

# Morbidity Associated with Obesity in Pregnancy

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## ABSTRACT

Obesity is associated with increased risk of illness and disability. It is one of the leading preventable causes of death in the World. Major maternal complications associated with obesity include diabetes mellitus, hypertension, deep vein thrombosis, respiratory diseases, infections and birth defects and even decreased fertility. Economic consequences of obesity are operative delivery and its complications, prolonged hospital stay.

**Objective:** 1) To review maternal and fetal morbidity associated with obesity.

2) To observe the mode of delivery in obese pregnant female.

**Study Design:** Observational study (cross section)

**Place and Duration of Study:** This study was conducted at Khair-un-Nisa Hospital affiliated with Fatima Memorial Hospital from April 2011 to October 2011.

**Patients and Methods:** 60 patients were enrolled in this study. Women with BMI more than 30 were included in our study. BMI was calculated by pre-pregnancy weight or weight during first trimester at booking within outpatient department. Patients with history of chronic hypertension, diabetes mellitus were not included in the study.

**Results:** The prevalence of obesity is increasing in our young population. In this study mean age is 30 years  $\pm$  SD 91.25. Most of the patients had BMI 33  $\pm$  SD 2.80. Hypertension, diabetes, urinary tract infection 18.33%, congenital abnormalities 16.7%. Most of the patients ended on LSCS 30.5 %, wound infection noted in 11 patients 18.3%. During normal vaginal delivery 4 patients 6.7% had third degree perineal tear and 11 patients had post-partum hemorrhage. Fetal complications were birth asphyxia in 8 (13.3%) neonates and shoulder dystocia in 2 (3.3%) babies.

**Conclusion:** Obesity is a public health problem because of its prevalence, cost and health effects. Maternal obesity carries significant risk for mother and fetus. Risk increases with degree of obesity. Feto-maternal morbidity associated with it, can be prevented by creating awareness and preventing overweight and obesity in adults and children.

**Key Word:** Obesity, Body Mass Index (BMI), lower segment caesarean section (LSCS).

## INTRODUCTION

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and increased health problems.<sup>1</sup> Abnormal accumulation of body fat usually 20% or more over an individual ideal body weight and is associated with increased risk of illness and disability, it is one of the leading preventable cause of death in World.

On average, obesity reduces life expectancy by six to seven years. A BMI of 30-35 reduces life expectancy by two to four years, while severe obesity (BMI>40) reduces the life expectancy ten years.<sup>2</sup>

There are many adverse effects of obesity on pregnancy outcome. These include increased risk of early miscarriage and recurrent miscarriages, thromboembolic disease, increased neural tube defects and heart defects on fetus, gestational hypertension, preeclampsia, gestational diabetes, sleep apnea, non-alcoholic fatty liver diseases, intrauterine fetal death, increased risk of caesarean section and post-operative complications such as infections (urinary tract

infection, wound infection, and endometritis), hemorrhage and deep vein thrombosis.<sup>3</sup>

Maternal obesity is also known to be associated with increased rate of operative delivery and shoulder dystocia. Obesity among pregnant women is becoming one of the most important women health issue.

## PATIENTS AND METHODS

This study was conducted from April 2011 to October 2011 at Khair-un Nisa Hospital which is tertiary care hospital. Women who were pregnant with BMI more than 30 included in our study.

60 patients were added in this study meeting the inclusion criteria. These women were observed during whole ante natal period, delivery and even six week post-delivery regarding mother and infant complications. Proper clinical examination, basic laboratory investigations, and imaging were carried out. BMI (Body Mass Index) was calculated by dividing the subject weight by the square of height in meters (Kg/m<sup>2</sup>). In pregnancy BMI is calculated using pre-pregnancy weight if this is unknown then weight measurement at booking is used. The most commonly

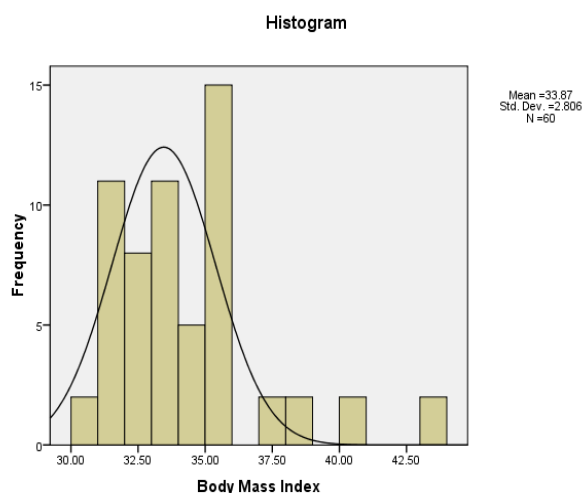
used definition, established by the world health organization (WHO) in 1997 and published in 2000.<sup>4</sup>

|                 |                     |
|-----------------|---------------------|
| BMI 18.5 – 24.9 | Normal Weight       |
| 25.0 – 29.9     | Over weight         |
| 30 – 34.9       | Class one obesity   |
| 35.0 – 39.9     | Class two obesity   |
| > 40            | Class three obesity |

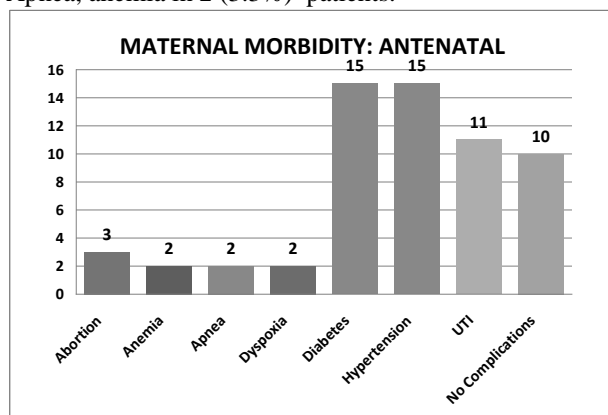
Clinical data was collected and assessed at SPSS version 17.

## RESULTS

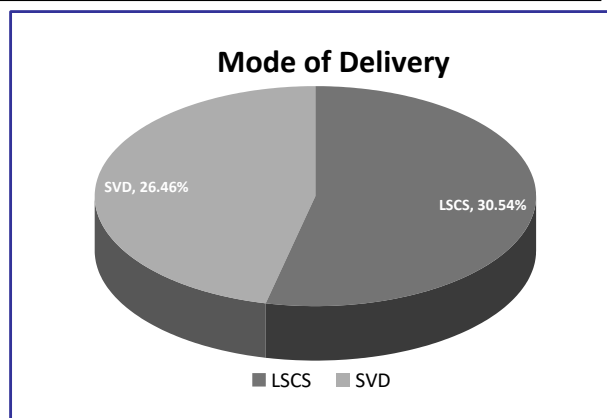
Prevalence of obesity is increasing in our young population. In this study mean age is 30 years, most of them had BMI  $33 \pm \text{SD } 2.8$ .



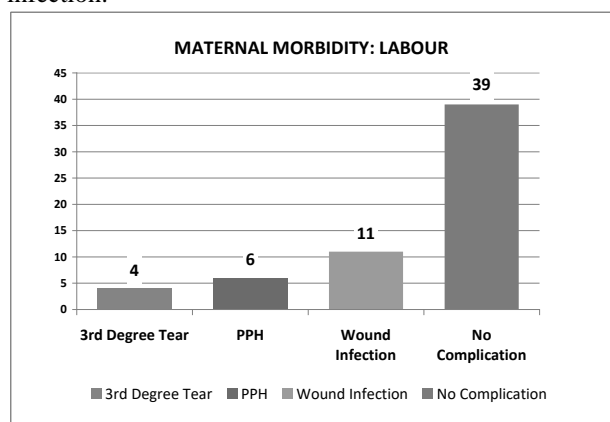
Maternal morbidity associated with obesity was hypertension, diabetes in 15 patients (25%) each. Urinary tract infection noted in 11 (18.33%) patients. Apnea, anemia in 2 (3.3%) patients.



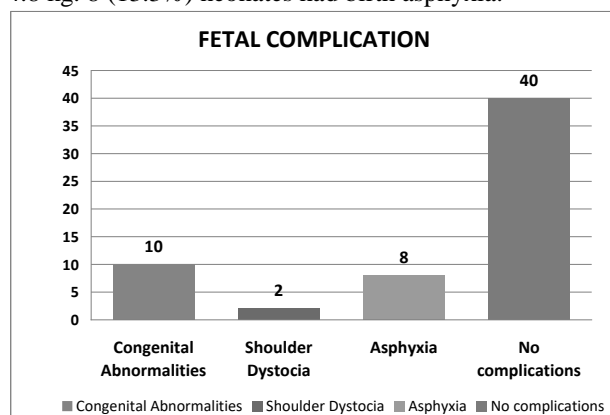
Most of these patients delivered by lower segment caesarean section 30.54% and by spontaneous vaginal delivery (26.46%).



During delivery 4 patients (6.11%) had 3<sup>rd</sup> degree prenil tear and 6 (10%), patients had post-partum haemorrhage (PPH), 11 patients (18.3%) had wound infection.



Among fetal complications congenital abnormalities during antenatal in 10 patients (16.7%). 2 (3.3%) babies had shoulder dystocia due to increased infant weight 4.8 kg. 8 (13.3%) neonates had birth asphyxia.



## DISCUSSION

The world health organization (WHO) predicts that over-weight and obesity may soon replace more traditional public health concerns such as under nutrition and infectious diseases are the most significant causes of poor health. Public health efforts seek to understand and correct the environmental factors responsible for the increased prevalence of obesity in the population. We should look at changing the factors that cause excess food energy consumption and inhibit physical activity.

Before 20<sup>th</sup> century, obesity was rare.<sup>5</sup> In 1997 WHO formally recognized obesity as a global epidemic. In 2005 WHO estimated that at least 400 million adults were obese with higher rate among women than men.

It was initially considered a problem only of high income countries, but obesity rate is rising worldwide and affecting both the developed and developing countries. These increases have been felt most dramatically in urban settings than rural settings.<sup>6</sup> The only remaining region of the World where obesity is uncommon is sub-Saharan Africa.

The increased risk of complications in obese women during pregnancy and delivery emphasis the need for the specialists and health care workers involved in treating obese women to be aware of the risk, complications and their management.

Approximately 1-3% of women, compared to 17% of obese women, develop gestational diabetes mellitus during pregnancy in Linn Y et al study.<sup>7</sup> But in our study 25% patients had gestational diabetes as Asians are more prone to develop diabetes than Europeans.

Studies conducted by andreason KR, anderen ML and schantz AL show that maternal obesity is an important factor for gestation hypertension.<sup>8</sup> Another study conducted by Castro according to the risk of preeclampsia typically doubles with each 5-7 Kg/m<sup>2</sup> increase in pre-pregnancy BMI. Obese pregnant women have a 14-25% incidence of preeclampsia.<sup>9</sup> The results of our study is comparable with overall literature that 25% patient develop hypertension during pregnancy.

A study was conducted by Usha KTS, hemmadi S, bethel J, Evans J they found an increased incidence of urinary tract infection in obese women but the incidence of wound infection is not increased as previously observed.<sup>10</sup> But in our study 18.3% incidence of urinary tract infection and wound infection was 18.3% also.

Obesity is an independent risk factor for caesarean section.<sup>11</sup> It increases the caesarean section rate over 20% compared to nearer 10% for normal weight women.<sup>12</sup> In recent years caesarean section rate has risen to record level of 46% in China and 25% in many Asians and European countries, Latin America and United States.<sup>13</sup> which is quite comparable to our study having 30.54% caesarean section rate.

Obese women tend to have higher rate of post-partum hemorrhage, the increase incidence of cesarean section among obese women has been implicated as the causative factor. Obese patients with BMI >30, who had a vaginal delivery had a greater than 500 ml blood loss compared to those with a BMI of 20-30 Kg/m<sup>2</sup>.<sup>14</sup> In our study PPH is seen in 10% of patients. In post-partum period obese women are found to have prolonged hospital stay for more than 4 days as compared to non-obese women who had hospital stay of about 2 days as shown in Nuthala paty FS, Rouse DJ.<sup>14</sup>

For every incremental unit increase in BMI the risk of neural tube defects increases by 7%.<sup>15</sup> Hyperinsulinemia is a strong risk factor for neural tube defects but even after the adjustment of hyperinsulinemia, obesity continues to be a modest risk factor.<sup>16</sup>

## CONCLUSION

The health and economic impact of rising obesity rate in women of reproductive age, is of significant public health importance as obesity is an important modifiable risk factor for adverse pregnancy outcome. Helping women to understand the risk associated with obesity and working with them for motivation to decrease obesity and its risks. Awareness needs to be created on the importance of normal weight before conception.

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