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Feto-Maternal Outcome in Kashmiri Women with High Bmi – A Hospital Based Study

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Abstract

Background and Aim: To review the effects of obesity (BMI >30) on antepartum risk/intrapartum risk. Obese women are at an increased risk of various adverse pregnancy outcomes. The aim of our study was to evaluate the impact of obesity on maternal and neonatal outcomes in a tertiary referral center and to compare obstetric outcomes by the level of maternal obesity.

Material and Methods: BMI of 400 pregnant women booked before 12 weeks calculated and categorized as normal, overweight, obese and morbidly obese at Lalla Ded hospital, Srinagar. Pregnant women with systemic disease and previous LSCS were excluded. Antepartum, intrapartum and neonatal variables were studied and statistical analysis was carried out.

Results: Antepartum Variables: Maternal obesity is significantly associated with gestational hypertension, preeclampsia, gestational diabetes, prolonged pregnancy, PPROM, anemia, dystocia, induced labor, failed induction of labor, cesarean delivery.

Postpartum Variables: PPH, pyrexia, prolonged hospital stay and thrombophlebitis are significantly associated with raised BMI.

Neonatal Variables: IUGR, Preterm, post term, LBW, Large for gestational age and macrosomia and newborns with Apgar score < 7 after 5 min was only observed in women with BMI lying in severe overweight range.

Keywords: BMI, Obesity, UTI, PPH, IUGR, NVD, GDM, PPROM, RDS, C-Section

Introduction

Obesity is a state of excess adipose tissue mass. Adipose mass increase by enlargement of adipose cells as well as by an increase in number of adipocytes.

The incidence of obesity within the general population, particularly among women of childbearing age, has escalated significantly over the past 25 years. In middle- and high-income countries, over one-third of women of reproductive age are classified as overweight or obese. This excess weight correlates with increased maternal and neonatal morbidity, and obese women experience higher rates of infertility and face augmented risks of various adverse pregnancy outcomes. Additionally, the nutritional environment during the perinatal period may directly influence the development of obesity later in life.

Most research examining the association between obesity and negative perinatal outcomes has been conducted in Western countries. There exists a paucity of data concerning the new member states of the European Union. The burden of obesity on healthcare systems should not be underestimated. In scenarios of limited resources, identifying at-risk groups that would benefit most from targeted interventions is of paramount importance. Gestational diabetes mellitus, preeclampsia, induction of labour, increase rate of caesarean section, postpartum hemorrhage, anemia, urinary tract infection, wound infection, were significantly more common in pregnant women with higher BMI . The infants born to obese women are at higher risk of having perinatal complications. The incidence of low APGAR scores, birth defects, macrosomia, birth injuries, shoulder dystocia require admission to neonatal intensive care units more often than do infants of normal weight mothers.

Aims and Objectives

- To study the effects of obesity on antepartum/intrapartum outcomes.
- To study neonatal outcomes of pregnant females with raised BMI.

Material and Methods

Our study was conducted for a period of one and a half year in LALLA DED Hospital, Govt Medical College Srinagar. This study was approved by the Institutional ethical committee Govt Medical College Srinagar. This study was a prospective observational study conducted on 400 population study.

Methodology

Inclusion and exclusion criteria for the study were established. Pregnant women who visited the outpatient department of obstetrics during the first trimester were registered. Information regarding their name, age, religion, and address was collected. At the initial visit, the height and weight of the pregnant women were measured, and their Body Mass Index (BMI) was calculated. Valid written informed consent was obtained. A comprehensive medical history was recorded, and a physical examination was conducted. Maternal BMI at the time of registration was utilized to assess the impact of BMI on pregnancy outcomes. For the purposes of this study, subjects were categorized into groups using Garrow's obesity grading, based on Quetelet's index, or BMI, which is calculated as weight in kilograms divided by height in meters squared.

Group	Weight Category	BMI(kg/m^2)
A	Normal	20-24.9
B	Overweight	25-29.9
C	Obese	30-40
D	Morbidly obese	>40

The antepartum variables examined included gestational diabetes, gestational hypertension, pre-eclampsia, eclampsia, anemia, preterm birth, prolonged pregnancy, intrauterine growth restriction (IUGR), severe

oligohydramnios, urinary tract infection (UTI), and spontaneous abortions. The intrapartum variables investigated focused on the mode of delivery (vaginal delivery or caesarean section), instrumental delivery, and shoulder dystocia. The postpartum variables assessed were postpartum haemorrhage, pyrexia, urinary tract infection (UTI), prolonged hospital stay, impaired wound healing and wound infection, thrombophlebitis, and lactational dysfunction.

The neonatal variables examined included were low birth weight baby(<2000g), macrosomia(>4000g), low Apgar score id defined as score of <7 at 5 min after delivery, prematurity, post maturity syndrome, admission to NICU, early neonatal death, stillbirth, neonatal hypoglycaemia , neonatal jaundice and respiratory distress syndrome.

Definition and Criteria Used

Gestational hypertension was defined as a blood pressure elevation ≥140 mmHg systolic or ≥90 mmHg diastolic measured on two occasions 6 h apart in previously normotensive women after 20 weeks of gestation. Preeclampsia was diagnosed when woman developed gestational hypertension and proteinuria ≥300 mg of protein in a 24-h urine specimen.

A fasting glucose screening test was done at initial prenatal visit. An oral glucose tolerance test (OGTT) was done in all pregnant women attending antenatal clinic at L.D hospital. with a loading glucose dose of 75 g between 24th and 28th weeks of gestation. The diagnosis of GDM is made when any of the following plasma glucose values are met or exceeded during one step strategy:

- Fasting plasma glucose: 92 mg/dL (5.1 mmol/L)
- 1-h plasma glucose: 180 mg/dL (10.0 mmol/L)
- 2-h plasma glucose: 153 mg/dL (8.5 mmol/L)

Class A1 GDM was diagnosed when dietary modification was sufficient to control blood glucose level. Class A2 GDM was diagnosed when additional therapy with insulin was required.

Failed induction of labour was diagnosed when physical and pharmacological methods did not generate regular uterine contractions and lead to vaginal delivery.

Dystocia was defined as a failure to progress in labour either because of uterine dysfunction, pelvic contraction or disproportion between the head of the foetus and the birth canal.

Inclusion Criteria

Pregnant women who are booked before 12 weeks of gestational age and delivered at Govt. Lalla Ded Hospital, Srinagar.

Exclusion Criteria

- Pregnant women who remain unbooked after 12 weeks of gestational age.
- Pregnant women with previous history of caesarean section.
- Pregnant women with history of medical disorders e.g. DM, hypertension, etc.
- Pregnant women who didn't give consent to participate in study.

Statistical Analysis

The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). Continuous variables were expressed as Mean±SD and categorical variables were summarized as frequencies and percentages. Graphically the data was presented by bar and pie diagrams. Chi-square test was employed for comparison of various categorical variables. A P-value of less than 0.05 was considered statistically significant.

Maternal Characteritics

Table 1:

Bmi Category	Group A	Group B	Group C	Group D
No. of Patients	92	198	98	12

Table 2: Maternal Parity

Primigravida	80	90	38	4
Multiparous	12	108	60	8

Table 3: Living Place

Urban	24	88	32	9
Rural	68	110	66	3

Table 4: Education Level

Primary- Secondary	22	63	28	4
Higher Education	70	135	70	8

Table 5: Maternal Age

18-30	60	88	38	5
>30	32	110	60	7

Table 6: Weight Gain during Pregnancy

<10KG	70	78	20	2
>10KG	22	120	78	10

Table 7: Antepartum Variables:

	Group A	Group B	Group C	Group D	P Value
Abortion	0	0	1	0	>0.05
Prolonged Pregnancy	30	41	29	4	<0.05
Severe Preeclapmsia	6	16	20	10	<0.05
Oligohydromnios	3	3	0	0	>0.05
PPROM	16	12	10	0	<0.05
Gdm	1	8	10	1	<0.05
Anemia	3	4	2	1	<0.05
UTI	0	1	0	1	>0.05
Gest Hypertension	9	26	10	2	<0.05

Table 8: Intrapartum Variables

	Group A	Group B	Group C	Group D
Abortion	8	11	22	2

NVD	62	102	26	1
Instrumental Delivery	-	-	-	-
C Section	22	85	50	9
Complicated Labour	11	6	4	1

Table 9: Postpartum Variables

	Group A	Group B	Group C	Group D	P Value
PPH	1	5	3	0	<0.05
Pyrexia	2	4	13	5	<0.05
Wound Infection	10	12	9	3	<0.05
UTI	1	2	1	1	>0.05
Prolonged Hospital Stay	10	17	22	5	<0.05
Endometritis	0	1	0	0	>0.05
Thrombophlebitis	0	1	0	1	>0.05
Lactational Dysfunction	0	3	2	3	<0.05

Table 10: Neonatal Outcome

	Group A	Group B	Group C	Group D	P Value
Apgar Score<7	20	16	22	1	<0.05
RDS	4	15	16	1	<0.05
Stillbirth	0	1	0	1	>0.05
IUGR	20	12	20	1	<0.05
Macrosomia	0	3	5	2	<0.05
Preterm	2	7	17	2	<0.05
Postterm	30	28	32	5	<0.05
Nicu Admission	2	10	12	4	<0.05
Died Within 24 Hours	0	0	1	1	>0.05

Results

We compared the obstetric behavior and pregnancy outcome of 92 women with normal BMI to 198 overweight, 98 obese, and 12 morbidly obese women in our study, and we performed statistical analysis. A higher BMI is substantially correlated with the antepartum variables like anemia (<0.05), gestational diabetes mellitus (<0.05), PPROM (<0.05), prolonged pregnancy (<0.05), and severe preeclampsia (<0.05). Abortion (>0.05), oligohydramnios (>0.05) and UTI (>0.05) and are not correlated with a higher BMI. Postpartum variables: UTI (>0.05), thrombophlebitis, and endometritis (>0.05) are not linked to elevated BMI, whereas PPH (<0.05), pyrexia (<0.05), prolonged hospital stay (<0.05), and lactational dysfunction (<0.05) are strongly connected with raised BMI. Raised BMI is closely linked to several neonatal outcomes, including IUGR (<0.05), preterm (<0.05), post term (<0.05), LBW

(<0.05), macrosomia (<0.05)and NICU admission. Conversely, stillbirth (>0.05), intubation (>0.05)and neonatal death within 24 hrs is not associated with raised BMI.

Discussion

Women who are obese before pregnancy have an expanded number of hypertensive disorders, PPROM, anemia and GDM. GDM by and large is analysed in 4%-7% of pregnant females. Obese females have prevalence of GDM three to eightfold higher when contrasted with ordinary weight pregnant females. Our outcomes additionally show a negative relationship between expanded pre pregnancy BMI with UTI, oligohydramnios and prolonged pregnancy. The current study's data were obtained from a tertiary referral centre, where more pregnant women with pregnancy complications are referred, which may be the reason why the risk of hypertensive disorders and GDM is significantly higher than the data published in the literature. There were significantly higher rates of caesarean section, labour complications, PPH, pyrexia, prolonged hospital stay and lactational dysfunction in women with higher BMI. Obese women have 18%-26% expanded possibility of giving birth to macrosomic infants. The rate of LGA newborns in our study, 29.3%, was even higher than previously reported. Crane et al. tracked down an expanded rate of foetal macrosomia with expanding maternal BMI. Similarly, we saw as altogether expanded OR of LGA babies in ladies with BMI 30-34.9 kg/m² and BMI ≥35 kg/m² when contrasted with typical weight ladies. RDS, shoulder dystocia, and birth trauma are all more common in LGA infants. Obese women have a higher pace of low Apgar score and more admission to an NICU. Our review shows women with BMI ≥35 kg/m² had a higher rate of conveying infants with Apgar score ≤7 at 5 min.The significant restriction of the review is that our specialization is a tertiary reference place. High-risk pregnancy cases comprise close to 66% of our patients. Consequently the paces of complicated obstetric results connected with weight perhaps higher in our review population and this could be a possibly jumbling factor that might have impacted the outcomes.

Conclusion

Obesity is modifiable and preventable. However incidence of maternal obesity and its attendant comorbid conditions (diabetes, hypertensive and cardiovascular disease) continues to increase at an alarming rate, with major public health implications. Not only does maternal obesity affect the woman, but it also impacts the health of the child, leading to increased neonatal morbidity. Screening for hypertension and DM must be performed before conceiving and in first antenatal visit. Obstetrician-gynaecologists are in a key position to prevent and treat this epidemic.

Abbreviations Used

BMI: Body mass index

UTI: Urinary tract infection

PPH: Post partum haemorrhage

IUGR: Intra uterine growth restriction

NICU: Neonatal intensive care unit

RDS: Respiratory distress syndrome

GDM: Gestational diabetes mellitus

PPROM: Preterm premature rupture of membranes

PIH: Pregnancy induced hypertension

OGTT: Oral glucose tolerance test

NVD: Normal vaginal delivery

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