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IMportance of continuous glucose monitoring in imPROving glycemic control and Variability in patiEnts with Diabetic Kidney Disease: IMPROVE-DKD study

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Objectives : Glycemic variability is increasingly recognized as an important target in diabetes management, particularly in patients with diabetic kidney disease (DKD), who are prone to both hypo- and hyperglycemia. This study evaluated the utility of continuous glucose monitoring (CGM) for glycemic control in patients with DKD.

Methods : In this multicenter prospective randomized controlled trial, adults with diabetes duration ≥ 3 months and HbA1c $\geq 7.5\%$ were enrolled. Predialysis chronic kidney disease (CKD) was defined as eGFR < 60 mL/min/1.73 m² for ≥ 3 months, and dialysis patients were those undergoing hemodialysis for ≥ 3 months. Participants were randomized (1:1) to SMBG or CGM. The SMBG group underwent blinded CGM at week 12, whereas the CGM group received three real-time CGM sessions at 6-week intervals. Glycemic parameters, including HbA1c, mean glucose, time-in-range (TIR), and hypoglycemia incidence, were compared.

Results : Of the 62 enrolled patients, 53 completed the study (SMBG 21, CGM 32), including 26 dialysis patients. Both groups showed significant reductions in HbA1c and mean glucose levels ($P < 0.05$). The CGM group demonstrated a significantly lower incidence of hypoglycemia compared with the SMBG group ($P = 0.038$). Although not statistically significant, the CGM group showed trends toward improved TIR and reduced glycemic variability. In the dialysis subgroup, CGM provided more pronounced benefits, with greater improvements in HbA1c ($7.9 \pm 1.0\%$ vs. $7.3 \pm 1.5\%$) and TIR ($36.7 \pm 22.0\%$ vs. $56.5 \pm 24.3\%$), along with fewer hypoglycemic events compared with SMBG.

Conclusions : CGM may be an effective monitoring strategy for improving glycemic control in patients with DKD. Its benefits appear particularly evident in hemodialysis patients, where CGM was associated with better glucose profiles and reduced hypoglycemia compared with SMBG.

Fig 1 Comparison of glycemic markers between two groups.jpg

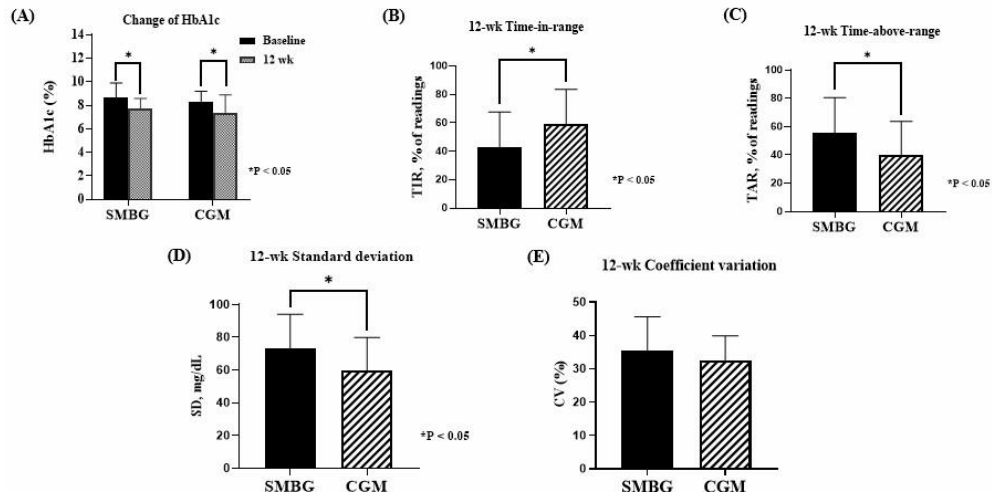


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