

# Patterns and Trends of Antidiabetic Medication Use During Pregnancy in China: A Retrospective Cohort Study

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## Background

With the rising prevalence of diabetes in pregnancy (DIP) in China, the need for antidiabetic pharmacotherapy during pregnancy has increased.

## Aim

This study aimed to describe patterns and trends of antidiabetic medication use among pregnant women in China from 2019 to 2025.

## Method

### Study design

A retrospective cohort study was conducted using electronic medical records from a provincial medical insurance database in eastern China.

### Population

Women aged 18-50 years with a singleton pregnancy lasting  $\geq 20$  weeks and at least one antidiabetic prescription between the last menstrual period and pregnancy end were included.

### Statistical Analysis

Patients were classified as having pregestational diabetes mellitus (PGDM) or gestational diabetes mellitus (GDM) based on diabetes diagnosis or antidiabetic medication use before pregnancy. The index date was the first antidiabetic prescription during pregnancy. Follow-up continued until pregnancy end, death, loss to follow-up, or database closure. Descriptive analyses assessed initial and overall antidiabetic medication use during pregnancy, in both the overall population and relevant subgroups.

## Results

- A total of 46,101 DIP patients were included (6,292 PGDM and 39,809 GDM). The mean age at cohort entry was 32.1 years and mean gestational age was 28.0 weeks.

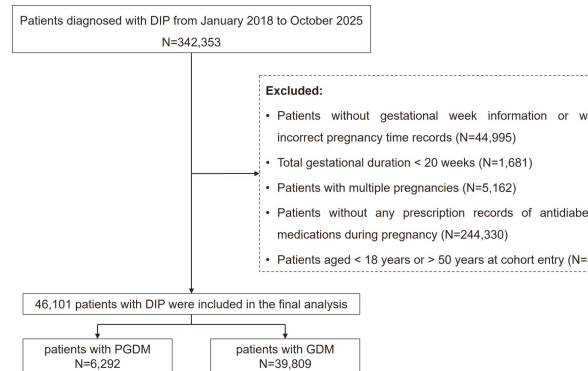


Figure 1. Flowchart of participants in the study cohorts.

- Insulin was the most common initial therapy (86.63%) and increased significantly over time ( $p < 0.001$ ), whereas metformin initiation (12.75%) declined ( $p < 0.001$ ). PGDM patients were more likely than GDM patients to initiate biguanides across all years ( $p < 0.001$ ), despite an overall decrease ( $p < 0.001$ ).

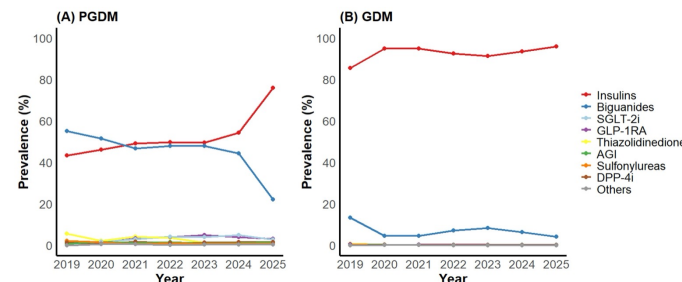


Figure 2. Initiation rates of glucose-lowering therapy among patients with PGDM and GDM.

- Among patients with PGDM, 37.73% switched antidiabetic classes from pre-pregnancy to pregnancy, most commonly from oral agents to insulin (68.01%).

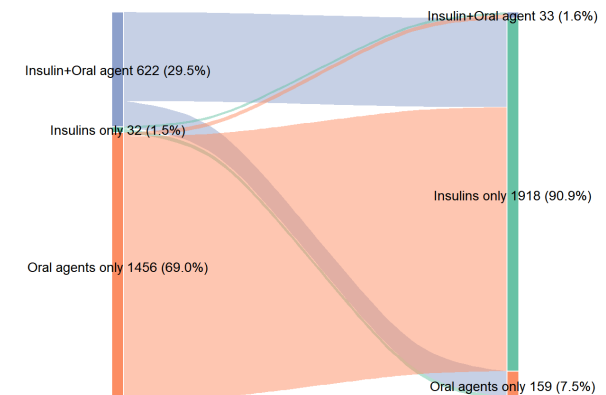


Figure 3. Proportions of medication-switching patterns before and after pregnancy among patients with PGDM.

- Overall, insulin predominated (mean 88.87%) with an increasing trend ( $p < 0.001$ ), while biguanide use was lower (mean 13.95%) and declined over time ( $p < 0.001$ ). Biguanide use remained higher in PGDM than GDM ( $p < 0.001$ ).

Table 1. Prevalence of medication use during pregnancy among patients with DIP.

Therapy	2019 (N=535)	2020 (N=5960)	2021 (N=7292)	2022 (N=8434)	2023 (N=9321)	2024 (N=11794)	2025 (N=7489)
Insulins	409 (76.45%)	5479 (91.93%)	6642 (91.09%)	7498 (88.90%)	8166 (87.61%)	10708 (90.79%)	7141 (95.35%)
Biguanides	141 (26.36%)	567 (9.51%)	791 (10.85%)	1174 (13.92%)	1495 (16.04%)	1561 (13.24%)	578 (7.72%)
Sulfonylureas	8 (1.50%)	21 (0.35%)	28 (0.38%)	27 (0.32%)	36 (0.39%)	35 (0.30%)	8 (0.11%)
AGI	3 (0.56%)	26 (0.44%)	33 (0.45%)	43 (0.51%)	40 (0.43%)	39 (0.33%)	26 (0.35%)
TZDs	13 (2.43%)	31 (0.52%)	61 (0.84%)	65 (0.77%)	42 (0.45%)	38 (0.32%)	24 (0.32%)
GLP-1 RA	5 (0.93%)	22 (0.37%)	55 (0.75%)	82 (0.97%)	114 (1.22%)	115 (0.98%)	48 (0.64%)
SGLT-2i	0 (0.00%)	20 (0.34%)	52 (0.71%)	90 (1.07%)	118 (1.27%)	153 (1.30%)	85 (1.13%)
DPP-4i	3 (0.56%)	23 (0.39%)	34 (0.47%)	35 (0.41%)	42 (0.45%)	53 (0.45%)	28 (0.37%)
Others	0 (0.00%)	11 (0.18%)	13 (0.18%)	4 (0.05%)	6 (0.06%)	12 (0.10%)	5 (0.07%)

## Conclusion

Despite guideline support for biguanides as alternative options for selected pregnant women, their real-world use in China remains conservative. Insulin continues to dominate antidiabetic treatment during pregnancy.

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