Effectiveness of a nutritional mobile application for management of hyperphosphatemia in patients on hemodialysis: A multicenter open-label randomized clinical trial

ABSTRACT

This study aims to determine the effectiveness of a phosphate mobile app (PMA), MyKidneyDiet-Phosphate Tracker ©2019, on hemodialysis (HD) patients with hyperphosphatemia. A multicenter, open-label, randomized controlled trial design allowed randomization of patients with hyperphosphatemia to either the usual care group (UG; receiving a single dietitian-led session with an education booklet) or the PMA group (PG). Thirty-three patients in each intervention group completed the 12-week study. Post-intervention, serum phosphorus levels were reduced in both groups (PG: −0.25 ± 0.42 mmol/L, $p = 0.001$; UG: −0.23 ± 0.33 mmol/L, $p < 0.001$) without any treatment difference ($p > 0.05$). Patients in both groups increased their phosphate knowledge (PG: 2.18 ± 3.40, $p = 0.001$; UG: 2.50 ± 4.50, $p = 0.003$), without any treatment difference ($p > 0.05$). Dietary phosphorus intake of both groups was reduced (PG: −188.1 ± 161.3 mg/d, $p < 0.001$; UG: −266.0 ± 193.3 mg/d, $p < 0.001$), without any treatment difference ($p > 0.05$). The serum calcium levels of patients in the UG group increased significantly (0.09 ± 0.20 mmol/L, $p = 0.013$) but not for the PG group (−0.03 ± 0.13 mmol/L, $p = 0.386$), and the treatment difference was significant ($p = 0.007$). As per phosphate binder adherence, both groups reported a significant increase in Morisky Medication Adherence Scale scores (PG: 1.1 ± 1.2, $p < 0.001$; UGa: 0.8 ± 1.5, $p = 0.007$), without any treatment difference ($p > 0.05$). HD patients with hyperphosphatemia using the PMA achieved reductions in serum phosphorus levels and dietary phosphorus intakes along with improved phosphate knowledge and phosphate binder adherence that were not significantly different from a one-off dietitian intervention. However, binder dose adjustment with meal phosphate content facilitated by the PMA allowed stability of corrected calcium levels, which was not attained by UC patients whose binder dose was fixed.