

# Literature Review of Fasting Glucose Management's Value for Diabetic

## Retinopathy

Zheng L, **Zhao X**, Chen X, Gao T, Lu Y, Xu C, Wu W

The First People's Hospital of Ningyang, Taian, ShanDong, China

**OBJECTIVES:** Previously, it was believed that Diabetic retinopathy (DR) was associated with HbA1c levels. In recent years, increasing evidence suggests that fasting plasma glucose (FPG) variability is a key factor influencing DR. The aim is to perform a literature review to elucidate the impact of fasting plasma glucose and its variability on the occurrence and progression of DR.

**METHODS:** A systematic search and review of the PubMed literature database was conducted to evaluate the relationship between FPG and its variability with DR in patients with type 2 diabetes mellitus (T2DM).

**RESULTS:** Multiple studies assessed the correlation between FPG variability and DR. It was found that the cumulative incidence of DR in T2DM patients without DR after a 5.2-year follow-up was 36.2%. A 33-year follow-up study demonstrated that the risk of retinopathy significantly increased when the average FPG during the initial 2 years of follow-up ranged from 6.9 to 7.4 mmol/L, and the risk escalated sharply when it ranged from 7.4 to 8.7 mmol/L. FPG standard deviation and coefficient of variation were independent risk factors for DR, as revealed by multivariate analysis. Another 8-year follow-up study found that both the standard deviation and coefficient of variation of FPG were associated with the development of proliferative diabetic retinopathy (PDR) (standard deviation: HR = 1.011, 95% confidence interval 1.003-1.018; coefficient of variation: HR = 6.858, 95% confidence interval 2.317-20.304), independent of HbA1c.

**CONCLUSIONS:** In patients with T2DM, higher levels of standard deviation and variability of FPG are positively correlated with DR. Therefore long-term stability of fasting plasma glucose is crucial for reducing the occurrence and progression of DR.