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# Hemoglobin A1c association patterns with cardiovascular outcomes among patients with diabetes mellitus following percutaneous coronary intervention: A systematic review

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**Abstract** Background Cardiovascular complications are the leading cause of mortality in patients with diabetes mellitus (DM) undergoing percutaneous coronary intervention (PCI). This systematic review aims to evaluate the association between HbA1c levels and major adverse cardiovascular events (MACE) in patients with DM post-PCI. Methods A comprehensive literature search was conducted following PRISMA guidelines. Eligible studies included randomized controlled trials, cohort studies, and observational analyses assessing the impact of strict, moderate, and poor glycaemic control on cardiovascular outcomes. Data extraction focused on HbA1c levels, MACE incidence, cardiovascular mortality, and cardiovascular complications. Results Nine studies with 24,978 participants were included. U-shaped and J-shaped relationships were found between HbA1c levels and cardiovascular outcomes. Moderate glycaemic control (HbA1c 6.5%-7.5%) was associated with the lowest risk of MACE and mortality. In contrast, strict glycaemic control (HbA1c <6.5%) and poor control (HbA1c >7.5%) were linked to increased cardiovascular risk. Patients with HbA1c below 5.5% exhibited a significantly higher risk of cardiovascular mortality, while HbA1c above 8% was also associated with poor outcomes. Conclusion Maintaining HbA1c levels in the moderate range (6.5%-7.5%) appears to provide optimal cardiovascular protection for patients with DM post-PCI. Strict or poor glycaemic control increases the risk of adverse outcomes.

**Keywords** **Author Keywords:** [HbA1c](#); [cardiovascular outcomes](#); [percutaneous coronary intervention](#); [diabetes mellitus](#); [major adverse cardiovascular events](#)

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