IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 25, Issue 4 Ser. 5 (April. 2026), PP 01-04
www.iosrjournals.org

"Maternal Obesity And Antenatal Complications: A Prospective Comparative Study"

Dr Sachin Kolhe
Assistant Proffessor, Department Of Obstetrics And Gynecology, Mgmihs, Kamothe, Navi Mumbai

Dr Oindrila Pal
Senior Resident, Department Of Obstetrics And Gynecology, Mgmihs, Kamothe, Navi Mumbai

Abstract
Background: *Maternal obesity is a growing public health concern associated with increased antenatal complications. Early identification of high-risk patients through antenatal risk stratification can improve maternal and fetal outcomes.*
Objective: *To evaluate antenatal complications in obese pregnant women and develop a clinically relevant risk stratification approach.*
Methods: *This prospective comparative study was conducted in the Department of Obstetrics and Gynaecology at a tertiary care center in Navi Mumbai. Pregnant women were categorized into obese (BMI ≥30 kg/m²) and non-obese groups. Antenatal complications including gestational diabetes mellitus (GDM), hypertensive disorders, and other comorbidities were analyzed. Statistical comparisons were performed to identify significant risk associations.*
Results: *Obese pregnant women demonstrated a significantly higher incidence of antenatal complications, particularly GDM and hypertensive disorders of pregnancy. The presence of pre-existing medical conditions further amplified risk. A stepwise increase in complication rates was observed with increasing BMI and associated comorbidities.*
Conclusion: *Maternal obesity is a strong predictor of antenatal complications. A structured antenatal risk stratification model incorporating BMI and comorbidities can help identify high-risk pregnancies early and guide targeted interventions.*
Keywords: *Maternal obesity, antenatal complications, risk stratification, gestational diabetes, hypertensive disorders*

Date of Submission: 14-04-2026 Date of Acceptance: 24-04-2026

I. Introduction

Obesity among women of reproductive age has reached alarming proportions globally and is increasingly encountered in obstetric practice. Maternal obesity is associated with significant metabolic and inflammatory alterations that predispose women to adverse antenatal outcomes.

The antenatal period provides a critical window for identifying high-risk pregnancies. Obese women are at increased risk of developing gestational diabetes mellitus (GDM), hypertensive disorders including preeclampsia, and other complications. Despite this, routine antenatal care often lacks structured risk stratification based on obesity severity and associated factors.

This study aims to evaluate antenatal complications in obese pregnant women and propose a clinically applicable risk stratification framework to improve early identification and management.

II. Materials And Methods

- Study design: prospective observational study
- Study area: Department of Obstetrics and Gynaecology in MGM Hospital, Kalamboli, Navi Mumbai.
- Study period: Research study was conducted from July 2023 to December 2024.

Sample size

The sample size was calculated based on the prevalence of obesity during pregnancy, which was estimated to be 12% according to previous studies (International Journal of Gynecology and Obstetrics/Volume 151, Issue 1 by Mansi Chopra et al., 2020). Using the formula $n = (Z \times Z \times P \times Q)/L \times L$, where Z = 1.96 for 95% confidence interval, P = 12 (prevalence of obesity during pregnancy), Q = 100-P = 88, and L = 5% (margin of error), the sample size was determined to be 160 subjects per group, for a total of 320 participants.

Inclusion criteria:

- For Group A (Study Group):

1. Women with BMI >30 kg/m²
2. Primigravida or multigravida
3. Pregnancy of >28 weeks (crossing the age of viability)
4. Patients who were willing to participate in the study and provided written informed consent

- For Group B (Control Group):

1. Women with BMI 18-30 kg/m²
2. Primigravida or multigravida
3. Pregnancy of >28 weeks (crossing the age of viability)
4. Patients who were willing to participate in the study and provided written informed consent

- **Exclusion criteria:**

1. Pregnancy less than 28 weeks
2. Patients who were not willing to participate in the study and did not provide written informed consent
3. Pregnancies with fetal anomalies

Data Collection:

Data were collected using a structured proforma including:

- Maternal age
- Gravidity and parity
- BMI at booking
- Pre-existing medical conditions
- Antenatal complications

Outcome Measures:

- Gestational diabetes mellitus
- Hypertensive disorders of pregnancy (including chronic hypertension and pre-eclampsia)
- Venous Thromboembolism
- Preterm labor
- Antepartum Haemorrhage
- Pre-existing Medical conditions

III. Results:

Table 1: Antenatal Complications

Complication	Group A (BMI >30 kg/m²) (n=160)	Group B (BMI 18-30 kg/m²) (n=160)	P-value
Gestational Diabetes Mellitus	18 (11.2%)	10 (6.2%)	0.165
Preeclampsia	24 (15.0%)	14 (8.8%)	0.119
Chronic Hypertension	7 (4.4%)	8 (5.0%)	0.799
Venous thromboembolism	0 (0%)	0 (0%)	-
Preterm labour	11 (6.9%)	8 (5.0%)	0.637
Antepartum Hemorrhage	2 (1.2%)	1 (0.6%)	1.000

This table outlines complications during pregnancy. Group A showed higher rates of gestational diabetes mellitus (11.2% vs 6.2%, p=0.165) and preeclampsia (15.0% vs 8.8%, p=0.119) compared to Group B, though these differences weren't statistically significant. Chronic hypertension was similar between groups (4.4% vs 5.0%, p=0.799). No cases of venous thromboembolism were reported in either group. Preterm labor was more common in Group A (6.9% vs 5.0%, p=0.637), as was antepartum hemorrhage (1.2% vs 0.6%, p=1.000), but these differences weren't statistically significant.

Graph 1: Antenatal Complications

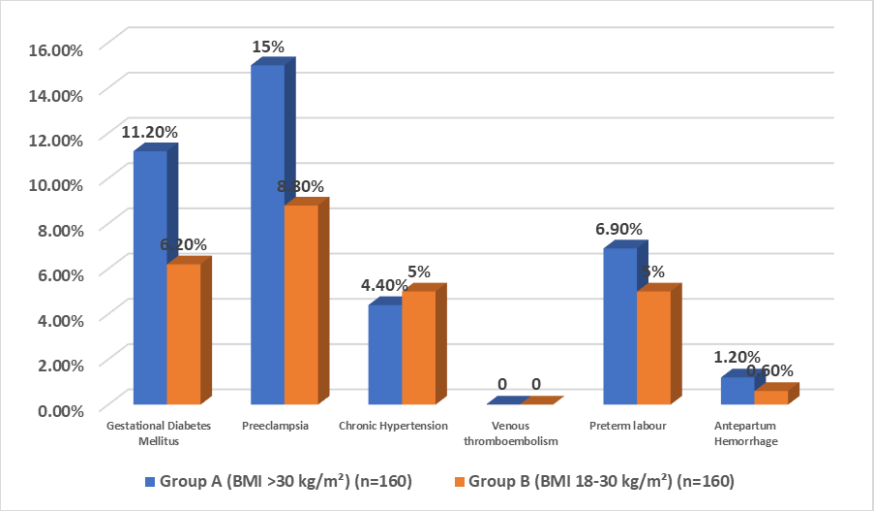
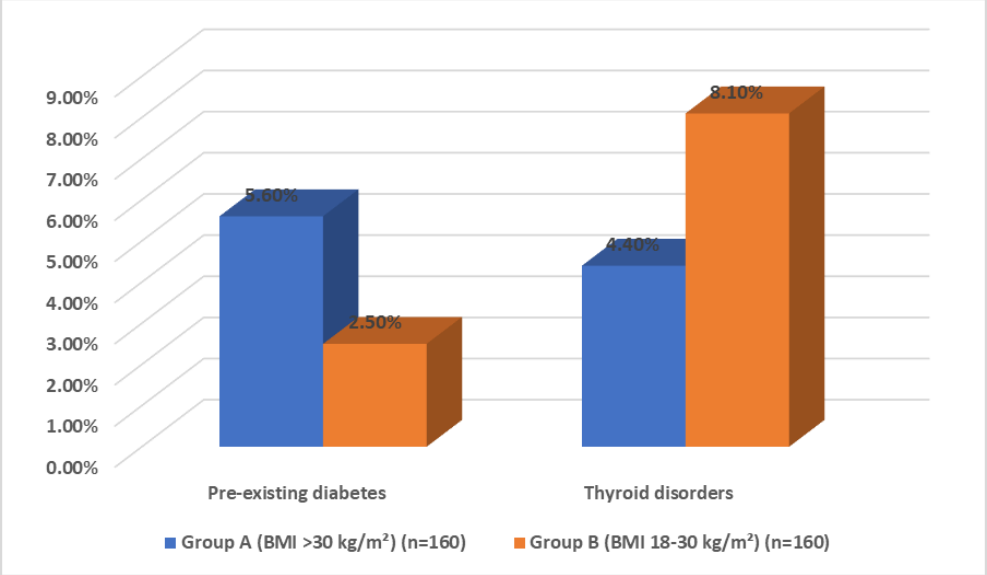


Table 2: Pre-existing Medical Conditions

Condition	Group A (BMI >30 kg/m²) (n=160)	Group B (BMI 18-30 kg/m²) (n=160)	P-value
Pre-existing diabetes	9 (5.6%)	4 (2.5%)	0.257
Thyroid disorders	7 (4.4%)	13 (8.1%)	0.248

This table examines pre-existing medical conditions. Pre-existing diabetes was more common in Group A (5.6%) compared to Group B (2.5%), though not statistically significant (p=0.257). Interestingly, thyroid disorders were less prevalent in Group A (4.4%) than Group B (8.1%), but again not statistically significant (p=0.248).

Graph 2: Pre-existing Medical Conditions



IV. Discussion

The present study highlights the significant association between maternal obesity and antenatal complications. The increased incidence of GDM observed in obese women can be attributed to heightened insulin resistance associated with excess adipose tissue.

Similarly, the higher occurrence of hypertensive disorders in obese pregnant women may be linked to endothelial dysfunction and chronic inflammation. These findings are consistent with previously published studies that have reported similar associations between maternal obesity and adverse pregnancy outcomes.

The presence of pre-existing medical conditions in obese women further compounds the risk of complications, emphasizing the need for careful antenatal surveillance.

V. Conclusion

Maternal obesity is strongly associated with an increased risk of antenatal complications, particularly gestational diabetes mellitus and hypertensive disorders of pregnancy. Early identification, regular monitoring, and appropriate management of obese pregnant women are essential to improve pregnancy outcomes.

References

[1]. Catalano PM, Shankar K. Obesity And Pregnancy: Mechanisms Of Short- And Long-Term Adverse Consequences For Mother And Child. BMJ. 2017;356:J1.
[2]. Heslehurst N, Simpson H, Ells LJ, Rankin J. The Impact Of Maternal BMI Status On Pregnancy Outcomes. Obes Rev. 2008;9(6):635–45.
[3]. Poorolajal J, Jenabi E. The Association Between Body Mass Index And Preeclampsia: A Meta-Analysis. J Matern Fetal Neonatal Med. 2016;29(22):3670–6.
[4]. Chu SY, Callaghan WM, Kim SY, Schmid CH, Lau J, England LJ, Et Al. Maternal Obesity And Risk Of Gestational Diabetes Mellitus. Diabetes Care. 2007;30(8):2070–6.
[5]. Poston L, Caleyachetty R, Cnattingius S, Corvalán C, Uauy R, Herring S, Et Al. Preconceptional And Maternal Obesity: Epidemiology And Health Consequences. Lancet Diabetes Endocrinol. 2016;4(12):1025–36.
[6]. Denison FC, Aedla NR, Keag O, Hor K, Reynolds RM, Milne A, Et Al. Care Of Women With Obesity In Pregnancy. BMJ. 2018;362:K3647.