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IMPROVEment of blood glucose levels and variability using continuous glucose monitoring in Diabetic Kidney Disease: IMPROVE-DKD study

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Objectives : Blood glucose stability has recently been considered important in the treatment of diabetes. Both hypoglycemia and hyperglycemia can frequently occur in patients with diabetic kidney disease. This study aimed to assess the utility of continuous glucose monitoring as an indicator for glycemic control in patients with chronic kidney disease.
Methods : This multi-center prospective randomized controlled trial enrolled patients aged ≥18 years with a diabetes diagnosis lasting ≥3 months and a glycated hemoglobin (HbA1c) level ≥7.5%. Non-dialysis chronic kidney disease (CKD) patients were defined as those with an estimated glomerular filtration rate (eGFR) <60 mL/min/1.73m² persisting for ≥3 months or individuals undergoing hemodialysis (HD) for ≥3 months. Participants were randomly assigned (1:1 ratio) to either the self-monitoring blood glucose (SMBG) group or the continuous glucose monitoring (CGM) group. The SMBG group underwent blinded CGM at week 12, while the CGM group received three real-time CGM sessions at 6-week intervals.
Results : Among 43 enrolled patients, 9 who did not complete the study were excluded, with data from 34 patients ultimately analyzed. The SMBG and CGM groups comprised 14 (41.2%) and 20 (58.8%) participants, respectively. Patients undergoing HD accounted for 58.8% (20/34) of the cohort. Baseline HbA1c and mean glucose levels showed no statistically significant differences between groups. Both groups demonstrated improvements in HbA1c and mean glucose ($P<0.05$). The CGM group exhibited a statistically significant reduction in hypoglycemia incidence compared to the SMBG group ($P<0.05$). Subgroup analysis of patients undergoing HD revealed significantly lower hypoglycemia rates and more pronounced improvements in HbA1c and mean glucose in the CGM group versus the SMBG group.
Conclusions : CGM may be a useful monitoring tool for improving glycemic control in patients with diabetic kidney disease, and it could be particularly beneficial in reducing hypoglycemia among patients undergoing HD.

Figure 1.png.PNG

Figure 1. Study Protocol

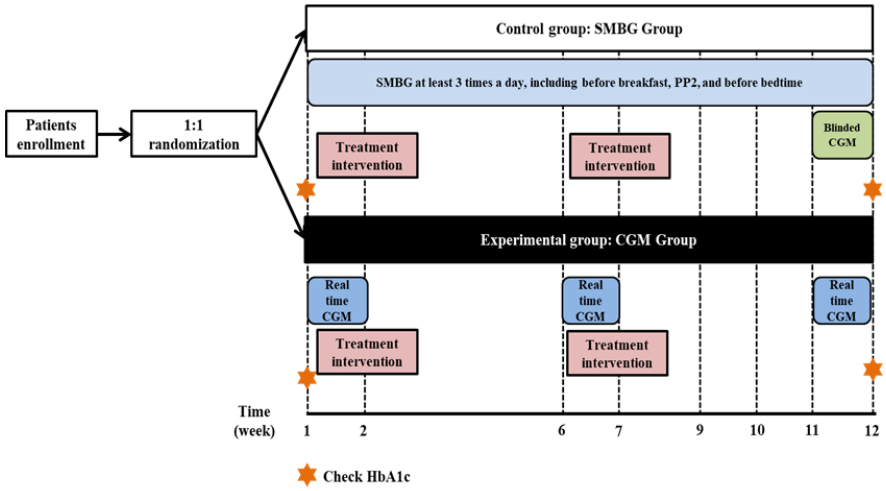

Figure 1.png.PNG

Figure 2. Comparison in glycemic markers between groups