

Comparision of Outcomes (Maternal and Foetal) in Obese and Non-Obese Pregnant Women

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ABSTRACT

Objective: The purpose of this research is to compare the risk factors for unfavorable pregnancy outcomes between obese and non-obese women.

Study Design: Randomized controlled trial

Place and Duration: Hayatabad Medical Complex Peshawar, during from the period Jan, 2021 To June, 2021.

Methods: In all, 130 participants signed up to take part in this research. The ages of the patients ranged from 18 to 42 years. A total of 65 patients who were obese (BMI>25kg/m³) were enrolled in group M, while an equal number of patients who were non-obese (BMI <25kg/m²) were included in group N. We compared the adverse events that occurred in both groups with regard to the outcomes for the mother and the baby. SPSS 21.0 was used to perform an in-depth analysis on all of the data.

Results: We found that frequency of pre-eclampsia, gestational diabetes mellitus and post-partum haemorrhage post-partum hemorrhage was higher in obese group than that of non-obese patients. Frequency of adverse events e.g. Cesarean section, prolong labour, induction of labour and instrumental delivery in mothers were higher in group M as compared to group N with p value <0.005. Frequency of perinatal mortality, low Apgar score and NICU admission was higher in group M but low birth weight in of group N was higher as compared to group M.

Conclusion: According to our findings, gestational diabetes, preterm labour labor, and preeclampsia are more common among obese women. Having a baby with an obese woman might be a risk factor for mother and child. Obesity in mothers increases foetal morbidity and death.

Keywords: NICU, C-section, Pre-eclampsia, Mortality, Partum haemorrhage, Low birth weight, Apgar score, Gestational diabetes,

INTRODUCTION

Adipose tissue accumulation in the body is what constitutes obesity. Obesity may be measured in a variety of methods, including skinfold thickness, BMI, and the waist-hip ratio. BMI is defined as a person's weight in kilograms divided by the square of the person's height in meters (kg/m²). Underweight (BMI less than 18.5 kg/m²), normal weight (18.5 - 24.9 kg/m²), overweight (BMI 25 - 29.9 kg/m²), and obesity (BMI more than 30 kg/m²) are the four main categories of BMI according to the WHO [1.] There are three distinct categories of obesity: Class I (BMI less than 30), Class II (BMI between 35 and 39.9), and Class III (BMI more than 40). [1]

Obesity has risen dramatically in recent years, reaching epidemic proportions in both middle and low-income nations [1]. Egyptian, Bahrain, Jordan, Kuwait, Saudi Arabia, and United Arab Emirates were found to have the highest rates of obesity among those ages 18 and older, according to data gathered from 16 nations in the Eastern Mediterranean area. More than one in three South African adults is obese, according to a community-based national epidemiological study. In women, the incidence was estimated to be 44 percent. Another interesting fact is that 22% of Saudi Arabia's female participants in a cross-sectional survey in the western portion of the country are fat. A number of ailments, including hypertension, heart disease, type 2 diabetes, joint and gallbladder disease as well as some forms of cancer, may be linked to obesity. [2-4]

There is a greater risk of difficulties during pregnancy for women who are overweight or obese. These include pregnancy-related complications such as gestational diabetes and hypertension; preeclampsia; venous thromboembolism; bleeding; caesarean section; and maternal death.[5,6]An increased risk of miscarriage, congenital anomalies, micro- or macrosomia with glycemia, pre-term delivery or stillbirth, as well as neonatal mortality has been shown in several investigations [7, 8]. After childbirth, the dangers of wound infection, postpartum depression, and inadequate nursing are all increased. Children and

adolescents who are born to obese mothers are also more likely to become obese themselves [9,10].

A study of 42 research from various countries, particularly in Asia, examined the association between maternal BMI and risk of bad and health outcomes and concluded that obesity is related with a larger risk of unhealthy maternal outcomes [11]. As a result, a slew of investigations were carried out in Saudi Arabia. Obesity rates in Abha and Buraidah were determined to be 33.4% and 30 percent, respectively [12,13], according to a research done in Eastern Province.

Increased perinatal mortality is linked to maternal obesity, which raises the risk of preterm delivery, macrosomia, congenital abnormalities and childhood obesity. Obese mothers are also more likely to have caesarean sections and to suffer from anaesthesia and postoperative problems. Among the most serious complications is preeclampsia, which is defined by the development of hypertension and proteinuria after 20 weeks of pregnancy. As many as 2% to 8% of all pregnancies are thought to be affected by preeclampsia [14,15].

The study's goal is to find out whether pregnant women who are overweight or obese have a higher risk of having a negative pregnancy outcome.

MATERIAL AND METHODS

This randomized control trial was conducted at Hayatabad Medical Complex Peshawar, during from the period Jan, 2021 To June, 2021 and comprised of 130 patients. Patients' demographics were obtained with signed permission. This research excluded women with placenta previa, recurrent miscarriages, or uterine scarring.

The ages of the patients ranged from 18 to 42 years. Following the consent of the Institution's Ethical Committee, the study was carried out. Patients were split into two groups, M and N, which were evenly distributed. More over half of Group M's 65 patients (BMI>25kg/m²) were obese and Group N's 65 patients (BMI <25kg/m²) were non-obese. The outpatient department obtained the patient's height and weight in order to calculate their

BMI. Patients were monitored throughout their pregnancy. Pre-eclampsia, gestational diabetes mellitus, and post-partum haemorrhage were identified in the Performa by the researcher. Aside from caesarean sections, instrumental deliveries, inductions of labour and prolonged labours, adverse outcomes were also estimated for both groups. Descriptive statistics were used to find the average and standard deviation for each patient's age and gestational age. There were rates and percentages of preeclampsia, gestational diabetes mellitus, and postpartum haemorrhage for each of the outcome variables, which were assessed. It was discovered that the following foetal outcomes were common: low birth weight, low Apgar score, and admission to the neonatal intensive care unit (NICU). SPSS 21.0 version was used to analyze all of the data.

RESULTS

The mean gestational age in group M was 35.16±8.31 weeks and in group N was 37.5±6.22 weeks. In group M parity was 4.05±2.61 and in group N was 5.1±4.41. The mean age of included women in group M was 30.5±11.79 years with mean BMI 32.41±11.27 kg/m². While in group N mean age was 28.15 ±12.44 years and had mean BMI 24.7±11.49 kg/m².(table 1)

Table-1: Age, BMI, gestational age and parity among both groups

Variables	M	N
Mean Gestational age (weeks)	35.16±8.31	37.5±6.22
Mean Parity	4.05±2.61	5.1±4.41
Mean age (years)	30.5±11.79	28.15 ±12.44
Mean BMI (kg/m ²)	32.41±11.27	24.7±11.49

We found that frequency of pre-eclampsia, gestational diabetes mellitus and post partum haemorrhage was higher in obese group (43.1%,26.2%,63.1%) than that of non-obese patients with p value <0.003. (fig 1)

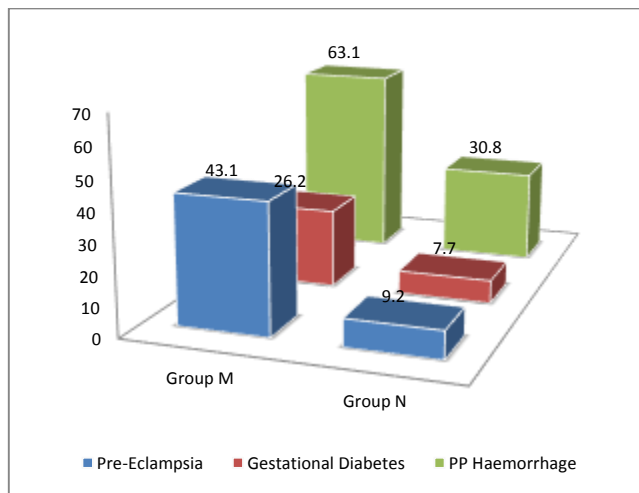


Figure-1: Comparison of PPH, GD and Pre-eclampsia among both groups

Table-2: Comparison of maternal outcomes among both groups

Variables	Obese	Non-obese
C-Section		
Yes	21 (32.3%)	7 (10.8%)
No	44 (67.7%)	58 (89.2%)
Instrumental Delivery		
Yes	8 (12.3%)	4 (6.2%)
No	57 (87.3%)	61 (93.8%)
Induction of labor		
Yes	15 (23.1%)	5 (7.7%)
No	50 (76.9%)	60 (92.3%)
Prolong Labor		
Yes	7 (10.8%)	3 (4.6%)
No	58 (89.2%)	62 (95.4%)

Frequency of adverse events cesarean section, prolong labour, induction of labour and instrumental delivery in mothers were higher in group M as compared to group N with p value <0.005.(table 2)

Frequency of perinatal mortality, low Apgar score and NICU admission was higher in group M but low birth weight in group N was higher as compared to group M.(table 3)

Table 3: Comparison of adverse outcomes in fetals of both groups

Variables	M	N
low birth weight	16 (26.6%)	34 (52.3%)
Perinatal mortality	4 (6.2%)	2 (3.1%)
low apgar score	12 (18.5%)	7 (10.8%)
NICU admission	30 (46.2%)	18 (27.7%)

DISCUSSION

Sedentary lifestyles, maternal smoking/alcoholism, and late-onset pregnancies are all on the increase in today's day, which has a negative impact on the pregnancy result. With its long-term consequences, obesity, which is the most frequent among them, impairs pregnancy and childbirth. It is possible to have a successful pregnancy even if you are fat. Obesity during pregnancy is associated with a higher need for medical and obstetric interventions, which is harmful to both the mother and the baby, even with good prenatal and antenatal care. Obesity is a major factor in many chronic diseases, including heart disease, type 2 diabetes, and cancer. Premature births, gestational diabetes, caesarean sections, and preeclampsia are all more common when a pregnant woman is overweight. Perinatal challenges are made worse by a paucity of therapy choices that target the fundamental causes. Pregnant women are more susceptible to the negative impacts of obesity, according to current epidemiological research.

In current study 130 pregnant women were included. 65 obese women were in group M and 65 non-obese women were in group N. The mean gestational age in group M was 35.16±8.31 weeks and in group N was 37.5±6.22 weeks. In group M parity was 4.05±2.61 and in group N was 5.1±4.41. The mean age of included women in group M was 30.5±11.79 years with mean BMI 32.41±11.27 kg/m². While in group N mean age was 28.15 ±12.44 years and had mean BMI 24.7±11.49 kg/m². These results were comparable to previous studies.[16,17] We found that frequency of pre-eclampsia, gestational diabetes mellitus and post-partum haemorrhage was higher in obese group (43.1%,26.2%,63.1%) than that of non-obese patients with p value <0.003. A previous study by Ahmed SR et al. had shown similar results. [18] Only hyperemesis gravidarum, which is more common in obese women than with non-obese women, is more common in obese women. Hyperemesis gravidarum is 1.5 times more common in obese women than in non-obese women, according to research. [19] Obese women are more likely to get pregnancy-related high blood pressure and preeclampsia.

Frequency of adverse events cesarean section, prolong labour, induction of labour and instrumental delivery in mothers were higher in group M as compared to group N with p value <0.005. Maternal obesity is associated with an increased risk of elective and emergency caesarean delivery [20]. Pregnancy issues connected to obesity, macrosomia and premature labour contribute to an increased risk of caesarean delivery. Similar to Menon and Isac [21], caesarean sections were 5.18 times more likely in obese women in our research. There is a link between obesity and the need for a caesarean section even if the other associated risks of being obese during pregnancy are kept under control, according to Chu et al. When it comes to labour, maternal obesity seems to have a small but significant influence, regardless of the fetus's size, but rather depending on the mother's size.[22] Obese women are more likely to have a lengthier labour than their thinner counterparts. Those who were obese had a 4.69-fold higher chance of having a longer labour, according to our research. According to Zhang et al.,[23] obese moms are more likely to have

dystocia. A fourfold increase in the probability of inefficient uterine contractility was discovered by Cedergren [24], and we found comparable results at an even lower cut-off point in severely obese women. Most studies [25] have observed an increased incidence of operational vaginal births in obese women, although the difference is statistically insignificant. Instrumental deliveries were more prevalent in non-obese women.

Frequency of perinatal mortality, low Apgar score and NICU admission was higher in group M but low birth weight in foetals of group N was higher as compared to group M. These were comparable to the studies conducted in past. [26,27] Overweight and obese pregnant women's metabolically rich environment, as seen by their elevated blood glucose and triacylglyceride levels (Bianchi et al.), may contribute to their baby's higher birth weight, according to their own research. Hyperinsulinemia occurs when a mother's high blood glucose levels are transferred to her foetus, leading to a rise in blood glucose levels in the foetus and an increase in insulin secretion. Fetal glucose utilization will rise, resulting in a reduction in the foetal glucose gradient and an increase in the rate of glucose transfer from the mother to the foetus. There is an increase in the amount of fat that accumulates in the foetal body due to this [28].

CONCLUSION

According to our findings, gestational diabetes, preterm labour, and preeclampsia are more common among obese women. Having a baby with an obese woman might be dangerous for mother and child. Obesity in mothers increases foetal morbidity and death.

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