

## Mean Nocturnal Blood Glucose Levels Among Diabetics in a Tertiary Healthcare Center: A Cross-Sectional Study

Tharun Venkatesan, K Bargavi, Sathya Arvinth KR\* and P Vijayaraja

*Department of General Medicine, Government Thoothukudi Medical College, Tamilnadu, India.*

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### ABSTRACT

**Introduction:** Diabetes mellitus continues to be an important public health challenge, and its long-term complications require continuous and effective monitoring. Hemoglobin A1C (HbA1c) is one of the most common indicators of glycemic control; however, it has several drawbacks especially in relation to glycemic variability.

**Aim:** To determine the mean value of nocturnal blood glucose levels among diabetic patients in a tertiary care hospital and analyze its association to the demographic profile, mode of treatment, and presence of diabetic complications.

**Materials and Methods:** A cross-sectional descriptive study was performed at Thoothukudi Medical College and Hospital (TMCH) from May to June 2023. A total of 134 diabetic patients with associated complications who were admitted in the hospital were randomized into the study. Nocturnal blood glucose levels were obtained using the Accu-Chek Performa glucometer. Age, sex, type of treatment (insulin versus oral hypoglycemic agents), and the presence of micro- and macro-vascular complications were among the analyzed variables.

**Results:** A total of 71 male patients (mean age:  $57.84 \pm 11.40$  years) and 63 female patients (mean age:  $57.4 \pm 11.42$  years) were included in the study. Nocturnal glucose levels showed some sex-related difference, but it was not statistically significant. Those patients with insulin therapy demonstrated greater nocturnal glucose variability than oral agent users. However, no statistically significant associations were found between nocturnal glucose levels and the type of diabetic complication (microvascular or macrovascular).

**Conclusion:** No significant association was found between mean nocturnal blood glucose levels and patient age, sex, treatment modality, or category of diabetic complications. These findings suggest that dynamic glucose monitoring may offer superior insights into glycemic control and complication prevention compared to traditional static markers like HbA1c. Further investigation needed.

**Keywords:** Diabetes mellitus, Glycemic variability, Glycemic control, Tertiary care hospital

**Corresponding author:** Arvinth SKR, Department of General Medicine, Government Thoothukudi Medical College, Tamilnadu, India, E-mail: appucks@gmail.com

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