Thesis title: The Effects of a Nurse-led Case Management Program on Home Exercise Training for Hemodialysis Patients: A Randomized Controlled Trial

Abstract

Background: Patients on maintenance hemodialysis experience diminished physical health. Exercise has been shown to be effective in improving physical function and optimizing well-being in this patient group. Nephrology nurses should be encouraged to promote it in the routine care of hemodialysis patients.

Aim: The aim of this study was to examine the effects of a 12-week nurse-led case management program on home exercise training among hemodialysis patients.

Methods: The study constituted a randomized, two-parallel group trial. One hundred and thirteen adult patients on dialysis treatment for more than three months were recruited from the hemodialysis units of two tertiary hospitals in Nanjing, China. They were randomly assigned to either an intervention group (n = 57) or control group (n = 56). Both groups underwent a brief weekly center-based exercise training session before their dialysis sessions for the first six weeks. The intervention group received additional nurse case management on home exercise weekly for the first six weeks and then biweekly for the following six weeks during their dialysis sessions. Outcome measures included gait speed, 10-repetition sit-to-stand performance,
quality of life, self-rated health, depressive symptoms, physical activity level, and patient-perceived exercise benefits and barriers. Data were collected at baseline and at 6 and 12 weeks into the program.

**Results:** With regard to normal gait speed, repeated-measured analysis of variance revealed that patients in the intervention group demonstrated greater increases over time \( F_{(1, 111)} = 4.42, p = 0.038 \) than those in the control group. No significant between-group effects were found in either fast gait speed or 10-STS performance (\( F_{(1, 111)} = 3.93, p = 0.050 \); \( F_{(1, 111)} = 3.92, p = 0.050 \), respectively); but the increase trends of these two outcomes were faster for the intervention group than for the control group between weeks six to twelve. The results of Friedman tests showed a significant improvement in symptoms and problem domain of the quality of life. Patients in both groups showed improved self-rated health over time with no between-group differences. There were no group differences in depressive symptoms. Significant group differences were noted in physical activity levels upon completion of the program \( z = -4.897, p < 0.001 \), with the intervention group reporting higher such levels. With regard to patient-perceived exercise benefits and barriers, there was a significant between-group effect \( F_{(1, 111)} = 4.45, p = 0.037 \), with the intervention group reporting a greater reduction in perceived barriers to exercise.

**Conclusions:** Home exercise intervention delivered through the nurse case
management approach is promising to improve physical functioning and quality of life for hemodialysis patients. The case management approach was effective in helping hemodialysis patients to overcome identified barriers to exercise and subsequently engage in home exercise.