CO152

Glycemic Control and Long-Term Macrovascular Outcomes in People With Type 2 Diabetes in China: A Retrospective Study

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Meng Zhang[1,2], Qi Pan[3], Feng Sun[1,2], Peng Shen[4], Yexiang Sun[4], Hongbo Lin[4], Siyan Zhan[1,2], Lixin Guo[3]

[1]Peking University, Beijing, China, [2]Key Laboratory of Epidemiology of Major Diseases (Peking University), Beijing, China, [3]Beijing Hospital, Beijing, China, [4]Yinzhou District Center for Disease Control and Prevention, Ningbo, China

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OBJECTIVE

- To examine the association between glycemic control and long-term macrovascular outcomes in patients with type 2 diabetes (T2D) in China using real-world data.

CONCLUSION

- Glycemic control at HbA1c < 7% was associated with significant risk reduction in long-term macrovascular outcomes in Chinese people with T2D, regardless whether the glycemic control was achieved at index or sustained during follow-up.
  - The incidence rates of 3P-MACE among the sustained glycemic control groups were lower than those in the corresponding index glycemic control groups.
  - The subgroup analyses and sensitivity analyses yielded findings consistent with the main analyses (except for history of ASCVD, no statistical significance was found in subgroup analyses).
- Diabetes treatments with better glycemic control may have value on the long-term macrovascular outcomes in patients with T2D.

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BACKGROUND

- The increasing prevalence of type 2 diabetes (T2D) places substantial burden on patients, caregivers, and the healthcare systems worldwide.
- T2D is associated with many macro- and microvascular complications, among which cardiovascular diseases are the most prevalent complications and the leading cause of mortality.[1]

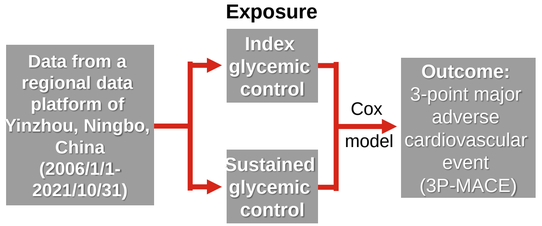
Glycemic Control & Macrovascular Outcomes

- Hemoglobin A1c (HbA1c) is a crucial metric for evaluating overall glucose control and serves as the primary surrogate marker for T2D complications.
- The association between glycemic control and reduced risk of microvascular outcomes in T2D has been well established.[2]
- Consensus on the association between glycemic control and the risk of macrovascular outcomes is still lacking, and long-term evidence from the real world is scarce.
- We aimed to examine the association between glycemic control (HbA1c < 7.0%) and long-term macrovascular outcomes in patients with T2D in China.

[1] ElSayed NA, et al. Diabetes Care 2023;46:S158-S190.
[2] American Diabetes Association Professional Practice Committee. Diabetes Care 2024;47(Suppl 1):S231-S243.

STUDY DESIGN

A Retrospective Real-world Study



Methods

- Adult patients with T2D with ≥ 1 HbA1c record from 2007/01/01-2016/10/31 were included to ensure ≥ 5 years of follow-up.
- Index date was defined as the first HbA1c record date occurring ≥ 90 days after the first T2D diagnosis.
- Exposure was defined as attaining the glycemic target (HbA1c < 7.0%) at index ("index glycemic control") or maintaining HbA1c < 7.0% at every measurement during follow-up ("sustained glycemic control").
- Cox proportional hazard model was used to examine the association between glycemic control and 3P-MACE (including myocardial infarction, stroke, and cardiovascular death during follow-up), adjusting for demographic and clinical characteristics.

KEY RESULT

- A total of 7,049 individuals (mean age 61.4±11.4 years, 3,751 [53.7%] female) were analyzed.
- During a median follow-up of 6.7 years (interquartile range: 5.5–7.9), 3P-MACE occurred in 1565 (22.2%) patients at an incidence rate of 3.4 per 100 person-years.

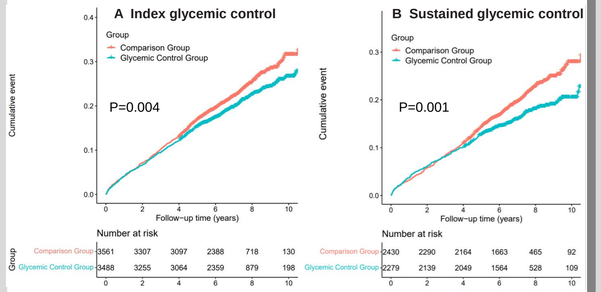


Figure 1: Cumulative incidence of 3-point major adverse cardiovascular events in different groups.

Index and sustained glycemic control were significantly associated with risk reduction in 3P-MACE (adjusted hazard ratio [95% confidence interval]: 0.86 [0.78-0.96] and 0.75 [0.65-0.87], respectively, both p<0.05).

Participants

- We included 7,049 eligible patients with T2D in the analyses.
- Among them, 3,488 patients had index HbA1c < 7.0% and 2,279 patients maintained HbA1c < 7.0% during at least five years of follow-up.

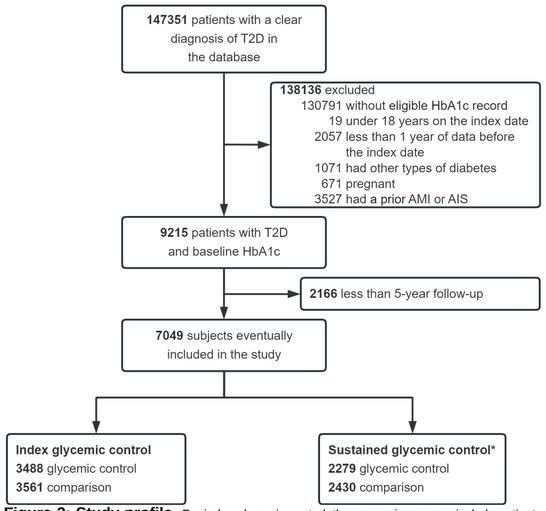


Figure 2: Study profile. For index glycemic control, the comparison group include patients with index HbA1c ≥7% ; *For sustained glycemic control, the comparison groups included patients who having all HbA1c results ≥ 7.0% throughout the post-period. AMI, acute myocardial infarction; AIS, acute ischemic stroke.

Main analysis

Association between glycemic control and 3P-MACE

- Both univariable and multivariable Cox proportional hazard models showed that index and sustained glycemic control were significantly associated with 3P-MACE risk reduction (all p<0.05).

Table 1: Univariable and multivariable analysis

Groups	Number of events (%)	Univariable analysis		Multivariable analysis	
		Hazard ratio (95% CI)	p value	Hazard ratio (95% CI) *	p value
Index HbA1c < 7.0%					
Comparison	836 (23.5%)	Reference		Reference	
Glycemic Control	729 (20.9%)	0.87 (0.78-0.96)	0.004	0.86 (0.78-0.96)	0.006
Sustained HbA1c < 7.0%					
Comparison	499 (20.5%)	Reference		Reference	
Glycemic Control	379 (16.6%)	0.80 (0.70-0.91)	0.001	0.75 (0.65-0.87)	<0.001

* Adjusting for age, sex, BMI value, hypoglycemia events, diabetes complications severity index, history of atherosclerotic cardiovascular disease (ASCVD), hypertension, hyperlipidemia, type of antidiabetic medication, antiplatelet drugs, and statins utilization in the pre-period.

Subgroup analysis

- The adjusted hazard ratios (aHRs) of both index and sustained glycemic control on 3P-MACE were similar between patients aged <65 and aged ≥65 years, male and female, as well as those who had normal weight and those who had overweight/obese (all p interaction > 0.05).
- Index glycemic control at HbA1c < 7.0% was associated with larger reduction of 3P-MACE occurrence in patients without ASCVD history compared to those with ASCVD history (HR 0.75 [95% CI 0.64-0.87] vs 0.97 [95% CI 0.84-1.12], p interaction = 0.012).

Sensitivity analysis

- When reanalyzed with multiple imputed dataset, index and sustained glycemic control were still significantly associated with reduced risk of 3P-MACE (both p <0.05).
- The aHRs were similar to those in the main analyses without imputation.

Disclosures. LG has served on advisory board panels and received consultancy fees from Abbott, AstraZeneca, Bayer, Boehringer-Ingelheim, Dreisamtech, Dongbao, Eli Lilly and company, Gan & Lee, Hansoh, Hengrui, Huadong Medicine, Hua Medicine, Innovent, Janssen, Novartis, Novo Nordisk, Merck, Pfizer, Sanofi, Synapsor, Takeda, Zense, and 3sbio. He also reports grants from Abbott, AstraZeneca, Bayer, Dreisamtech, Eli Lilly and company, Hansoh, Hengrui, Huadong Medicine, Hua Medicine, Innovent, Meitekanger tech, Novo Nordisk, Salubris, Sanofi, Synapsor, and Zense. All other authors declare no competing interests.