

IMPACT OF HIGH MATERNAL BMI ON FETAL AND MATERNAL OUTCOME: A PROSPECTIVE OBSERVATIONAL STUDY.

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Abstract

Aim: to study the impact of increased BMI on fetal and maternal outcome.

Materials and methods: The present descriptive observational study was conducted in the Department of Obstetrics and Gynecology, Nalanda Medical College and Hospital, Patna, Bihar, India over the period of 1 year. The study includes total 100 subjects who have taken antenatal care at the hospital. Descriptive statistics included computation of percentages, means and standard deviations were calculated using SPSS version 20.

Results: mean maternal age at birth was 28.11 years and mean BMI (kg/m^2) was 27.12. The mean birth weight of babies was 3.12 kgs and mean NICU stay was 5.21 days. Still birth (11%) and Neonatal death (8%) were reported as the major fetal outcome. Under maternal outcome Caesarean section followed by Pre-eclampsia, PIH and GDM were reported as the major morbidities.

Conclusion: Present study confirmed that maternal obesity is now becoming one of the most common risk factors in pregnancy, leading to complications that impact on the health of both the woman and her offspring.

Keywords: BMI, Obesity, Maternal, Fetal, Outcome

Introduction

Obesity is a chronic illness which is associated with metabolic disease, nutritional deficiency, musculoskeletal complications and carcinomas. These obesity-related health issues extent to pregnancy where they are responsible for producing a variety of medical and obstetric complications resulting in an increased incidence of maternal and fetal adverse outcomes.ⁱ

In India the epidemic of obesity is seen alongside continuing problem of under nutrition, creating a double burden.ⁱⁱ According to NFHS (2005-06) surveys more than 30 million people of India are obese, which is approximately 6% of the obese people worldwide.ⁱⁱⁱ Currently third in the chart next only to US & China; India is racing ahead to top the chart. There is also a steady rise in obesity among children in Asian population with it rising up to 25% in some developing countries.^{iv}

There is considerable evidence that maternal obesity during gestation increases the incidence of complications such as childhood obesity, diabetes, cardiovascular diseases, several types of cancer, and metabolic syndrome at multiple life stages in the offspring.^v

In contrast, maternal underweight has a protective effect on these pregnancy complications except for the slightly increased risks of having a baby with low birth weight and

intrauterine growth restriction. As many of the physiological changes of pregnancy associated with maternal obesity are present from early pregnancy onward, reducing maternal obesity before conception is probably the best strategy to decrease the health burden of adverse fetal and birth outcomes.^{vi}

The studies of feto-maternal adverse outcomes have been primarily based on retrospective studies, reviews, and large birth registries, have used weights rather than BMI, and have been limited in the outcomes evaluated. Hence the present study was undertaken to study the impact of increased BMI on fetal and maternal outcome.

Materials and methods

The present descriptive observational study was conducted in the Department of Obstetrics and Gynecology, Medical College and Hospital, Patna, Bihar, India over the period of 1 year. The study includes 100 subjects who have taken antenatal care at the hospital. The study protocol was reviewed by the Ethical Committee of the Hospital and granted ethical clearance. After explaining the purpose and details of the study, a written informed consent was obtained.

Inclusion Criteria

1. Pregnant woman who give informed consent for study

- Pregnant woman with gestation >30 weeks
- Pregnant women with singleton pregnancies

Exclusion Criteria

- Pregnant woman presenting <30 weeks of gestation.
- Pregnant women present with any medical disorders like thyroid, renal, diabetes mellitus type II and adrenal disorders..

Methodology

Pregnant woman were followed up in each antenatal visit as well as in ward in case of any complication before or after delivery. Detailed history was taken including complaints during present pregnancy, past history, menstrual history, obstetrical history. Detailed general physical examination and obstetrical examination was done. Neonatal status was followed up in the ward or NICU.

Statistical Analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 20 (SPSS Inc., Chicago, Illinois, USA).

Descriptive statistics included computation of percentages, means and standard deviations were calculated. The confidence interval and p-value were set at 95% and ≤ 0.05 respectively

Results

Table 1: Fetal-maternal clinical profile

Variables	Mean	Std. Deviation
Maternal		
Age (Years)	27.11	3.19
BMI (Kg/m ²)	27.12	2.09
Fetal		
Gestational age (week)	37.21	1.12
Weight	3.12	0.69
NICU stay	5.21	4.79

Table 2: Fetal outcome

Outcome	N (%)
Survived	81 (81%)
Stillbirth	11 (11%)
Neonatal Death	8 (8%)

Table 3: Maternal outcome

Maternal outcome	N %
Caesarean section	36 (36%)
Pre-eclampsia	27 (27%)
Pregnancy Induced Hypertension	22 (22%)
Gestational Diabetes Mellitus	15 (15%)
Post-Partum Hemorrhage	3 (3%)
Wound infection	3 (3%)
Urinary Tract Infection	2 (2%)

Discussion

Worldwide there has been alarming increase in the incidence of obesity and overweight, particularly in the past two to three decades. In the latest report, the WHO has indicated that approximately 1.6 billion adults are overweight and around 400 million are obese. Obesity as thus becomes a major contributor for global burden of chronic diseases and disabilities.^{vii}

In the present study mean age was 28.11 years and mean BMI (kg/m²) was 27.12. Kumar HAS et al.^{viii} in their study reported that maximum numbers of patients were in the age group of 25 to 30 years in all the BMI groups. Shuchi L et al.^{ix} revealed that mean age was 27.92 in the BMI>30 group compared with 24.2 in the BMI<30 group. This could be due to the age related weight gain in these patients.

In the present study, the mean NICU stay was 5.21 days. Other studies have also found that the incidence of NICU admissions increased significantly with increase in BMI.^{x,xi} The mean birth weight of babies in this study was 3.12 kgs. Hincz et al and Mazumder et al. found that the mean birth weight of babies increased with the increase in BMI.^{xii,xiii}

Present study reported still birth (11%) as major fetal outcome and Neonatal death was observed in 8% of the cases. Similary Sahu et al.^{xiv} found higher rate of still births in obese women and Fatima et al.^{xv} Early neonatal death occurs in 11% of overweight and 1% of normal weight pregnant women.

Under maternal outcome the present study identifies that 22% of cases were related to Pregnancy Induced Hypertension due to overweight. The findings are consistent and relevant to the other studies conducted at various occasions.^{xv}

In the present study, the risk of GDM and pre-eclampsia found increased. Previous studies have also reported that obese women had a significant risk for GDM and pre-eclampsia.^{xvi,xvii}

Hibbard et al.^{xviii} the present cases have encounter 44% of caesarian section in overweight women and 16% in normal weight. In another comparative study, it has been reported that 35% percent caesarian section occurred in Ngoga E et al.^{xix}

Present study reports 3% cases of post partum hemorrhage. A study has reported that increased risk of Post-Partum Haemorrhage occurrence in women that are obese or considerably overweight.^{xx}

Conclusion

Present study confirmed that maternal obesity is now becoming one of the most common risk factors in pregnancy, leading to complications that impact on the health of both the woman and her offspring. A general

awareness regarding weight control, food habits and lifestyle modification is required as there are increasing trends of being overweight and obese both in developing as well as developed nations.

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