

Frequency of Maternal and Fetal Complication in Obese Pregnant Women

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ABSTRACT

Objective: To determine the frequency of maternal & fetal complication in obese pregnant women.

Study Design: Descriptive case series study

Place and Duration of Study: This study was conducted at the department of Obstetrics & Gynecology, Nishtar Medical University, Multan, from May 2021 to October 2021.

aterials and Methods: A total of 264 pregnant females with BMI > 25kg/m² were included in this research. These females were registered on predesigned proforma of all those women who booked themselves and were followed till delivery for maternal and fetal outcome, data was collected and analyzed.

Results: The mean age of the women was 28.20±4.67 years. Frequency of maternal and fetal complications in obese pregnant women observed has been found high. Caesarean section rate 39.3% women, gestational hypertension 52.5%, gestational diabetes 18.9% and assisted birth 44.3%, macrosomia & still birth was 24.6% and 18.9% respectively.

Conclusion: In a nutshell, outcomes of our study indicate that obesity carries significant increased risk for complications during pregnancy and delivery for both mother & fetus.

Key Words: Obesity, Frequency, Maternal and fetal complication

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INTRODUCTION

Obesity is an abnormal and excessive accumulation of fat within body leading to health impairment. Exact etiology is not known but there is involvement of multiple factors like genetic metabolic, endocrine, psychological and cultural factors. Obese expecting females are at risk of associated obstetric problem as well as their offspring are sufferer at a great. This study can help in observing effect of obesity on maternal and fetal outcome. The global epidemic of obesity affects over 50 million adults, with an estimated 205 million men and 297 million women over the age of 20 being obese, as reported by WHO [1]. Recent research has revealed that during the years 2002 to 2004, one out of every five pregnant women who had scheduled appointments were found to be obese^[2].

Obesity is defined as having a body mass index (BMI) of 30 kg/m² or higher, while being overweight is defined as having a BMI of 25 to 29.9 kg/m². However, for Asians, the cutoff BMI for overweight is >23 kg/m² and >25 kg/m² for obesity [3]. Recent research has revealed that during the years 2002 to 2004, one out of every five pregnant women who had scheduled appointments were found to be obese [2]. In our country, the prevalence of obesity is up to 13.5%, posing a significant health risk [4]. Developing countries have a frequency of 17.19%, according to WHO. BMI during pregnancy is determined by using the pre-pregnancy weight. In case the pre-pregnancy weight is not available, the first weight recorded during prenatal care is used instead [5]. Pregnant women who are obese are at a higher risk of complications for both themselves and their fetuses. Studies have shown that obese pregnant women have a 14-25% chance of developing gestational diabetes and preeclampsia, as well as being twice as likely to require a caesarean procedure [6]. Other complications such as infectious morbidity, postpartum hemorrhage (PPH), and delivery of large-for-date infants, stillbirth, and intra-partum complications were also found to be increased in studies [7, 8]. Local studies from Karachi have examined the impact of obesity on pregnancy outcomes [8, 9], but no research has been conducted in Hyderabad. Therefore, this research aims to emphasize the importance of maintaining an ideal BMI before conception to achieve a successful pregnancy outcome by assessing the frequency of complications related to pregnancy and obesity in our setup.

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MATERIALS AND METHODS

This study was conducted over the course of six months, from May 2021 to October 2021, at department of Obstetrics & Gynecology, Nishtar Medical University, Multan. The study included a total of 264 pregnant women between the ages of 20-35 years with a gestational age of 24 weeks or more and a single term pregnancy, and with a BMI of more than 25kg/m². Women with multiple gestations, diabetes mellitus, hypertension, or any other chronic metabolic or infectious disease were excluded. A non-probability sampling technique was used, and informed written consent was obtained from all participants after the approval of the research ethical committee. All included women were followed up until delivery to assess maternal and fetal outcomes. Data was collected and entered into a computer, and SPSS version 23.0 was used for analysis. Maternal age, parity, and BMI were calculated using mean and standard deviation, while maternal and fetal outcomes such as gestational hypertension, gestational diabetes, assisted birth, cesarean section, macrosomia, and stillbirth were calculated using frequency and percentage. Stratification was done with respect to maternal age, parity, and BMI, and a chi-square test was applied for post-stratification analysis. A p-value less than or equal to 0.05 was considered statistically significant.

RESULTS

Mean age, gestational age and parity were comparable between the groups. Mean BMI of the overweight group was 26.33±1.53 kg/m² and of obese group was 33.34±2.03 kg/m² (p<0.001). (Table No. 1.)

Gestational diabetes was present in 8.5% of overweight and 18.9% of the obese patients (p=0.013). Gestational hypertension was present in 14.1% of overweight and 52.5% of the obese patients (p<0.001). The incidence of preeclampsia and eclampsia was 31.0% and 21.1% in overweight group while 39.3% and 37.7% in the obese group (p-value 0.155 and 0.003), respectively. (Table No. 2.)

Mode of delivery was SVD in 46.5% vs. 16.4%, assisted delivery in 28.2% vs. 44.3%, and cesarean section in 25.4% vs. 39.3% in overweight vs. obese group (p<0.001). Placental complications were comparable between the groups (p=.0126). The incidence of PROM, PPH and maternal mortality was 21.1%, 14.1% and 0.0% in overweight group while 14.8%, 37.7% and 8.2% in the obese group (p<0.001), respectively. (Table No.3.)

The Apgar score at birth was comparable between the groups (p=0.603). There was no statistically significant difference in macrosomia and macrosomia between both the groups (p=0.094). The incidence of still birth was 7.7% and 18.9% in overweight and obese group, respectively (p=0.007). (Table No. 4.)

Table No. 1: Demographic data of the patients

Variable	BMI ≤ 30 (N=142)	BMI >30 (N=122)	p-value
Age, years	28.06±5.25	28.20±4.67	0.819
BMI, kg/m ²	26.33±1.53	33.34±2.03	<0.001
Gestational age, weeks	30.88±4.43	31.47±4.13	0.268
Parity			
Primipara	75 (52.8%)	61 (50.0%)	0.648
Multipara	67 (47.2%)	61 (50.0%)	

Data is entered as mean ± S.D. or number (percentage)

Table No. 2: Maternal Complications

Variable	BMI ≤ 30 (N=142)	BMI >30 (N=122)	p-value
Gestational diabetes	12 (8.5%)	23 (18.9%)	0.013
Gestational hypertension	20 (14.1%)	64 (52.5%)	<0.001
Preeclampsia	44 (31.0%)	48 (39.3%)	0.155
Eclampsia	30 (21.1%)	46 (37.7%)	0.003

Data is entered as number (percentage)

Table No. 3: Maternal Outcome

Variable	BMI ≤ 30 (N=142)	BMI >30 (N=122)	p-value
Mode of delivery			
SVD	66 (46.5%)	20 (16.4%)	<0.001
Assisted delivery	40 (28.2%)	54 (44.3%)	
Cesarean section	36 (25.4%)	48 (39.3%)	
Placenta			
Previa	42 (29.6%)	23 (18.9%)	0.126
Accreta	8 (5.6%)	12 (9.8%)	
Increta	7 (4.9%)	11 (9.0%)	
Percreta	11 (7.7%)	14 (11.5%)	
Outcome			
PROM	30 (21.1%)	18 (14.8%)	<0.001
PPH	20 (14.1%)	46 (37.7%)	
Mortality	0 (0.0%)	10 (8.2%)	

Data is entered as number (percentage)

Table No. 4: Fetal Outcome

Variable	BMI ≤ 30 (N=)	BMI >30 (N=)	p-value
Apgar score at birth			
≤5	58 (40.8%)	46 (37.7%)	0.603
>5	84 (59.2%)	76 (62.3%)	
Complication			
Microsomia	10 (7.0%)	8 (6.6%)	0.094
Macrosomia	20 (14.1%)	30 (24.6%)	
Outcome			
Still birth	11 (7.7%)	23 (18.9%)	0.007

Data is entered as number (percentage).

DISCUSSION

Obesity is a prevalent condition in both developed and developing nations that poses a significant health risk. In pregnant women, obesity is considered an obstetrical risk factor that increases the likelihood of unfavorable pregnancy outcomes and prenatal complications, posing serious risks to both the mother and the fetus. As a result, the creation of prophylactic measures is highly necessary^[10, 11]. Birth weight, weight for length, and adiposity of the offspring are dependent on the mother's pre-pregnancy weight, BMI, pattern of gestational weight gain, and total gestational weight gain. Neonatal morbidity and mortality are significantly influenced by adiposity and birth weight, which can also affect early adult weight and long-term health^[12, 13].

Research indicates that women with a BMI over 30 kg/m² are at a higher risk of requiring a caesarean delivery, with the excess risk being one to twofold^[14,15]. This finding is consistent with other published studies. In the current study, 39.3% of women required a C-section. Even in moderately obese women with healthy pregnancies and cared for by nurse midwives, the chance of C-section was higher, according to one study.¹⁶ The UK National Sentinel Caesarean Section Audit reported that 34% of women who underwent a caesarean delivery had a BMI over 30kg/m²^[17]. According to Sherrord^[18], the increase in C-section rates among obese women may be due to slower cervical dilation and greater soft tissue in the maternal pelvis, which can obstruct labor or cause CPD. Some authors have presented various findings on this topic. Another study found that having more caesareans or suction extractions was not associated with higher BMI before becoming pregnant. Further, in a study, reported that neither obesity nor normal weight in the mother nor were changes in gestational weight linked to pregnancy problems. However, pre-eclampsia and gestational diabetes were found to be more common in prior studies^[14,19], and these conditions increase the likelihood of intervention during pregnancy and delivery. In our research on maternal outcomes in obese pregnant women, we found a higher incidence of gestational hypertension, gestational diabetes, and assisted deliveries. Mamula et al^[20] also found that obese and overweight women were more likely than normal weight women to experience third-trimester antepartum hemorrhage, pregnancy-induced hypertension, and gestational diabetes in their study of 23190 term singleton pregnancies.

Our study found that the frequency of macrosomia and stillbirth in obese pregnant women was 6.6% and 18.9%, respectively. This is consistent with other studies that have reported an increased risk of macrosomia in obese women, with odds ratios ranging from 1.5 to 2.213. The association between maternal obesity and stillbirth has also been reported in a meta-

analysis by Chu et al^[21], but the reason for this association is not clear. It may be a direct result of obesity or it could be due to comorbid conditions such as gestational diabetes mellitus (GDM) or hypertension. Fetal monitoring using ultrasound or cardiotocography can be more challenging in morbidly obese women. Therefore, there should be a low threshold for fetal assessment in obese women, regardless of the cause of the higher risk. In addition, it is important to educate obese women about the limitations of ultrasound assessment. The study had a limited patient population, as it only included women who visited the OPD, labour ward, and postnatal ward of Gynae unit-IV at Liaquat University of Medical and Health Science Jamshoro. Nevertheless, it contributes to the increasing amount of evidence that indicates a higher risk of caesarean delivery, pregnancy-induced hypertension, gestational diabetes, and macrosomia in women with obesity, as determined by BMI. Obstetric care providers may face challenges in managing and preventing these complications.

CONCLUSION

In conclusion, our study provides evidence that maternal obesity increases the likelihood of complications during pregnancy and childbirth, which may adversely affect both the mother and the fetus. We found that obesity is associated with a higher risk of macrosomia, obstetric interventions, and maternal and fetal morbidity. Our study underscores the importance of considering women in the overweight category as "high risk" during antenatal counselling and risk assessment. Therefore, it is crucial to calculate the BMI of all pregnant women at the time of booking and provide them with guidance on healthy weight management, including dietary and exercise programs, as well as referrals to dieticians when necessary. To address the challenges of managing obesity in pregnancy, prophylactic measures must be created to mitigate these risks and improve maternal and fetal outcomes.

Author's Contribution:

Concept & Design of Study: Shazia Rafiq
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