

Prescription Pattern and Costs of Antidiabetic Medications in Patients With Type 2 Diabetes by Specialist Physicians and Non-specialist Physicians

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Background

- In Japan, ten types of medications are available for the treatment of type 2 diabetes mellitus (T2DM).
- According to the Standard Diabetes Manual 2021¹, biguanides (BG) are recommended as first-line therapy. This recommendation applies not only to diabetes specialists but also to non-specialist physicians who manage patients with T2DM.
- Despite the widespread dissemination of the Japanese Clinical Practice Guideline for Diabetes, the proportion of patients achieving HbA1c <7% remains below 50%². This may be related to low adherence and poor treatment persistence.
- Studies using Japanese health insurance claims data³ have shown that dipeptidyl peptidase-4 inhibitors (DPP-4i) are the most frequently prescribed first-line therapy. However, real-world use of newer agents, such as sodium-glucose cotransporter-2 inhibitors (SGLT2i) and glucagon-like peptide-1 receptor agonists (GLP-1RA), following their wider adoption remains unclear, and overall treatment patterns reflecting these factors have not been fully elucidated.

Objective

To describe first-line T2DM medications prescribed to newly treated T2DM patients and 12-month treatment continuation, stratified by diabetes specialists vs non-specialists, using Japanese claims data.

Methods

〈Data Source〉

DeSC Healthcare Inc. claims database
(April 2014 to August 2023)

〈Patient criteria〉

- Age \geq 18 years
- At least one recorded diagnosis of T2DM (ICD-10 codes : E11,E14)
- Newly initiated on any T2DM medication between November 2014 and August 2022, with a 6-month washout period to ensure treatment-naïve status
- Minimum follow-up of 12 months after initiation of medication therapy

The first T2DM medication prescribed was defined as first-line therapy, and the types of first-line drugs were summarized descriptively.

For oral T2DM medications, 12-month treatment continuation rates were calculated.

Treatment discontinuation was defined as the last prescription date plus the days of supply,

If no prescription was received within a grace period of 1.5 times the median days of supply for that patient, capped at a maximum of 12 months.

〈Operational Definition of Prescriber〉

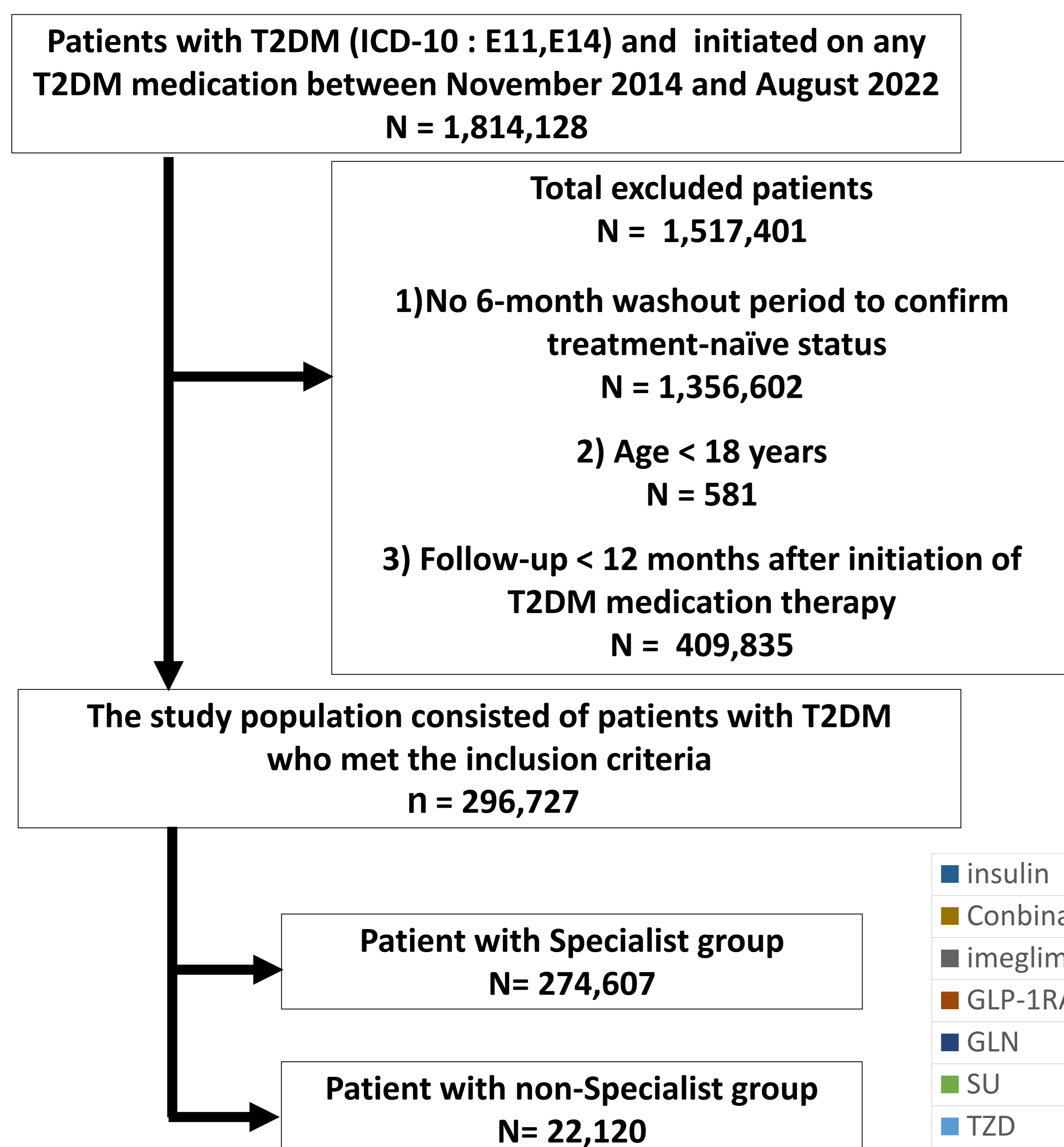
Specialist group: Patients visiting facilities with a history of insulin prescriptions (operational proxy for diabetes specialty care).

Non-specialist group: Others.

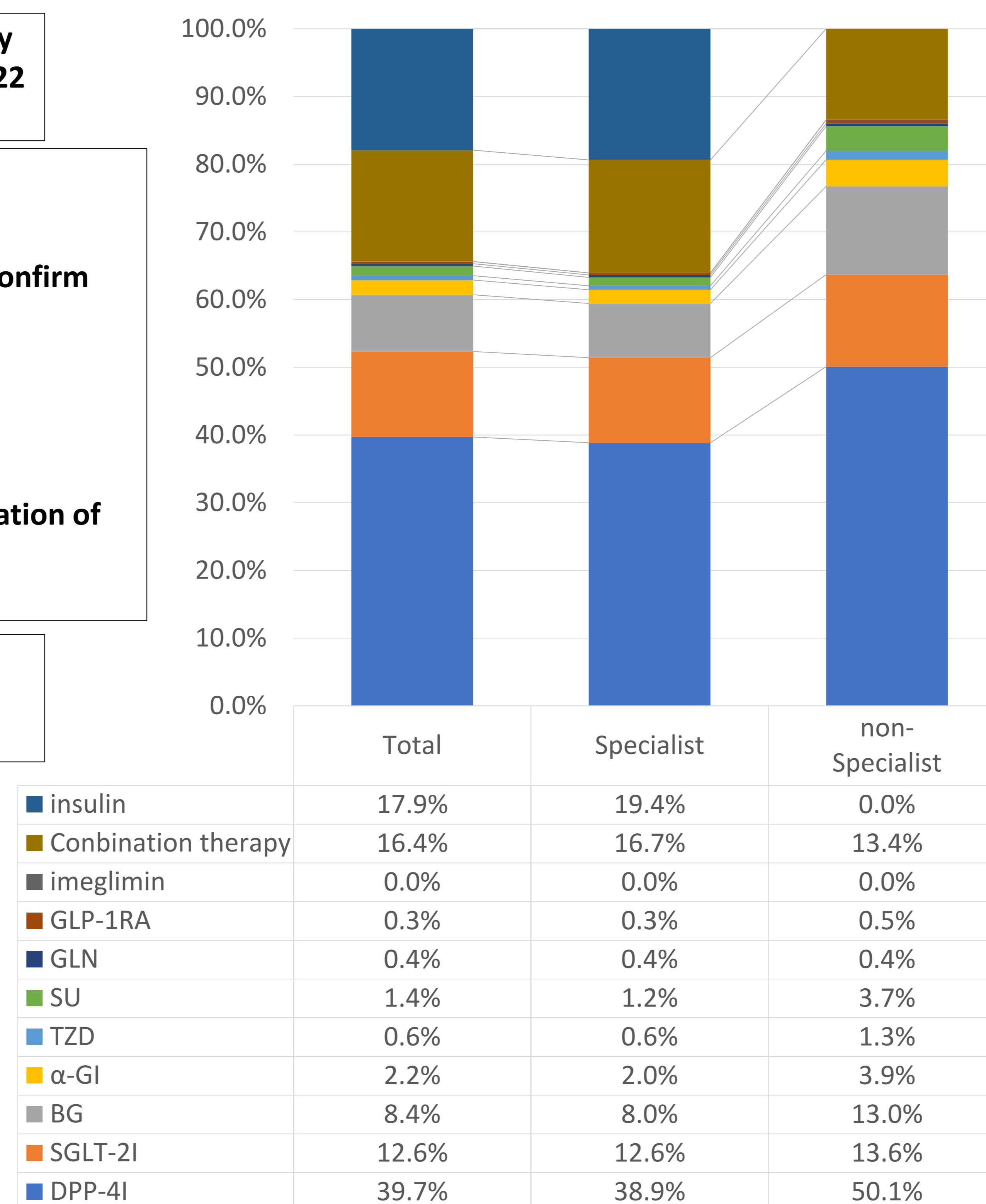
Note: This proxy may bias insulin availability toward the specialist group.

Results

Flow chart



Prescription ratio of first-line drugs



12-month treatment continuation rates.

	Total	Specialist	non-Specialist
DPP-4I	76.2%	76.7%	70.2%
SGLT-2I	76.0%	76.1%	75.5%
BG	67.8%	68.3%	63.9%
α-GI	61.0%	61.2%	60.2%
TZD	56.1%	54.3%	63.3%
SU	54.6%	54.6%	55.0%
GLN	51.4%	51.0%	55.7%
GLP-1RA	51.0%	50.9%	39.6%
imeglimin	64.3%	65.0%	62.5%

Abbreviation

DPP-4I	Dipeptidyl peptidase-4 inhibitor
SGLT-2I	Sodium glucose cotransporter-2 inhibitor
BG	Biguanide
α-GI	alpha-glucosidase inhibitor
TZD	Thiazolidine
SU	Sulfonylurea
GLN	Glinide
GLP-1RA	glucagon-like peptide-1 receptor agonist

Discussion / Conclusion

- There were no substantial differences in prescribing patterns or treatment continuation rates between the diabetes specialist and non-specialist groups.
- Consistent with previous studies³, DPP-4i were the most frequently prescribed in both groups.
- Across both groups, treatment continuation rates were higher for SGLT-2I and DPP-4I compared with other drug classes, potentially due to their lower risk of hypoglycemia, additional clinical benefits, and lower dosing frequency.
- Despite guideline recommendations, more costly drugs such as DPP-4I (94.5 JPY / day) and SGLT-2I (160.7 JPY / day) were prescribed more often than BG (20.5 JPY / day). However, considering cost-effectiveness, the current treatment practices, which show low adherence to guidelines, may require improvement.

conflicts of interest

The authors have no financial conflicts of interest disclose concerning the study.

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