

## FETOMATERNAL OUTCOMES IN OVERWEIGHT AND OBESE WOMEN

Dr. Sheela Bano<sup>\*1</sup>, Prof. Dr. Zartaj Hayat<sup>2</sup>, Dr. Nazish Shifa<sup>3</sup>

<sup>\*1</sup>(PGR FCPS Obstetrics and Gynecology), Fauji Foundation Hospital, Rawalpindi.

<sup>2</sup>Professor and Head of Department of Obstetrics and Gynecology, Fauji Foundation Hospital, Rawalpindi.

<sup>3</sup>Senior Registrar, Fauji Foundation Hospital, Rawalpindi.

<sup>\*1</sup>sheelabano@gmail.com

DOI: <http://doi.org/10.5281/zenodo.19882152>

### Keywords

Overweight, Obesity, Pregnancy, Maternal and fetal complications.

### Article History

Received: 20 January 2025

Accepted: 17 February 2025

Published: 06 March 2025

Copyright @Author

Corresponding Author: \*  
Dr. Sheela Bano

### Abstract

#### **Objective:**

To determine fetomaternal outcomes in overweight and obese pregnant women.

#### **Methods:**

This cross-sectional study was conducted at the outpatient department and labor ward of the Department of Obstetrics and Gynecology of Fauji Foundation Hospital, Rawalpindi, from August 2024 to January 2025. The study involved 200 pregnant women who had a BMI of 25 kg/m<sup>2</sup> or higher. Patients were monitored during labour and early puerperium. Labour and delivery outcome variables and associated data were recorded in structured questionnaire. Maternal and fetal outcomes were monitored for each patient.

#### **Results:**

The mean age was 30.8 years with a standard deviation of 5.3 years. Among the participants, 42 (21%) were primigravida. Maternal complications included gestational diabetes in 34 cases (17.0%), gestational hypertension in 93 cases (46.5%), assisted vaginal delivery in 31 cases (15.5%), cesarean section in 141 cases (70.5%), and postpartum hemorrhage in 9 cases (4.5%). Regarding fetal complications, macrosomia was observed in 57 cases (28.5%), stillbirth occurred in 6 cases (3.0%), fetal distress was reported in 9 cases (4.5%), and NICU admission was required for 23 cases (11.5%).

#### **Conclusion:**

Being overweight and obese is significantly associated with adverse maternal and neonatal complications.

## INTRODUCTION

Obesity has become a widespread global health crisis, impacting over fifty million adults worldwide. According to the World Health Organization, there are approximately 205 million men and 297 million women over the age of 20 classified as obese.<sup>1</sup> Elevated pre-conception body mass index is regarded as a significant health risk and has been recognized as a pandemic issue by WHO.<sup>2</sup> A Turkish study found that nearly 48% of pregnancies involved

women who were overweight or obese. This condition is particularly prevalent among women of reproductive age, with 14% of women compared to 10% of men affected. Recent estimates indicate that the prevalence of obesity varies from 18% to 25.3%, according to reports it has been stated that in 2025, more than 21% of women worldwide were affected by obesity.<sup>3</sup> The body mass index (BMI) remains the most accessible and effective measure for assessing

obesity levels. The WHO defines a BMI between 25.0 and 29.9 as overweight, with obesity further categorized into classes: Class I (30.0–34.9 kg/m<sup>2</sup>), Class II (35.0–39.9 kg/m<sup>2</sup>), and Class III (40 kg/m<sup>2</sup> or higher).<sup>4</sup>

The rising rates of obesity are largely influenced by factors such as social demographics, varying health behaviors, attitudes towards nutrition, and levels of physical activity. It is widely acknowledged that a woman’s weight prior to pregnancy plays a more significant role in health risks than the amount of weight gained during pregnancy.<sup>5 6</sup>

Obesity-related complications during pregnancy include gestational diabetes, hypertension, thromboembolic events, perineal injuries, postpartum bleeding, cesarean deliveries, and increased maternal mortality. Additional negative outcomes encompass a lower success rate of vaginal births, heightened risk of cesarean sections, intraoperative issues such as increased infection rates, labor induction difficulties, instrumental interventions, and the necessity for close fetal monitoring beyond term. Neonatal concerns include admission to the intensive care unit and the need for ventilatory support.<sup>7,9</sup>

The objective of the current study was to determine fetomaternal outcomes in overweight and obese pregnant women.

**METHODS:**

This cross-sectional study was conducted at the outpatient department and labor ward of the Department of Obstetrics and Gynecology of Fauji Foundation Hospital, Rawalpindi, from August 2024 to January 2025. Approval from hospital IRB was obtained.

The study involved 200 pregnant women who had a BMI of 25 kg/m<sup>2</sup> or higher, ranging in age from 20 to 35 years old, all at a gestational age of at least 34

weeks, and carrying singleton pregnancies. Participants with infectious diseases, chronic metabolic conditions, hypertension, diabetes, or multiple pregnancies were excluded from the study. A nonprobability sampling method was employed.

Each patient was interviewed face to face by using semi structured interview schedule in which sociodemographic variables, examination findings and after that labour outcome related variables were recorded in checklist. Patients were monitor during labour and early puerperium. Labour and delivery outcome variables and associated data were recorded in structured questionnaire form and checklist. Maternal and fetal outcomes were monitored for each patient.

**RESULTS:**

The baseline characteristics of the study participants were as follows: The mean age was 30.8 years with a standard deviation of 5.3 years. Among the participants, 42 (21%) were primigravida. Regarding the area of living, 133 participants (66.5%) resided in urban areas while 67 (33.5%) lived in rural areas. In terms of socioeconomic status, 102 individuals (51.0%) were classified as poor, 61 (30.5%) as middle class, and 37 (18.5%) as upper class (Table 1).

The frequency of maternal and fetal complications among the study participants was as follows: Maternal complications included gestational diabetes in 34 cases (17.0%), gestational hypertension in 93 cases (46.5%), assisted vaginal delivery in 31 cases (15.5%), cesarean section in 141 cases (70.5%), and postpartum hemorrhage in 9 cases (4.5%). Regarding fetal complications, macrosomia was observed in 57 cases (28.5%), stillbirth occurred in 6 cases (3.0%), fetal distress was reported in 9 cases (4.5%), and NICU admission was required for 23 cases (11.5%) (Table 2).

**Table 1. Baseline Characteristics.**

Age (Years)	30.8±5.3
Primigravida	42 (21%)
<i>Area of Living (%)</i>	
Urban	133 (66.5%)

Rural	67 (33.5%)
<i>Socioeconomic Status (%)</i>	
Poor	102 (51.0%)
Middle Class	61 (30.5%)
Upper Class	37 (18.5%)

**Table 2. Frequency of Maternal and Fetal Complications.**

<i>Maternal Complications (%)</i>	
Gestational diabetes	34 (17.0%)
Gestational Hypertension	93 (46.5%)
Assisted Vaginal Delivery	31 (15.5%)
Cesarean Section	141 (70.5%)
Postpartum Hemorrhage	9 (4.5%)
<i>Fetal Complications (%)</i>	
Macrosomia	57 (28.5%)
Still Birth	06 (3.0%)
Fetal Distress	9 (4.5%)
NICU Admission	23 (11.5%)

**DISCUSSION:**

Obesity and overweight are prevalent issues affecting both developing and developed nations, significantly impacting health.<sup>10</sup> For mothers, obesity poses serious dangers not only to their own well-being but also to the fetus, increasing the likelihood of adverse pregnancy outcomes and complications between mother and child. Additionally, it is associated with a higher incidence of prenatal issues.<sup>11</sup>

The findings of this study provide a critical look into the "obesity-pregnancy" paradox, where maternal overweight and obesity serve as primary catalysts for a cascade of adverse fetomaternal outcomes. With an average maternal age of 30.8 years and a population

predominantly from urban (66.5%) and low socioeconomic (51%) backgrounds, our data suggests that the biological risks of high BMI are significantly compounded by social determinants of health.

Our study observed a 46.5% prevalence of gestational hypertension, a figure that drastically exceeds the global average for the general obstetric population (typically 5–10%). This finding aligns with the physiological consensus that obesity induces a state of chronic low-grade inflammation and oxidative stress, which impairs vascular endothelial function. Recent longitudinal data by Rehman et al. confirms that the risk of hypertensive disorders of pregnancy (HDP) increases exponentially with every unit increase in pre-pregnancy BMI.<sup>12</sup>

Furthermore, the fact that over half of our participants were categorized as "Poor" suggest that

nutritional deficiencies—specifically a lack of calcium and antioxidants—may have synergized with obesity to exacerbate vascular resistance.

The 70.5% Cesarean Section (CS) rate in this study is perhaps the most alarming statistic. While the WHO suggests a 10–15% rate for the general population, recent studies of obese cohorts specifically show a dramatic upward trend. Additionally, the 15.5% assisted vaginal delivery rate in our data highlights the technical difficulty of the second stage of labor in obese women, where soft tissue dystocia often hinders the natural descent of the fetus. The study by Mughal et al. reported CS in 80.8% patients and assisted birth in 13.7% patients.<sup>13</sup> Athokpam et al. reported CS rate of 44.7%.<sup>14</sup> While the study by Rehman et al. reported CS rate of 40.6% in overweight women and 62.2% in obese women. Which is lower than our study results.<sup>12</sup>

The increased occurrence of postpartum hemorrhage noted in our research aligns with existing studies. For instance, research from South Africa demonstrated that women with obesity experienced significantly higher rates of postpartum hemorrhage, induction failures, fetal anomalies, and unscheduled prenatal visits. Additionally, neonates born to obese mothers were more frequently admitted to neonatal units, and the overall healthcare costs for this group were markedly higher compared to those of women of normal weight. This highlights the additional strain that obesity places on healthcare systems with limited resources.<sup>15</sup>

The rise in operative deliveries, hypertensive conditions, and neonatal problems among obese pregnant women significantly burdens healthcare systems, especially in areas with limited resources.<sup>16</sup> This study's findings of increased NICU admissions and maternal surgeries point to longer hospital stays, higher healthcare expenses, and greater emotional strain on families. These issues highlight the importance of comprehensive prenatal care that offers nutritional guidance, weight tracking, and early detection of metabolic issues.<sup>17</sup> Furthermore, the clustering of multiple complications in severely obese women emphasizes the necessity for a team-based approach involving obstetricians, dietitians, endocrinologists, and neonatologists.<sup>18</sup> Implementing preventive measures to achieve

healthy weight before pregnancy can notably diminish high-risk pregnancies and enhance maternal and fetal outcomes. Consequently, tackling maternal obesity should be prioritized nationally within women's health policies and programs.<sup>19</sup>

This research has certain limitations despite its strong findings. Primarily, since the study was carried out at only one tertiary care center, the applicability of the results to rural or resource-limited environments with different populations and healthcare systems may be restricted. Additionally, obesity classification was based solely on BMI, without considering other measures such as waist-to-hip ratio, visceral fat assessment, or metabolic biomarkers, which could offer a more detailed understanding of associated health risks.

#### CONCLUSION:

Being overweight and obese is significantly associated with adverse maternal and neonatal complications. These results highlight the importance of implementing specialized prenatal surveillance, early identification of risk factors, and thorough management plans for pregnant women with obesity to minimize adverse outcomes for both mother and baby.

#### REFERENCES:

1. Fallatah AM, Babatin HM, Nassibi KM, Banweer MK, Fayoumi MN, Oraif AM. Maternal and Neonatal Outcomes among Obese Pregnant Women in King Abdulaziz University Hospital: A Retrospective Single-Center Medical Record Review. *Med Arch.* 2019;73(6):425-32.
2. The Lancet Gastroenterology H. Obesity: another ongoing pandemic. *Lancet Gastroenterol Hepatol.* 2021;6(6):411.
3. Webber L, Divajeva D, Marsh T, McPherson K, Brown M, Galea G, et al. The future burden of obesity-related diseases in the 53 WHO European-Region countries and the impact of effective interventions: a modelling study. *BMJ Open.* 2014;4(7):e004787.
4. Khanna D, Peltzer C, Kahar P, Parmar MS. Body Mass Index (BMI): A Screening Tool Analysis. *Cureus.* 2022;14(2):e22119.

5. Ahmed KY, Rwabilimbo AG, Abrha S, Page A, Arora A, Tadese F, et al. Factors associated with underweight, overweight, and obesity in reproductive age Tanzanian women. *PLoS One*. 2020;15(8):e0237720.
6. Tareke AA, Mohammed A, Muche A, Ali Y. Identifying high-risk population segments for underweight, overweight, and obesity among reproductive-age women in sub-Saharan Africa. *Front Public Health*. 2024;12:1467747.
7. Seven A, Yalinbas E, Kucur SK, Kocak E, Isiklar O, Yuksel B, et al. Comprehensive evaluation of irisin levels in fetomaternal circulation of pregnant women with obesity or gestational diabetes mellitus. *Ir J Med Sci*. 2019;188(4):1213-9.
8. Nagler L, Eißmann C, Wasenitz M, Bahlmann F, Al Naimi A. The association between maternal obesity and fetomaternal outcomes in twin pregnancies. *PLoS One*. 2024;19(7):e0306877.
9. Brunner K, Linder T, Klaritsch P, Tura A, Windsperger K, Göbl C. The Impact of Overweight and Obesity on Pregnancy: A Narrative Review of Physiological Consequences, Risks and Challenges in Prenatal Care, and Early Intervention Strategies. *Curr Diab Rep*. 2025;25(1):30.
10. Tucker AR, Brown HL, Dotters-Katz SK. Maternal Weight Gain and Infant Birth Weight in Women with Class III Obesity. *Am J Perinatol*. 2021;38(8):816-20.
11. Ehrental DB, Maiden K, Rao A, West DW, Gidding SS, Bartoshesky L, et al. Independent relation of maternal prenatal factors to early childhood obesity in the offspring. *Obstet Gynecol*. 2013;121(1):115-21.
12. Rehman F, Asmat S, Mehsud N, Ishtiaq L, Shakeel K, Ali M, et al. Effects of Obesity on Pregnancy and Fetomaternal Outcome. *Cureus*. 2025;17(10):e94358.
13. Mughal A, Memon FP, Farhan N, Ghaloo M, Memon RJJoTSoO, Pakistan Go. Obese Pregnant Women and Fetomaternal Complications. 2024;14(2):147-50.
14. Athokpam K, Kangjam P, Tauro SR, Singh LB, Biswakarma AK. Fetomaternal outcome in overweight and obese pregnant women in tertiary care hospital in Northeast India. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 2025;14(6):1845-50.
15. Ngatiane LS, Naidoo TD. Obesity in pregnancy in a resource-constrained setting: Complications and cost implications - a retrospective cross-sectional study. *Int J Gynaecol Obstet*. 2023;161(2):485-90.
16. Chopra M, Kaur N, Singh KD, Maria Jacob C, Divakar H, Babu GR, et al. Population estimates, consequences, and risk factors of obesity among pregnant and postpartum women in India: Results from a national survey and policy recommendations. *Int J Gynaecol Obstet*. 2020;151 Suppl 1(Suppl 1):57-67.
17. Shahrir NF, Abdul Jalil R, JR RJ, Devi Karalasingam S, Mohd Nordin N, Abdullah MF, et al. Maternal Obesity and Its Associated Factors and Outcomes in Klang Valley, Malaysia: Findings from National Obstetric Registry. *Malays Fam Physician*. 2021;16(3):56-67.
18. Dahake ST, Shaikh UA. Maternal early pregnancy body mass index and pregnancy outcomes among nulliparous women registered in tertiary care hospital and urban slum hospital of a metropolitan city. *J Educ Health Promot*. 2020;9:159.
19. Song BB, Mandelbaum RS, Anderson ZS, Masjedi AD, Harris CA, Violette CJ, et al. Pregnancy following assisted reproductive technology in morbidly obese patients: assessment of fetomaternal outcomes. *J Assist Reprod Genet*. 2024;41(4):903-14.