy after obesity.

INTRODUCTION : Overweight and obesity are defined as abnormal or excessive fat accumulation that may cause adverse health outcomes (World Health Organization, 2012).¹ 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 problem² resulting in new challenges for all healthcare professionals especially those working with pregnant women and neonates. National Family Health Survey (NFHS-3) 2005-06 of India defines obesity as body mass index above 30.0 kg/m³.⁴

The World Health Organization has described obesity as one of today's most neglected public health problems, affecting every region of the globe.⁵ 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/m²), normal weight (BMI 18.5-24.9 kg/m²), overweight (BMI 25.0-29.9 kg/m²) or obese (BMI ≥30.0 kg/m²). Obesity is further classified into three levels: Class I obesity (BMI 30.0-34.9 kg/m²), Class II obesity (BMI 35.0-39.9, kg/m²) and Class III (BMI ≥ 40.0 kg/m²).² In low-income countries like India, overweight and obesity often coexist with under-nutrition (Mendez, Monterio and Popkin, 2005)⁶. Maternal obesity and its effect on the outcome of pregnancy and delivery in the Indian population has not hitherto been extensively studied. Higher incidence of gestational diabetes and macrosomia has been consistently reported by some authors in association with obesity^{7,8,9}. Thus, active

strategies for weight control and life style advice after delivery with regular follow up is needed for the management of these women. Similarly, increased risk of preeclampsia has also been reported^{7,8,9}. 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.^{10,11} There is a significantly higher incidence of induction of labour and caesarean section in the group of women with increased BMI. Stringent anti obesity measures need to be implemented in women to prevent the complications of obesity in reproductive years.

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.

To set the parameter for obese pregnant women regarding nutrition, education, behaviour modification, drug treatment and dieting.

MATERIAL AND METHODS :

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. It was a longitudinal study with follow-up.

Study comprising of 150 obese pregnant women as study group (BMI >30 kg/m²) and 150 non-obese pregnant women as control group (BMI 18.5 -24.9 kg/m²). Sample size was calculated at 80% study power and α level of 0.05. All nul-

lipara women were included while women with Medical disorder like chronic hypertension, anemia, pre-pregnant diabetes ,Scarred uterus , Placenta praevia and vasa praevia , Cardiovascular disease , Multipara , Multiple pregnancy were excluded. Each patient was observed from the time of reporting to ANC (<8 week), during pregnancy and delivery till she was discharged. 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. Any antenatal/intranatal/postnatal complication (e.g. pregnancy induced hypertensive disorders, gestational diabetes, antepartum hemorrhage, preterm labour pain, non progress of labour, fetal distress, post partum haemorrhage etc.) and management recorded. In the newborn sex, weight, APGAR score, gestational age and congenital anomalies, neonatal death, birth trauma, NICU admission were noted. Feto-maternal outcomes were recorded and analyzed. Both groups were compared in age and parity. Statistical data analysed. 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.

RESULTS , ANALYSES AND DISCUSSION :

Table 1. Distribution of Cases According to Treatment Taken for Infertility

Treatment for infertility	Obese Group		Control Group	
	No.	%	No.	%
Taken	30	20.00	12	8.00
Not Taken	120	80.00	138	92.00
Total	150	100.00	150	100.00

P-value < .005 (HS)

Above table shows 20% of obese group patients conceived after taking treatment for infertility while only 8% of control group required treatment for infertility. In 92% of control group conception was spontaneous. The difference was statistically highly significant.

Table – 2. Distribution of Cases According to Antepartum Complications

Antepartum Complications	Obese Group (n = 141)		Control Group (n = 148)		P-value
	No.	%	No.	%	
Pregnancy Induced Hypertensive Disorder	39	27.66	15	10.14	<.001 (HS)
Preterm Labour Pain	36	25.53	18	12.16	<.005 (HS)
Gestational Diabetes	17	12.06	3	2.03	<.005 (HS)
Postdated Pregnancy	13	9.22	10	6.76	>.05

Above table shows that percentage of pregnancy induced hypertensive disorder is 27.66 in obese group compared to control group (10.14). When comparing these data the difference was statistically highly significant (p value <.001). Preterm labour pain, gestational diabetes found more in obese group compared to control group (p value<.005).

Table 3. Distribution of Cases According to Intrapartum Complications

Intrapartum Complications	Obese Group (n = 141)		Control Group (n = 148)		P-value
	No.	%	No.	%	
Fetal Distress	23	16.31	12	8.11	<.05

Intrapartum Complications	Obese Group (n = 141)		Control Group (n = 148)		P-value
	No.	%	No.	%	
Non-Progress of Labour	14	9.93	05	3.38	<.05
Perineal Tear	11	7.80	3	2.03	<.05
Shoulder Dystocia	7	4.96	1	0.68	<.05

Above table shows that in obese group, fetal distress present in 16.31% cases compared to 8.11 % in control group. Difference was statistically significant (P-value < .05). statistically significant patients have non progress of labour compared to control group . perineal tear found in 7.80% cases in obese women compared to 2.03% cases in control group patients (P-value < .05).

Shoulder dystocia found in 4.96% cases in obese group compared to .68% in control group women (P-value < .05).

Table no. 4. Distribution of Cases According to Postpartum Complications

Postpartum Complications	Obese Group (n = 141)		Control Group (n = 148)		P-value
	No.	%	No.	%	
Puerperal Pyrexia	28	19.86	15	10.14	<.05
Wound / Stitch Line Infection	20	14.18	9	6.08	<.05
Post Partum Hemorrhage	18	12.77	7	4.73	<.05
Hospital Stay >7 days	15	10.64	6	4.05	<.05

Puerperal pyrexia present higher in obese group (19.86%) compared to control group (10.14%).(P-value < .05). Episiotomy wound/stitch line infection present in 14.18% obese group compared with6.08% in control group women. (P-value < .05).

Table no. 5. Distribution of Cases According to Fetal Outcome

Fetal Outcome No.		Obese Group (n = 141)		Control Group (n = 148)		P-value
		%	No.	%	No.	
Birth Weight	>4 kg (Macrosomia)	5	3.55	0	0.00	<.05
	≥3.5 kg	16	11.35	3	2.03	<.005
APGAR Score at 5 Minute	≥7/10	117	82.98	136	91.89	<.05
	<7/10	24	17.02	12	8.11	<.05
NICU Admission		34	24.11	14	9.46	<.005 (HS)
Preterm Baby Below 37 Weeks		33	23.40	12	8.11	<.001 (HS)
Birth Trauma		7	4.96	1	0.68	<.05
IUFD (>20 weeks)		3	2.13	1	0.68	>.05
Neonatal Death		3	2.13	1	0.68	>.05
Congenital Anomaly		2	1.42	0	0.00	>.05

Statistically significant patients have birth weight ≥3.5 kg in obese group compared to control group .Macrosomic baby, APGAR score <7/10, birth trauma found more in obese group (P-value < .05). Preterm baby and NICU admission higher in obese group compared to control group.

CONCLUSION :

From our study we conclude that maternal obesity has significant deleterious effect on the outcome of pregnancy and leads to major maternal and fetal complications. With proper management of pregnant women with a higher BMI, improve-

ment 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.

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