

## Glycemic Variability in Type 2 Diabetes in India

Apsara Kavital, M. B. Hiremath

### Abstract

India faces a significant diabetes epidemic, with approximately 72 million people diagnosed with diabetes and an additional 80 million in the pre-diabetes stage. Type 2 Diabetes accounts for over 90-95% of all diabetes cases in India. Managing Glycemic variability (GV) is essential to prevent complications and improve patient outcomes. GV is a critical aspect of diabetes management, and its significance in type 2 diabetes is increasingly recognized in India, where the prevalence of diabetes is rapidly growing.<sup>1,4</sup> GV refers to the fluctuations in glucose values around the baseline, and high GV is associated with a higher risk of diabetes associated complications.<sup>1,2</sup>

**Keywords:** Type 2 Diabetes; Albuminuria; Glycemic Variability.

### INTRODUCTION

A study by Nathiya et al. (2022) demonstrated that flash glucose monitoring guided therapeutic interventions could reduce GV in a brief span of ten days in patients with type 2 diabetes.<sup>2</sup> The study used an Easy GV calculator to estimate the flash glucose monitoring (FGM) derived measures of GV, including SD, mean amplitude of glycemic excursion (MAGE), continuous overall net glycemic action (CONGA), absolute means of daily differences (MODD), M value, and coefficient of variance (CV).<sup>2</sup> The results showed a significant improvement in mean tissue glucose and glycemic variability, indicating that FGMS based therapeutic interventions could be an effective strategy to reduce GV in type 2 diabetes.<sup>1,2</sup>

The study also found that albuminuria in type 2 diabetes is associated with high GV, suggesting that reduced diabetes complications may ultimately result from this reduced GV.<sup>2</sup> Albuminuria is a

well-known risk factor for diabetic kidney disease, and the study's findings highlight the importance of monitoring and managing GV in patients with type 2 diabetes, particularly those with albuminuria.<sup>2</sup> A 1% reduction in HbA1c is associated with a 37% decrease in the risk of microvascular complications.<sup>1,4</sup>

In India, the prevalence of diabetes is increasing, and the burden of diabetes associated complications is expected to rise.<sup>3</sup> Therefore, it is crucial to develop effective strategies to manage GV in patients with type 2 diabetes. The study by Nathiya et al., (2022) provides evidence that FGMS-based therapeutic interventions could be an effective strategy to reduce GV in type 2 diabetes in India.<sup>2</sup>

Additionally, a low glycemic diet can help manage GV in patients with type 2 diabetes. A study comparing a low glycemic index (LGI) diet with a high-cereal fiber diet in type 2 diabetes subjects for a period of 6 months showed a moderately lower HbA1c level in the LGI diet group.<sup>5</sup> Traditional Indian diets are rich in dietary fiber, which could explain the lower incidence of type 2 diabetes mellitus in India in the 1960s-1970s.<sup>5</sup> Therefore, incorporating LGI foods into the diet can be a beneficial strategy for managing GV in patients with type 2 diabetes in India.<sup>5</sup>

In conclusion, GV is a critical aspect of diabetes management, and its significance in type 2 diabetes is increasingly recognized in India. The study provides evidence that FGMS based therapeutic interventions could be an effective strategy to

---

**Author Affiliation:** <sup>1</sup>Research Scholar, <sup>2</sup>Professor, Department of Biotechnology & Microbiology, Karnatak University, Dharwad 580003, Karnataka, India.

**Corresponding Author:** M.B. Hiremath, Department of Biotechnology & Microbiology, Karnatak University, Dharwad 580003, Karnataka, India.

**E-mail:** murigendra@gmail.com

**Received on:** 18.05.2024 **Accepted on:** 23.10.2024



reduce GV in type 2 diabetes in India, particularly in patients with albuminuria.<sup>2</sup> Further research is needed to develop effective strategies to manage GV in patients with type 2 diabetes in India, and to evaluate the long term impact of reduced GV on diabetes associated complications. Incorporating LGI foods into the diet can also be a beneficial strategy for managing GV in patients with type 2 diabetes in India.

## REFERENCES

1. Zhou Z, Sun B, Huang S, Zhu C, Bian M. Glycemic variability: adverse clinical outcomes and how to improve it? *Cardiovasc Diabetol.* 2020;19:102
2. Nathiya, S., Singh, P., Suman, K., Bareth, S., Pal, D., Jain, S., & Tomar, R. (2022). Albuminuria, glycemic variability and effect of flash glucose monitoring in type 2 diabetes mellitus. *Journal of Diabetes Science and Technology*, 15(1), 134-140.
3. Indian Council of Medical Research. (2017). *India: Diabetes update 2015*. New Delhi: Indian Council of Medical Research.
4. Real-world evidence of glycemic control among patients with type 2 diabetes in India. *BMJ Open Diabetes Res Care.* 2019;7(1):e000654.
5. Pavithran N, Kumar H, Menon AS, Pillai GK, Sundaram KR, Ojo O. South Indian Cuisine with Low Glycemic Index Ingredients Reduces Cardiovascular Risk Factors in Subjects with Type 2 Diabetes. *Int J Environ Res Public Health.* 2020 Aug 27;17(17):6232.

### How to cite this article:

Apsara Kavital, M. B. Hiremath. Glycemic Variability in Type 2 Diabetes in India. *Ind J Diabetes Endocr* 2024;6(1):07-08.