Original Article

Obese Pregnant Women and Fetomaternal Complications

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Abstract

Objective: To determine the frequency of maternal and fetal complication in obese pregnant women.
Methodology: This cross-sectional study was conducted at the outpatient department, labor ward, and postnatal ward in the Department of Obstetrics and Gynecology at Liaquat University of Medical and Health Sciences Jamshoro from January 2023 to December 2023. The study included a total of 292 pregnant women with a body mass index (BMI) greater than 25 kg/m2. The data was analyzed using SPSS version 23.0, calculating mean and standard deviation for maternal age, parity, and BMI.
Results: The study identified various feto-maternal outcomes, including gestational hypertension 46.9%, gestational diabetes 39.7%, assisted birth 39.7%, cesarean section 80.8%, macrosomia 26.71%, and stillbirth 8.22%. The rate of assisted birth was significantly higher in multiparous women compared to primiparous women. The rates of gestational hypertension, cesarean section, and stillbirth were higher in women whose BMI was between 25.6 to 30 kg/m² compared to those whose BMI was above 30 kg/m².
Conclusion: Our study finds that obesity significantly increases pregnancy and delivery complications for both mother and fetus. Higher BMI is linked to increased risks of fetal morbidity, maternal morbidity, obstetrical intervention, and macrosomia. Consequently, overweight women should be considered "high risk" during antenatal counseling and risk assessment.
Keywords: Obesity, Fetal outcomes, Maternal complications, Pregnant women, BMI

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Introduction

Obesity has emerged as a global epidemic, affecting over fifty million adults worldwide, with alarming figures from the World Health Organization estimating 205 million males and 297 million females over the age of 20 to be obese.[1] This condition, defined by a body mass index (BMI) of 30 kg/m2 or higher, represents a substantial health risk, especially as recent research indicates that one in five pregnant women attending appointments between 2002-2004 were already obese.[2,3]

The BMI thresholds for identifying overweight and obesity are 25 to 29.9 kg/m2 and 30 kg/m2 or higher, respectively, although for Asians, the cutoffs are slightly lower at >23 kg/m2 for overweight and >25 kg/m2 for obese.[4] In our nation alone, where the prevalence of obesity reaches up to 13.5%, this issue stands out as a significant health concern with far-reaching implications for public health and individual well-being.[5]

In developing countries, the frequency of obesity among pregnant women is around 17.19%, according to the WHO.[6] This condition, particularly when present before pregnancy, or if pre-pregnancy weight data is unavailable and first prenatal weight is used, can significantly impact the health of both the mother and the fetus.[7] Research indicates that obese pregnant

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women have 25% higher risk of developing preeclampsia and gestational diabetes mellitus.[8]

Additionally, they are twice as likely to require a caesarean delivery. Other risks associated with obesity during pregnancy include increased chances of infectious morbidity, intrapartum complications, stillbirth and post-partum hemorrhage, highlighting the importance of managing weight during pregnancy for optimal outcomes.[9,10]

Several local studies conducted in Karachi have investigated the effect of obesity on pregnancy outcomes, whereas no research on pregnancy outcomes linked to obesity has been conducted in Hyderabad. To underscore need of ideal BMI for uneventful pregnancy, this research was designed to assess the frequency of complications related to pregnancy and obesity in our setting.

Methodology

This cross-sectional study was conducted at the outpatient department, labor ward, and postnatal ward in the Department of Obstetrics and Gynecology at Liaquat University of Medical and Health Sciences in Jamshoro over a one-year period from January 1st, 2023 to December 2023. The study included a total of 292 pregnant women with BMI ≥ 25 kg/m^2, aged between 20 and 35 years, with ≥ 24 weeks gestational age, and singleton pregnancy. Women with infectious disease, chronic metabolic disorder, hypertension, diabetes, multiple gestations were excluded. A non-probability sampling technique was employed, and data collection was conducted with informed written consent and approval from the research ethical committee, utilizing a pre-designed proforma for women who self-booked.

All pregnant women were followed up for fetal and maternal outcomes until delivery. The data was analyzed using SPSS version 23.0, calculating mean and standard deviation for maternal age, parity, and BMI, while frequency and percentage were computed for maternal and fetal outcomes (stillbirth, macrosomia, cesarean section, assisted birth, gestational diabetes, gestational hypertension). Stratification was performed based on maternal age, parity, and BMI, followed by post-stratification using the chi-square test, considering a p-value of 0.05 or less as significant.

Results

In our study, the mean age of the patients was 26.83±4.29 years, and the mean BMI was 27.69±2.52. Regarding parity status, 189 women (64.73%) were multiparous, with a parity range of 2-5, and 103 women (35.27%) were primiparous.

The study identified various feto-maternal outcomes, including gestational hypertension (46.9%), gestational diabetes (39.7%), assisted birth (39.7%), cesarean section (80.8%), macrosomia (26.71%), and stillbirth (8.22%), as presented in Table I.

Table I: Frequency of feto-maternal outcome in obese pregnant women.

Maternal Complication	n(%)
Gestational hypertension	137 (46.9%)
Gestational diabetes	116 (39.7%)
Assisted Birth	40 (13.7%)
Cesarean section	236 (80.8%)
FETAL OUTCOMES	
Macrosomia	78 (26.71%)
Still Birth	24 (8.2%)

It was found that the rates of gestational hypertension and gestational diabetes were significantly higher in women aged 31 to 35 years. Additionally, the rate of macrosomia was notably higher in women aged 26 to 30 years. However, the rates of cesarean section, assisted birth, and stillbirth did not show significant differences across different age groups. (Table II)

Table II: Comparisons of frequency of maternal and fetal outcome in obese pregnant with respect to age.

Maternal and Fetal Complication	Age Groups (Years)			P-Value
	20 to 25 n=137	26-30 n=114	31 to 35 n=41	
Gestational hypertension	56(40.9%)	56(49.1%)	25(61%)	0.05
Gestational diabetes	50(36.5%)	41(36%)	25(61%)	0.01
Assisted Birth	21(15.3%)	17(14.9%)	2(4.9%)	0.21
Cesarean section	106(77.4%)	93(81.6%)	37(90.2%)	0.17
Macrosomia	27(19.7%)	49(36.8%)	9(22%)	0.007
Still Birth	11(8%)	12(10.5%)	1(2.4%)	0.26

Table III: Comparisons of frequency of maternal and fetal outcome in obese pregnant with respect to parity.

Maternal and Fatal Complication	Primipara n =103	Multipara n =189	P Values
Gestational hypertension	51(49.5%)	86(45.5%)	0.51
Gestational diabetes	44(42.7%)	72(38.1%)	0.44
Assisted Birth	8(7.8%)	32(16.9%)	0.030
Cesarean section	89(86.4%)	147(77.8%)	0.073
Macrosomia	24(23.3%)	54(28.6%)	0.33
Still Birth	9(8.7%)	15(7.9%)	0.81

Furthermore, the rate of assisted birth was significantly higher in multiparous women compared to primiparous women. The rates of gestational hypertension, cesarean section, and stillbirth were higher in women whose BMI was between 25.6 to 30 kg/m² compared to those whose BMI was above 30 kg/m². (Table III)

Discussion

Obesity or over weight is a widespread challenge in developing and developed countries, posing significant risks to one's health.[11] In mothers, obesity entails serious risks for both the mother and fetus, and also a risk factor for worse pregnancy outcomes and fetomaternal complication and is linked to a high frequency of prenatal complications.[12] Consequently, preventive measures are essential. Variables such as adiposity, weight, length and low birth weight are dependent on mother BMI, antenatal weight, gestational weight gain and pattern. Adiposity and birth weight are significant factors in fetal complications (morbidity and mortality), and they also have role in weight in early adulthood.[13]

The results indicating a higher risk of C-section in females with a BMI greater than 25 kg/m² are consistent with other published research, demonstrating an excess risk that appears to be one to twofold.[14] In this particular study, C-sections were performed in 80.8% of the women. Moreover, even among moderately obese women who had otherwise healthy pregnancies and were under the care of nurse midwives, the likelihood of undergoing a C-section was still elevated, as highlighted by one study.[15] Furthermore, in a sentinel c-section audit conducted in UK reported that about 34% of pregnant females go through c-section when they have BMI above 30 kg/m[2.16]

According to Sherrord[17], the rise in Caesarean rates may be caused by a slower rate of cervical dilatation and a greater depot of soft tissues in the pelvic region of mother, which may hinder the labor or cause cephalopelvic disproportion (CPD). Various findings were presented by some authors. For instance, Jensen et al[18] reported that increase in suction extractions and cesarean sections were not associated with high BMI before pregnancy.

Edwards et al[19] found that normal weight of mother, obesity and weight changes in gestation are not associated with pregnancy complications. Only few previous studies reported that gestational diabetes and pre-eclampsia are themselves associated with c-section and other interventions.

In our research on the frequency of maternal outcomes in pregnant women with increase weight, we found gestational hypertension, gestational diabetes mellitus (GDM), and assisted deliveries to be common. Similarly, Mamula et al.[21], in their study of 23,190 term singleton pregnancies, found that obese pregnant women were high on risk for third trimester complications like GDM, hypertension, and antepartum hemorrhage as compare to normal weight women.

In our research, the frequency of macrosomia and stillbirth was 26.71% and 8.22%, respectively. Many studies have reliably noted macrosomia, with odds ratios varying between 1.5 and 2.213.[22] The link between maternal obesity and an increased risk of stillbirth was indicated by Chu et al[23] in their meta-analysis, although association of obesity and pregnancy comorbid conditions is unclear, it may be due to direct correlation of obesity with diabetes and hypertension. Fetal monitoring with cardiotocography and ultrasonography is logistically more challenging in women who are morbidly obese.

Only those women who visited postnatal ward, labour ward and outpatient department of obstetrics and gynecology Liaquat University of Medical and Health Science Jamshoro were included in research, which had small patient population. However, it adds to growing body of data that shows obesity, as determined by BMI, puts women at higher risk for caesarean delivery, pregnancy-induced HTN, GDM, & macrocosmic birth defects. Obstetrical care workers may find it difficult to control these issues and prevent them from happening in the first place.

Conclusion

Our study finds that obesity significantly increases pregnancy and delivery complications for both mother and fetus. Higher BMI is linked to increased risks of fetal morbidity, maternal morbidity, obstetrics interventions and macrosomia. Consequently, overweight women should be considered "high risk" during antenatal counseling and risk assessment. All mothers should have their BMI calculated at booking and receive guidance on weight management, including diet and exercise recommendations and referrals to dieticians as needed.

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