



**ORIGINAL RESEARCH PAPER**

**Medical Science**

**A STUDY OF EFFECT OF HIGH BODY MASS INDEX ON WOMEN IN TERM OF INTERTILITY AND EARLY PREGNANCY LOSS**

**KEY WORDS:** BMI- bodymass index, WHO-world health organization

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**ABSTRACT**

**Aim and objective-** a comparative study of effect of high mass index on women fertility and early pregnancy outcome. Material and method-hospital based comparative longitudinal study  
**Results-** A high BMI women more prone to early pregnancy losses and infertility.

**INTRODUCTION-**

High body mass index is emerging problem in modern world due to unhealthy lifestyle changes and stressfull environment conditions. Got a healthy baby for mother is a miracle in this world .so modification in our lifestyle and healthy food intake we can change our body mass index in normal side and pregnancy outcome. Her simply high body mass index means obese women. 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. Worldwide, in 2014 an estimated 1.9 billion adults are overweight and 600 million adults are obese.[1] At the current rate of increase , by 2015 , it is expected that there will be 2.3 billion overweight and more than 700 million obese adults worldwide.[1]National Family Health Survey system 2005-6 states that the percentage of married women aged between 15-49, who are overweight or obese increased from 11% in NFHS-2 (2003-04) to 15% in NFHS-3.[2]

Severalstudies have reported significant associations between high body mass index women and the reproductive system, including reduced fecundity and a higher risk of suffering from menstrual disorders and anovulation [3'4]. Hence, her high BMI women have a 3 fold higher risk of infertility due to anovulation when compared to normal weight women [4]. This has led to more overweight and obese women seeking help from assisted reproductive technologies(ART) to achieve a pregnancy. The association between obesity and miscarriage has been reported in a number of studies, both in the general population [5] as well as in women undergoing assisted reproductive techniques (ART) [6,7]. A remarkable number of these studies show an increase in the prevalence of miscarriage in case of obesity [5,7,8]; however, there are studies that found no association between these two issues [7,11]. The link between obesity and miscarriage has been reported in both natural and assisted conceptions. Bellver et al. [10] found a rise in the incidence of spontaneous miscarriage with increasing BMI in patients who had been treated by various ART, including embryo transfer using donor oocytes

**AIM AND OBJECTIVES-**

- To compare infertility problem and early pregnancy loss in high body mass index verses normal body mass index women.
- To reduce the complications and associated problems in high body mass index women in future.

**MATERIAL AND METHOD-**

This hospital based comparative longitudinal study with follow-up was conducted in Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur during the year 2013 to Dec 2014. Study comprising of 150 pregnant women as study group (BMI >30 kg/m<sup>2</sup>) and 150 pregnant women as control group (BMI 18.5 -24.9 kg/m<sup>2</sup>). **INCLUSION CRITERIA-**All nullipara pregnant women. **EXCLUSION CRITERIA-**Medical disorder like chronic hypertension, anemia, pre pregnant diabetes ,Scarred uterus Placenta previa and vasa previa, Cardiovascular disease Multipara Multiple pregnancy.

Each patient was observed from the time of reporting to ANC (<8 week), during pregnancy and delivery till she was discharged. 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.The height (in meters) of the study participants was recorded at the first antenatal visit while the weight (kg) was recorded at each visit.The measurement was used to calculate Quetlets index or the body mass index (BMI) using the formula weight (kg)/(height in meters)<sup>2</sup>. 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.

**OBSERVATIONS—**

**Table – 1: Distribution of Cases According to Age**

Age (in yrs)	High body mass index BMI > 30kg/m <sup>2</sup>		Control Group BMI 18.5-24.9kg/m <sup>2</sup>	
	No.	%	No.	%
20	37	24.67	49	32.67
21 – 25	75	50.00	80	53.33
26 – 30	30	20.00	17	11.33
31 – 35	8	5.33	4	2.67
<b>Total</b>	<b>150</b>	<b>100</b>	<b>150</b>	<b>100</b>
<b>Age Range</b>	18 – 35		18 – 32	
<b>Mean SD</b>	23.29+3.58		22.47+2.79	

Mean age was 23.29 ± 3.58 years in obese group compared to 22.47 ± 2.79 years in control group that is statistically significant. 25.33% patients in obese group were ≥26 yrs compared with 14% in control group. Difference was statistically significant (P-value < .05). This could be due to the age related weight gain in these patients.

**Table – 2: Distribution of Cases According to Residing Area**

Residing Area	High body mass index >30 kg/m <sup>2</sup>		CONTROL GROUP BMI 18.5-24.9 kg/m <sup>2</sup>	
	No.	%	No.	%
Urban	98	65.33	79	52.67
Rural	52	34.67	71	47.33
<b>Total</b>	150	100.00	150	100.00

Table-2 shows that in obese group 65.33% cases came from urban area compared to 34.67% from rural area. This difference is statistically significant (P-value < .001) shows that obesity is more common in urban population. This difference is due to sedentary life style of urban women who never perform hard work and faulty dietary habits.

**Table-3: Distribution Of Cases Accordig Gravidity**

Gravidity	High body mass index >30 kg/m <sup>2</sup>		Control Group BMI (18.5-24.9)	
	No.	%	No.	%
Primigravida	135	90.00	146	97.33
Nullipara (Gravida >1)	15	10.00	4	2.67
<b>Total</b>	150	100.00	150	100.00

Table-3 shows that 10% of high BMI group patients were gravida more than 1, but nullipara, compared to control (2.67%) showing that high BMI is a risk factor for miscarriage. Difference was statistically significant

**Table – 4: Distribution of Cases According to Treatment Taken for Infertility**

Treatment for infertility	High body mass index >30kg/m <sup>2</sup>		Control Group Normal BMI(18.5-24.9)	
	No.	%	No.	%
Taken	30	20.00	12	8.00
Not Taken	120	80.00	138	92.00
<b>Total</b>	150	100.00	150	100.00

Table-4 shows 20% of high BMI 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 significant.

**TABLE-5: Distribution of Cases According to Early Pregnancy Loss ( 20 wks)**

Early Pregnancy Loss ( 20 wks)	High body mass index >30kg/m <sup>2</sup>		Control Group BMI (18.5-24.9)	
	No.	%	No.	%
Seen	9	6.00	2	1.33
Not Seen	141	94	148	98.67
<b>Total</b>	150	100.00	150	100.00

Table-8 shows that early pregnancy loss ≤20 weeks (abortion) is high (6.00%) in high BMI group compared to control group (1.33%). Difference is statistically significant (P-value < .05).

**DISCUSSION-**

The increasing rate of maternal obesity (high BMI ) provides a major challenge to obstetric practice. Maternal obesity can result in negative outcomes for both women and fetuses. Obstetricians are well positioned to prevent and treat this epidemic. Table-1 shows that maximum number of patients in both groups belonged to age between 21-25 years. Mean age was 23.29 ± 3.58 years in high BMI group compared to 22.47 ± 2.79 years in control group that is statistically significant. In our study 25.33% patient in high BMI group were ≥26 yrs compared with 14% in control group. Difference was statistically significant (P-value < .05). This could be due to the age related weight gain in these patients. Our results were comparable with Meher-Un-Nisa et al[12] who reported that average age of obese group patients was 25.2 years and that of non obese was 24.1 years, showing that obesity was more often found in women of higher age. Table-2 shows that in high

BMI group 65.33% cases came from urban area compared to 34.67% from rural area. This difference is statistically highly significant (P-value < .001). This difference is due to sedentary life style of urban women who never perform hard work and faulty dietary habits. Popkin[13]; Drewnowski and Popkin et al<sup>14</sup> reported that urbanisation was a cause of obesity. Table-3 shows that 13.33% of high BMI group patients were gravida more than 1, but nullipara as compared to control (6%), showing that obesity is a risk factor for miscarriage. Difference was statistically significant. Lashen et al[14] in their study reported that obesity is a risk factor for recurrent miscarriages. Table-4 shows 20% of high BMI group patients conceived after taking treatment for infertility while only 8% of control required treatment for infertility. In 92% of control conception was spontaneous. So obesity is a risk factor for infertility. Lashen et al[14] reported that obesity was risk factor for infertility. Bellever et al[15] reported that increase incidence of assisted reproductive technique is found in high BMI group. Table-5 shows that early pregnancy loss ≤20weeks (abortion) were high (6%) in obese group compared to control group (1.33%). So high BMI is a risk factor for abortion. Similar result found in study done by Jain P et al[16], they reported increased incidence of abortion in extreme high BMI group compared non obese (P-value < .05). In contrast a study done by Debasmita et al[17], there no statistically significance difference found in abortion risk in both group.

**CONCLUSION-**

From our study we conclude that maternal high BMI 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, improvement in awareness among them and 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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