

# Pharmacological management of gestational diabetes and its effect on neonatal outcomes

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## Introduction

Gestational diabetes mellitus (GDM) affects up to 12% of pregnancies that increase the risk of neonatal complications such as hypoglycaemia, macrosomia and hyperbilirubinemia.<sup>1</sup>

The first line pharmacological insulin.<sup>2</sup> However, this requires multiple subcutaneous injections and has increased risk of maternal and fetal hypoglycaemic events. Recently metformin, a biguanide, has been used in the management of GDM.<sup>1,3,4</sup> There is a risk of placental transfer to the fetus, but recent studies have not shown any adverse effects.<sup>3</sup> Research shows that metformin in GDM management is associated with lower rates of macrosomia, severe neonatal hypoglycaemia, respiratory distress and hyperbilirubinemia requiring phototherapy.<sup>3,4</sup> Metformin is also associated with lower rates of deliveries via caesarean section compared to insulin.<sup>4</sup>

## Objective

This study aimed to assess the pharmacological management of GDM and its maternal and neonatal outcomes.

## Method

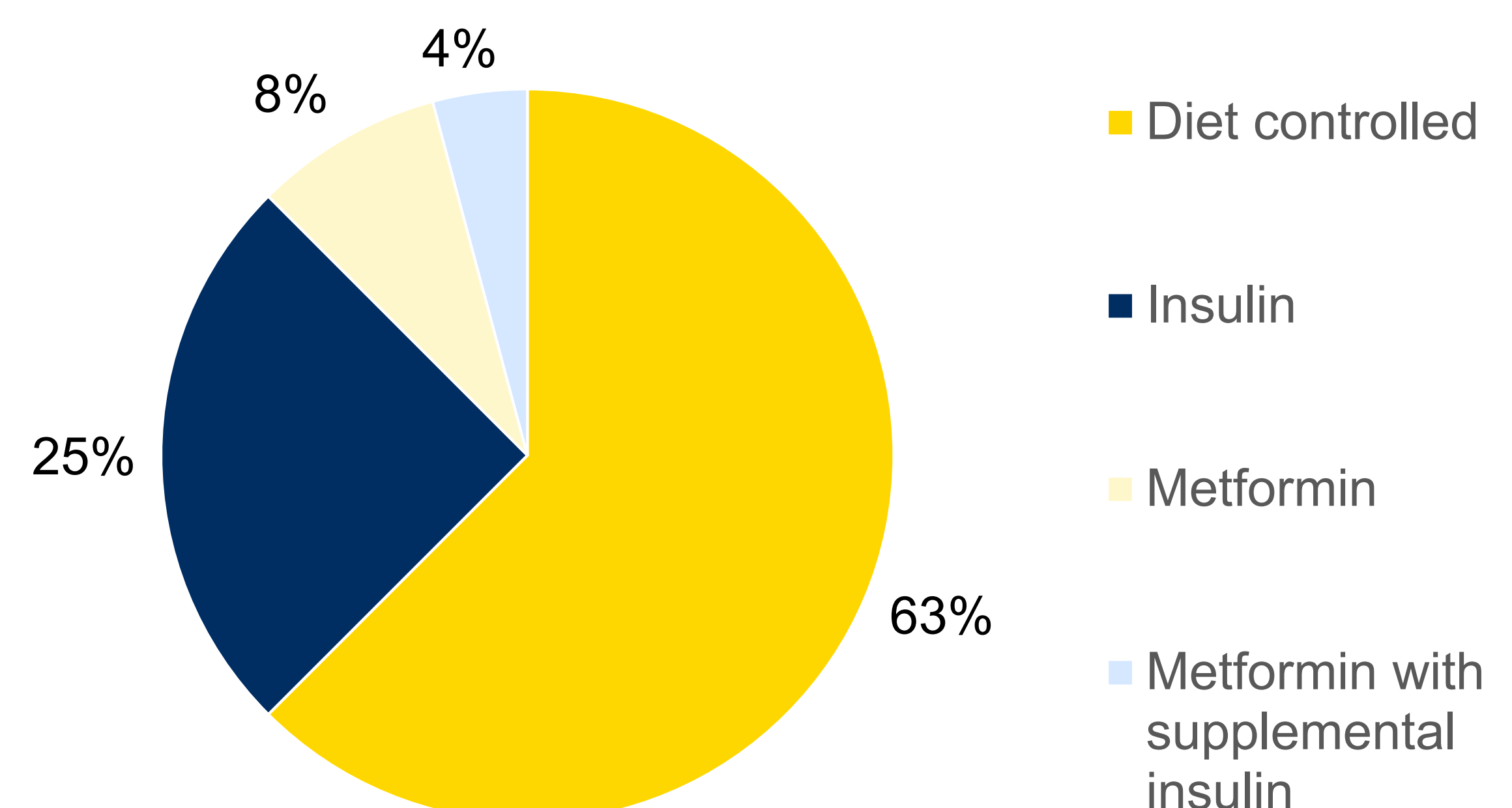
A retrospective audit was conducted in a major tertiary hospital. Data was collected by reviewing medical records of women who birthed in July 2018. It included maternal demographics, gestational age, maternal birth outcomes, as well as neonatal outcomes including birth weight, APGAR scores, hypoglycaemia, respiratory distress and hyperbilirubinemia. SPSS was used for data analysis.

## Results

Data analysis of 118 births demonstrated 24 cases (20%) of GDM requiring management. Lower rates of birth via emergency caesarean section and higher rates of elective caesarean section were observed in the women managed using insulin. Two cases of instrumental births were observed in the diet-controlled GDM women. Two cases of premature birth were noted; one in a woman managed with insulin and another managed with diet alone. APGAR scores at 1 minute were similar. All APGAR scores at 5 minutes were 9.

## References

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**Figure 1:** The frequency of the management of GDM using insulin, metformin, metformin with supplemental insulin and diet

| No GDM (n=94)                                  | GDM (n=24)   | Diet alone (n=14) | Insulin (n=7) | Metformin (n=2) | Metformin + insulin (n=1) |
|--|--------------|-------------------|---------------|-----------------|---------------------------|
| 3.4kg (0.56)                                   | 3.4kg (0.44) | 3.3kg (0.43)      | 3.5kg (0.53)  | 3.4kg (0.45)    | 3.4kg (0.0)               |
| <b>Mean gestational age in weeks (std dev)</b> |              |                   |               |                 |                           |
| 38 (2.9)                                       | 38 (2.4)     | 37 (4.4)          | 38 (0.63)     | 38 (0.58)       | 38 (0.0)                  |

**Figure 2:** The birthweight of neonates in mothers with no GDM and those managing their GDM with insulin, metformin, metformin with supplemental insulin and via dietary measures  
There was no statistically significant difference in gestational age between different groups.

|                      | No GDM (n=94) | GDM (n=24) | Diet (n=14) | Insulin (n=7) | Metformin (n=2) | Metformin + insulin (n=1) |
|----------------------|---------------|------------|-------------|---------------|-----------------|---------------------------|
| Respiratory distress | 19 (20%)      | 3 (13%)    | 0           | 2 (29%)       | 1 (50%)         | 0                         |
| Jaundice             | 11 (12%)      | 4 (17%)    | 2 (14%)     | 0             | 1 (50%)         | 1 (100%)                  |
| Hypoglycaemia        | 2 (2%)        | 1 (4%)     | 0           | 1 (14%)       | 0               | 0                         |

**Figure 3:** The frequency of neonatal complications in women without GDM and with GDM managed by insulin, metformin, metformin with insulin, and diet alone

## Conclusion

This study, in addition to current literature, supports the use of metformin as an alternative to insulin for the management of GDM. There was no significant increase in neonatal complications when comparing metformin to insulin. A limitation of this study was the small population of women managed with metformin. Further research needs to be conducted to understand the association of metformin with respiratory distress and jaundice.

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