INCREASED BODY MASS INDEX: IMPLICATIONS IN PREGNANCY
Mangala B. Rudrawadi¹, B.A. Rudrawadi², Sneha³

HOW TO CITE THIS ARTICLE:

ABSTRACT: INTRODUCTION: The increased prevalence of obesity in women is a major public health concern. These trends have a major impact on pregnancy outcome in these women, which have been documented by several researchers. OBJECTIVE: To show the increased risk of adverse outcomes in labour and fetomaternal morbidity in obese women (BMI>30) and outcome of pregnancy. MATERIAL AND METHODS: Comparisons were made between women with a BMI <30 compared to those with more than 30. Main outcomes measures: 1. Labour Outcome:- Labour outcomes assessed were risk of postdated pregnancy Induction of Labour. Mode of delivery. Failed Instrument delivery, Macrosomia and shoulder dystocia. 2. Maternal adverse outcomes:- Maternal adverse outcomes assessed were postpartum hemorrhage, wound infection. 3. Fetal well being:- Fetal well being assessed using Apgar Score <7 at 5 mn. fetal anomaly, trauma, asphyxia Requiring neonatal ward admission. RESULT: Maximum patients who underwent LSCS were having BMI>30 as compared to normal BMI women with over weight & obese faced higher risk of PIH, failed induction of labour and intrapartum complications.

INTRODUCTION: Maternal obesity has been reported as a risk factor for various antenatal, intrapartum, postpartum and neonatal complications such as postdates, induction of labour, macrosomia, shoulder dystocia, prolonged duration of labour, increased blood loss, caesarean section rates and neonatal admission [5].

It is already commonly known that maternal over weight and obesity are associated with adverse pregnancy outcome such as maternal hypertension, preeclampsia, gestational diabetes, more frequent cesarean delivery, delivery of large for gestational age (LGA) infants and still births [8].

OBJECTIVE: To show the increased risk of adverse outcome in labour and fetomaternal morbidity in obese women (BMI>30) and outcome of pregnancy.

MATERIALS AND METHODS: A total no. of 100 pregnant women at term attending ANC clinic included in the study, all anthropometric measurements (weight and height) were carried out by means of standard methodology as described by Lohman et al. [7] the BMI was calculated for all the patients. A study was prospective clinical study done on a out-patient basis from January 2012 to June 2013 at Basaweshwar teaching and general Hospital and Sangameshwar teaching and General hospital Gulbarga. The patients were divided into group A(Less than 30 BMI) which was considered as a comparison group and group B (More than 30BMI) which was the study group. These women were followed till delivery. New born baby weight was recorded at the time of birth for all. The BMI was used as Indicator of obesity as per the WHO classification in 1999[13].
BMI was calculated by means of the formula weight/height$^2$
- Normal BMI 20 — 24.9 kg / m$^2$
- Overweight BMI 25 — 29.9 kg/m$^2$
- Obese BMI > 30 kg / m$^2$

Outcome measures assessed included post dates, induction of labour, macrosomia, operative delivery and maternal and perinatal morbidity.

Inclusion criteria:
1. All women with singleton un-complicated pregnancy at term are included in the study.
2. Women with normal BMI and above.

Exclusion Criteria:
1. Women with multi fetal gestation.
2. Babies with congenital malformation.
3. Pregnancy with known medical disorder like diabetes mellitus, hypertension, cardiac and surgical conditions.

RESULT: A total of 100 pregnant women at term were included in the study after strict application of inclusion and exclusion criteria of which 20 cases were obese with BMI of > 30, 80 cases with BMI of < 30. The mean age was not significantly different in the comparison group and those with study group. Most of the adverse effects were observed in the study group than the comparison group. As it is evident from table no. 2, women with BMI more than 30 were at increased risk of post date pregnancy and more likely to require induction of labour. The mean duration of 1$^{st}$ stage of labour(hours) and 2$^{nd}$ stage of labour(in Minutes) were not significantly different in the groups. 20% of the study group patients had prolonged 2$^{nd}$ stage labour that is more than 2 hours. The incidents of induction of labour were 20% in group B as compare to 25% in group A, 20% of the study group had a failure of induction of labour as compare to 5% in comparison group. Significantly it is noted only 25% of the study group had a normal vaginal delivery as compare to 45% in comparison group. 45% had an elective caesarian section in the study group as compare to 25% in the comparison group. 10% had an emergency LSCS in the group B than 5% in group A. 15% and 5% macrosomia and shoulder dystocia are seen respectively in the study group. PPH UTI, Wound infection were seen more in women with BMI >30 as compare to women with <30 BMI (Table-1). Congenital anomalies are seen 1 each in both groups.

DISCUSSION: An increasing trend towards obesity was found over the last 10 years, and at present, one third of our pregnant population has a BMI greater than 30. This is similar to the national trend [1]. But our study shows 20% pregnant population as a BMI >30.

Although the mean age in those who were obese did not significantly differ from the comparison group in this study, it has been reported that increasing age is an added risk factor for obesity [2,10,13].

This study detected a higher incidence of postdates, induction of labour, caesarean section, macrosomia and shoulder dystocia in the group of women with increased BMI. Macrosomia has been consistently reported by many researchers [6,11,12].
Our findings of an increased risk of caesarean section in women with a BMI > 30 is in accordance with other published work and the excess risk appears to be twofold [6,10,11]. Unfortunately, in the UK National Sentinel Caesarean Section Audit. It was not possible to evaluate the effect of maternal weight on the rate of caesarean section, but it was noted that 34% of women who were delivered by caesarean section had a BMI greater than 30 [3].

It is possible that these complications could be a cascade of events with the starting point being postdates, and then a difficult induction leading to other interventions. Why there should be delay in onset of labour in these women is unknown.

It is likely that many of the maternal and fetal complications follow as a result of labour events. An increased caesarean section rate is likely to lead to increased blood loss, especially where emergency procedures for large baby's are being undertaken. However, obese women who had vaginal delivery also had excessive blood loss over 500 ml. when compared with those with a BMI of 20 — 30 [1]. Similar observation was made in our study. Hence, increased rate of caesarean section might not be the only factor influencing the blood loss in this group. Most studies have noted an increased incidence of infection (e.g. genital, urinary) [4,11] but our study shows only two cases of each urinary tract and wound infection, probably because of antibiotic prophylaxis before any procedure.

This study, however clearly demonstrates the increased risk associated with embarking upon a pregnancy with over weight, and shows that this group of women need to be regarded as 'high risk' when counseling and risk assessment is done in the antenatal. It has been recommended in the fifth Confidential Enquiries into Maternal Deaths that all mothers should have their BMI calculated at booking as a part of the full risk assessment and should be offered advice about sensible weight reduction, including diet and exercise and referral to a dietician where appropriate [1].

In summary the study demonstrates and confirms that an increased BMI increases the incidence of macrosomia the need for obstetric interventions and consequent morbidity in mother and baby.

Pregnancy is a life event in which women are inclined to behavioral changes. Is it possible that with appropriate management before and during pregnancy, the gestational weight gain could be reduced and may be even contribute to persistent behavior changes concerning nutrition and physical exercise post parental.

CONCLUSION:
1. The increased maternal BMI is associated with many adverse pregnancy outcomes and its risk increases with the degree of obesity.
2. Obese women appear to be at risk of intrapartum and postpartum complication.
3. They should be considered as high risk and counseled accordingly.
4. Obese mother are more likely to develop metabolic syndrome later in life turns posing a significant health and economic burden worldwide, Great awareness is needed by health professional who are obese women of child bearing age.
Complications | Group A (no. of patients 80) | Group B (No. of patients 20) |
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<tr>
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<tbody>
<tr>
<td></td>
<td>Less than 30 BMI</td>
<td>More than 30 BMI</td>
</tr>
<tr>
<td>PPH</td>
<td>06</td>
<td>7.5%</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Wound infection</td>
<td>-</td>
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<tr>
<td>Apgar score&lt;7 at 5 mins.</td>
<td>09</td>
<td>11.3%</td>
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<tr>
<td>Congenital Anomalies</td>
<td>01</td>
<td>1.2%</td>
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Table 1: Maternal and neonatal complications

Outcome | Group A (No. of patients 80) | Group B (No. patients 20) |
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<tr>
<td></td>
<td>Less than 30 BMI</td>
<td>More than 30 BMI</td>
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<tr>
<td>Post Datism</td>
<td>14</td>
<td>17.5%</td>
</tr>
<tr>
<td>Induction of Labour</td>
<td>20</td>
<td>25%</td>
</tr>
<tr>
<td>Failure of Induction</td>
<td>04</td>
<td>5%</td>
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<tr>
<td>4. Mode of delivery</td>
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<td></td>
</tr>
<tr>
<td>A. vaginal delivery</td>
<td>36</td>
<td>45%</td>
</tr>
<tr>
<td>i) Vaginal delivery with complications</td>
<td></td>
<td></td>
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<td>ii) Second stage more than 2 hours</td>
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<td>03</td>
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<tr>
<td>a. Macrosomia Shoulder dystocia</td>
<td></td>
<td>01</td>
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<tr>
<td>B. LSCS</td>
<td></td>
<td></td>
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<tr>
<td>i) Elective</td>
<td>20</td>
<td>25%</td>
</tr>
<tr>
<td>ii) emergency</td>
<td>04</td>
<td>5%</td>
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Table 2: Labour Outcome

REFERENCES:

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