

## The Effect of BMI on Pregnancy Outcome Innulliparous Women

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### Abstract

*Introduction:* Maternal obesity has been associated with adverse pregnancy outcomes, such as pre-eclampsia, eclampsia, pre and post term delivery, increased rate of caesarean section. *Objectives:* To find out the effect of increasing body mass index (BMI) on pregnancy outcomes in nulliparous women delivering singleton babies. *Method:* This was a hospital based observational study, based on 300 nulliparous women delivering singleton babies in june(2017) to dec (2018). Women were categorized into four groups. Underweight (BMI < 20kg/m<sup>2</sup>), normal (BMI 20-25 kg/m<sup>2</sup>), overweight (BMI 25-30 kg/m<sup>2</sup>), and obese BMI >30 kg/m<sup>2</sup>. Obstetric Outcome compared by univariate and multivariate analysis. *Results:* Maximum no. of patients who underwent L.S.C.S (40%) were having B.M.I > 30 kg/m<sup>2</sup>. L.S.C.S. with C.P.D, Postdatism and post - L.S.C.S wound infection was maximum (44%), (32%) and (22%) for B.M.I > 30 kg/m<sup>2</sup>. Maximum no. of patients with Pre-eclampsia (38%) were having B.M.I. between 25-29.9 kg/m<sup>2</sup>. *Conclusions:* Increasing BMI is associated with increased incidence of cesarean delivery, Pre-eclampsia and pre-term delivery and post datism.

**Keywords:** BMI; Innulliparous Women; Singleton pregnancy.

### Introduction

The rising rate of obesity is a major public health concern in the West, Where 28% of pregnant women are over-weight and 11% are obese [1]. In the United States, the incidence of obesity in pregnancy varies from 18.5% to 38.3% according to the definition used. The problem of rising obesity is unique to India; WHO data shows that 2.6 million people die each year as a result of being over-weight or obese, which makes obesity a bigger killer than malnutrition, In earlier research, the relationship between maternal height and weight with pregnancy complications was extensively explored, but in recent times, BMI is widely accepted as a better measure of over and under-weight [2].

The aim of this study was to examine the association between BMI and obstetric outcomes in nulliparous women delivering single tone babies.

### Materials and Methods

This study was conducted after institutional ethical committee clearance.

This study was an observational study conducted in the department of Obstetrics and Gynecology, Vikhe Patil Institute of Medical Sciences at Ahmednagar from July 2017 to Dec. 2017 on 300 nulliparous women with singleton term pregnancies were included in this study.

### Inclusion Criteria

Nulliparous Women  
Singleton pregnancy

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*Exclusion Criteria*

- Multiple pregnancy
- Pregnancy with anomalies
- Pregnancy with Medical disorder

All anthropometric measurements (weight and height) were carried out by means of standard methodology.

BMI was calculated by means of the formula weight/ height<sup>2</sup>. Women were categorised into four groups :-

- Underweight (UW): BMI less than 20 kg/m<sup>2</sup>
- Normal (N): BMI of 20-24.9 kg/m<sup>2</sup>
- Overweight (OW): BMI of 25-29.9 kg/m<sup>2</sup>
- Obese (O): BMI > 30 kg/m<sup>2</sup>

*Obstetric outcome included the following-*

Incidence of L.S.C.S, Pre- eclampsia, Post- datism, pre- term, post L.S.C.S wound infection and incidence of L.S.C.S for C.P.D.

Statistical analysis was conducted using Statistical Package for Social Scientists (SPSS version 14).

Chi square test was applied for categorical variables. A p-value of less than < 0.05 was considered statistically significant.

**Results**

The value of chi - square of is 23.16 ( p<0.001), significant.

The Table 1 shows that there was maximum incidence of L.S.C.S, Post- Datism, Post - L.S.C.S wound infection in obese patients( B.M.I >30).

A total of 300 nulliparous women were included in this study out of these 7 (2%) women were underweight, 164 (55%) women were having normal BMI, 107(36%) were over weight and 22 (7%) were Obese shown in the table 1 below.

It was found that there was increased incidence of L.S.C.S as the BMI increases it has been found that there was no L.S.C.S in patients who were having BMI less than <20%. 19 (12%) women with normal BMI underweight L.S.C.S . The incidence of L.S.C.S was 21% (23 cases ) in overweight group and the highest incidence was found in the obese group (BMI>30 kg/m<sup>2</sup>) which was 9 cases constituting 40%.

The incidence of post - datism was 0%, 9%, 16%, and 32% in underweight, normal, overweight and obese nulliparous women respectively. Suggestive of increase in the BMI was associated with the increase in the incidence of post- datism.

The incidence of pre- term was maximum 14% in the under weight group.

In our study out of 300 women 11 (7%) women were having normal BMI, whereas 41(38%) overweight women had history of pre- eclampsia. There were 2 cases (9%) with pre- eclampsia with BMI more than >30 kg/m<sup>2</sup>.

It was observed that there was increased incidence of L.S.C.S done as a result of Cephalo pelvic disproportion as there was increase in BMI as it was 11%, 30% and 44% in normal, overweight and obese group respectively. It was observed that there was linear co- relation between BMI and incidence of post L.S.C.S wound infection , it was 5% in normal, 13% in overweight and 22% in obese patients.

**Discussion**

The results of our study were compared with the Jain et al study and it has been found that

The incidence of pre- eclampsia in normal BMI group and overweight group was 5.56% and 33.3% respectively which was comparable to 7% and 38% of our study. The incidence of L.S.C.S was 12 % and 56% in normal BMI and overweight plus obese group respectively which was comparable to our study

**Table 1:** Effect of BMI on pregnancy outcome

B.M.I	Total	L.S.C.S	Post Datism	Pre-Term	Pre- Eclampsia	L.S.C.S (C.P.D)	POST L.S.C.S Wound Infection
<20(UW)	7(2%)	0	0	1(14%)	0	0	0
20-24.99(N)	164(55%)	19 (12%)	14 (9%)	6(4%)	11(7%)	2(11%)	1(5%)
25-29.9(OW)	107(36%)	23(21%)	17(16%)	3(2.8%)	41(38%)	7(30%)	3(13%)
>30 (Obese)	22(7%)	09 (40%)	7 (32%)	0	2(9%)	4(44%)	2(22%)

Constituting 12% and 51% respectively. In another study done by Jenabi et al. [3] found that the incidence of L.S.C.S was 22% in patients with normal BMI and it was 51% in overweight plus obese patients. In our study it has been found that there was increased risk of pre-term labor was 14% in under weight which was comparable to 10% of Khashan et al. [4] study in both studies it has been found that the incidence of pre term was far more in underweight as compared to overweight and obese patients. In our study it has been found that the incidence of postdatism and post L.S.C.S wound infection is maximum in obese groups.

### Conclusion

Maternal BMI shows strong association with pregnancy outcome and complications. In our study it was concluded that Obesity is associated with increased incidence of L.S.C.S, Post-datism, Pre-eclampsia, L.S.C.S for cephalopelvic disproportion and post L.S.C.S wound infection. In our study it

was found that the incidence of pre term was highest in under weight women.

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