



Role of Metformin in reducing the incidence of Gestational Diabetes Mellitus in Obese Women

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Introduction

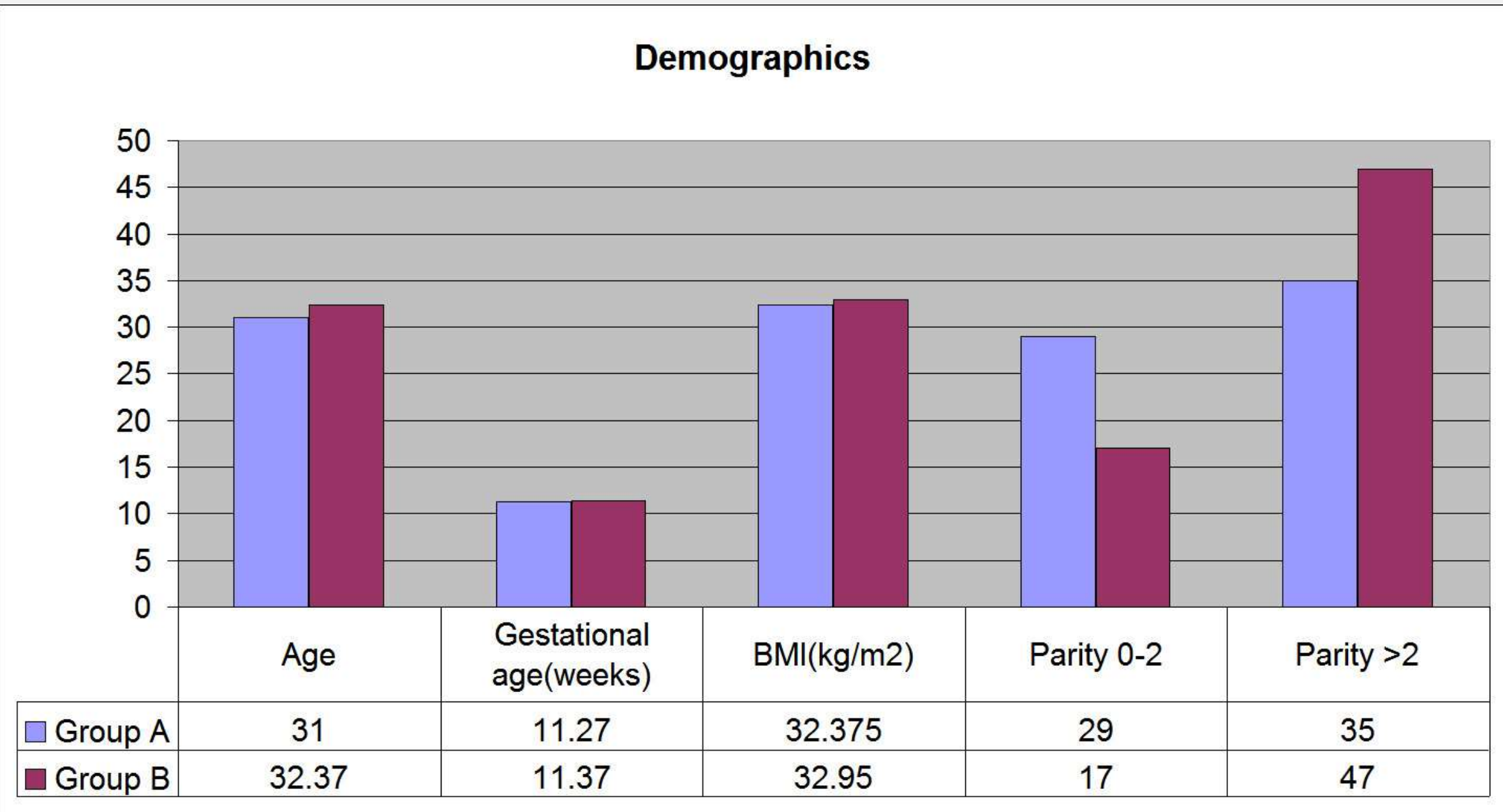
Gestational Diabetes Mellitus (GDM) is a metabolic condition that arises during pregnancy, affecting approximately 15% of pregnancies. It is linked to numerous adverse maternal and fetal outcomes, including preeclampsia, preterm delivery, cesarean section, macrosomia, stillbirth, low APGAR scores, neonatal hypoglycemia, respiratory distress, and neonatal jaundice. Early treatment and good glycemic control have been evidenced to reduce these complications. Among the various pharmacological agents, metformin has been studied for its role in the prevention of GDM in pregnant patients with obesity and when it has been used in combination with lifestyle interventions, such as diet and exercise, may help reduce weight gain and prevent GDM in this population. The International Federation of Gynecology and Obstetrics (FIGO) recommends metformin as a first-line medication for GDM patients who do not achieve ideal blood glucose levels through lifestyle interventions alone. Metformin targets insulin resistance and improves insulin action, making it a potential therapeutic option for managing hyperglycemia in pregnancy.

Objective

To evaluate whether metformin administration reduces the incidence of gestational diabetes mellitus in obese women and to examine its impact on the incidence of preeclampsia, birth weight, and the APGAR scores of newborns

Methodology

This experimental study was done at Shalamar Hospital, affiliated with Shalamar Medical & Dental College, Lahore, Pakistan, from May1st 2022 to June 30, 2024. A total of 150 women with a BMI $\geq$ 30kg/m², aged 18-40 years, between 11 to 14 weeks pregnant, were included. Those with contraindications to metformin, pre-existing diabetes, or any co-morbid medical disorder were excluded. The participants were divided into two groups with 75 in each: Group A the control group with only standard care. and Group B receiving metformin 250mg three times daily orally in addition to standard care. The oral glucose tolerance test was performed between 24 to 28 weeks and later at 32 weeks. The participants were followed till delivery to record preeclampsia, neonatal birth weight, and APGAR score.



Results

The mean age, gestational age, and BMI were similar between Group A (32.37 years, 11.37 weeks, 32.37 kg/m²) and Group B (31.35 years, 11.27 weeks, 32.3 kg/m²). The incidence of GDM (10% vs. 42%) and preeclampsia (13% vs. 74%) was significantly lower in the metformin group (p = 0.000). However, no significant differences were observed in birth weights or APGAR scores.

Table 1: Comparison of Gestational Diabetes Mellitus and Preeclampsia Incidence Between Control and Intervention Groups

Variable		Control group A	Intervention group B	P Value
GDM	No	37(57.8%)	57 (89.1%)	0.000
	Yes	27(42.2%)	7 (10.9%)	
Preeclampsia	Yes	47(74%)	9 (13%)	0.000
	No	17(24%)	55(87%)	

Table 2: Comparison of Neonatal Birth Weight and APGAR Scores Between Control and Intervention Groups

Variables	Group A Mean± SD	Group B Mean± SD	P-value
Birth weight (kg)	3.250 ± 0.50	3.32 ± 0.150	>0.05
APGAR score (1min)	7.12 ± 0.52.	7.35 ± 0.15	>0.05
APGAR score (5min)	7.35 ± 0.15	8.35 ± 0.15	>0.05

Conclusion

Metformin reduces the incidence of GDM and preeclampsia in obese women when started at 11 to 14 weeks of gestation, without affecting birth weight and APGAR score of neonates.

References

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