



Original Article

## Analysis of Glycemic Status in Diabetes-Naïve Patients on Statins: A Hospital-Based Cross-Sectional Study

Vijay Kumar Yadav<sup>1</sup>, Aniket Tripathi<sup>2</sup>, Hitesh Mishra<sup>3</sup>

<sup>1</sup>Associate Professor, Department of Pharmacology, Prasad Institute of Medical Sciences, Lucknow, U.P., India

<sup>2</sup>Assistant Professor, Department of Pharmacology, Prasad Institute of Medical Sciences, Lucknow, U.P., India

<sup>3</sup>Professor, Department of Pharmacology, IGIMS, Patna, Bihar, India

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### Corresponding Author:

**Vijay Kumar Yadav**

Associate Professor, Department of Pharmacology, Prasad Institute of Medical Sciences, Lucknow, U.P., India

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### ABSTRACT

**Background:** Statins are commonly administered to mitigate cardiovascular risk but have been linked to changes in glycemic control. This research assesses glycemic levels in diabetes-naïve individuals undergoing statin treatment.

**Methods:** A hospital-based cross-sectional study was performed over one year, involving 320 diabetes-naïve individuals receiving statins. Fasting blood glucose (FBG), postprandial blood glucose (PPBG), and hemoglobin A1c (HbA1c) levels were evaluated. Patients were classified according to glycemic state, and statistical analysis was conducted utilizing p-values to ascertain significance.

**Results:** A considerable percentage of individuals exhibited compromised glycemic indices. Approximately 28% exhibited impaired fasting glucose, and 18% demonstrated increased HbA1c values. Prolonged duration and elevated doses of statins were substantially correlated with dysglycemia ( $p < 0.05$ ).

**Conclusion:** Statin medication is linked to changes in glycemic status, even in persons who were previously non-diabetic. Consistent surveillance of glucose levels is advised for patients undergoing prolonged statin treatment.

**Keywords:** glycemic status, glucose levels, statin treatment, dysglycemia, postprandial blood glucose (PPBG).

### INTRODUCTION

Statins are among the most commonly recommended drugs for the prevention and management of cardiovascular disorders, owing to their recognized lipid-lowering capabilities and other pleiotropic effects, such as anti-inflammatory and endothelium stabilizing actions (1), (2). Their application has markedly diminished morbidity and mortality linked to atherosclerotic cardiovascular disease (3), (4). Consequently, statins are commonly used for both primary and secondary prevention, especially in those at elevated cardiovascular risk (5), (6).

Notwithstanding their established advantages, increasing research has elicited apprehensions about their possible effects on glucose metabolism (7). Numerous observational studies and clinical trials have indicated a correlation between statin therapy and an elevated risk of new-onset diabetes mellitus, along with deteriorating glycemic control in specific individuals (8), (9). The precise mechanisms remain incompletely elucidated, however they are thought to encompass various pathways, such as diminished insulin sensitivity, compromised pancreatic  $\beta$ -cell functionality, and modifications in cellular glucose uptake and metabolism (10),(11).

The possible diabetogenic effect is especially significant in those without prior diabetes, as it may predispose them to future metabolic issues (12). The extensive and frequently prolonged administration of statins means that even a slight elevation in glycemic metrics could yield considerable public health consequences (13).

Consequently, it is imperative to assess the impact of statins on glycemic levels, particularly in persons without prior diabetes (14). Comprehending these effects will assist clinicians in weighing the cardiovascular advantages of statins

against their metabolic hazards. This study is to evaluate glycemic indices in diabetes-naïve patients on statin therapy within a hospital environment (15), (16).

## METHODS

### Study Design:

Hospital-based cross-sectional study

### Study Duration:

1 year

### Sample Size:

320 patients

### Inclusion Criteria:

- Adults (>18 years)
- On statin therapy for  $\geq 3$  months
- No prior diagnosis of diabetes

### Exclusion Criteria:

- Known diabetes mellitus
- Endocrine disorders affecting glucose metabolism
- Use of drugs affecting glycemia (e.g., steroids)

### Data Collection:

- Demographic details
- Type, dose, and duration of statin use
- Laboratory investigations:
  - Fasting Blood Glucose (FBG)
  - Postprandial Blood Glucose (PPBG)
  - HbA1c

### Statistical Analysis:

- Data analyzed using appropriate statistical software
- Chi-square test used for categorical variables
- p-value < 0.05 considered statistically significant

## RESULTS

**Table 1: Baseline Characteristics**

Variable	Value
Total patients	320
Mean age	54 $\pm$ 10 years
Male (%)	60%
Female (%)	40%

**Table 2: Glycemic Status Distribution**

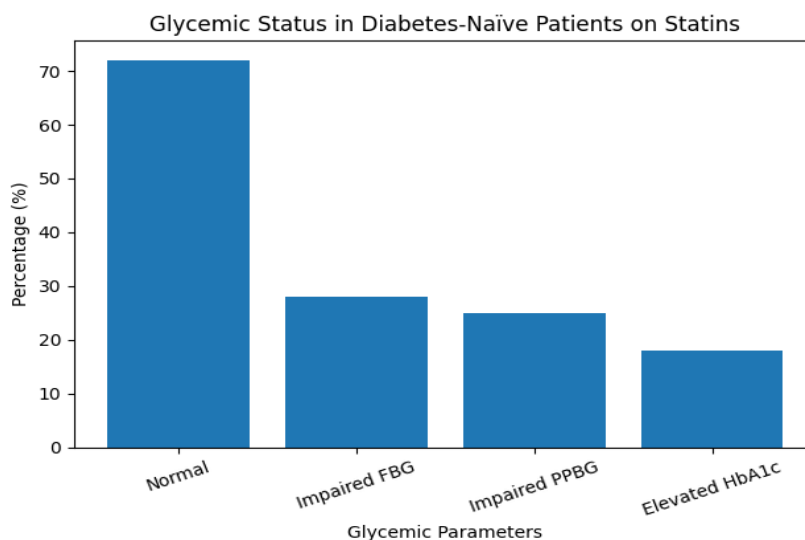
Parameter	Normal (%)	Impaired (%)	p-value
FBG	72%	28%	<0.05
PPBG	75%	25%	<0.05
HbA1c	82%	18%	<0.01

**Table 3: Association with Duration of Statin Use**

Duration	Dysglycemia (%)	p-value
<6 months	15%	
6–12 months	28%	
>12 months	40%	<0.01

**Table 4: Dose-wise Association**

Dose	Dysglycemia (%)	p-value
Low	18%	
Moderate	30%	
High	42%	<0.05



**Figure 1: glycaemic status in diabetes naïve patients' statins**

## DISCUSSION

This study reveals a notable correlation between statin therapy and modified glycemic status in patients without diabetes. A significant percentage of patients had impaired fasting glucose, higher postprandial glucose, and heightened HbA1c values, signifying early dysglycemic alterations(17),(18).

These findings align with prior research indicating that statins may hinder glucose metabolism (19). The noted escalation in dysglycemia with prolonged duration and elevated doses indicates a dose-dependent and time-dependent correlation (20), (21). Statins may mechanistically diminish insulin sensitivity and compromise pancreatic  $\beta$ -cell activity, leading to hyperglycemia (22),(23). The statistically significant p-values (<0.05 and <0.01) across many parameters enhance the robustness of these findings. HbA1c demonstrated notable significance, indicating persistent glycemic modifications rather than temporary fluctuations (24),(25).

Notwithstanding these findings, statins are crucial for mitigating cardiovascular risk (26), (27). Consequently, the advantages must be evaluated against possible metabolic hazards. Consistent surveillance of blood glucose levels, particularly in high-risk populations, is recommended (28),(29). The study's limitations comprise its cross-sectional design, which restricts causal inference, and the absence of long-term follow-up(30).

## CONCLUSION

Statin therapy in diabetes-naïve individuals is linked to substantial changes in glycemic status, especially with extended usage and elevated dosages. Although statins are essential for cardiovascular prevention, doctors must routinely evaluate glycemic indices to identify early dysglycemia. Additional longitudinal studies are advised to determine causality and long-term effects.

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