The effect of an EBM-based Bundle Care Model on falls in hemodialysis patients

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Background:

Hemodialysis patients are at high risk of falling as a result of vascular calcification, cardiovascular disease, diabetic peripheral neuropathy and muscle weakness. Patients received a total of 25,211 hemodialysis sessions per year from our center in 2019. In total, 53 patients fell (2.1‰), two fell following dialysis and 51 fell at home. Only 5.65% of patients do foot workouts on weekdays. The objective of this study was to reduce fall using an evidence-based medical care (EBM) model for hemodialysis patients.

Methods:

A total of 177 hemodialysis patients were selected in 2020. We intervened in elastic buckle exercises for muscular strength of patient's lower limbs. It is carried out for 30 minutes during hemodialysis. To reduce the occurrence of falls, a complex bundle care model, which consisted of a series of educational lectures, peripheral vascular disease screening, using Pulse Wave Velocity and Ankle-Brachial Index to find peripheral arterial occlusion and early intervention. The foot wound care training for patients were also implemented.

Results:

The EBM-based grouped care model was implemented for a 12-month period. The density of falls was 2.10/1000 at the pre-intervention stage, and 0.36/1000 at the post-intervention stage (p < 0.0001). The accuracy of resistance exercises during hemodialysis and the patient confidence rate in KAP for prevention falls were significantly increased, from 20.7% and 33.1% in the pre-intervention stage to 81.2% and 75.8% in the post-intervention stage, respectively. We observed a reduction in hypotensive episodes during hemodialysis (p < 0.008).

DENSITY OF FALLS (‰)

2.10	0.36
pre-intervention	post-intervention

PREVENTION FALLS (%)
■ accuracy of resistance exercises ■ KAP

pre-intervention		post-intervention	
20.7	33.1	81.2	75.8
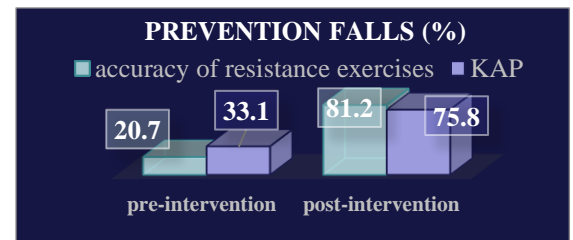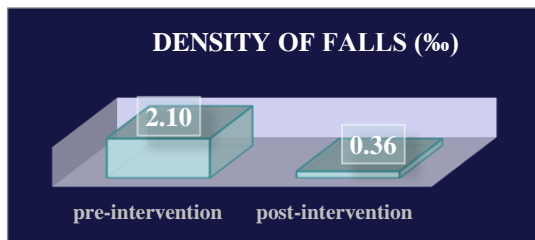
Conclusions:

An EBM-based bundle care model combined with PWV (Pulse Wave Velocity) and ABI (Ankle-Brachial Index) examination, resistance exercises of patient's lower limbs, foot wound assessment and care training for patients, was effective in reducing the falls density, enhancing the accuracy of resistance exercises during hemodialysis, and prompting the patient confidence in attitude and practice (KAP) for falls prevention in a hemodialysis room. Resistance exercises during dialysis can also reduce hypotensive events.

Relevance to HPH:

The patients undergoing hemodialysis are prone to fall with injury. We propose a bundled care model to reduce the fall accidents through communication between the medical care team and the patients. We also inform patients of understanding the risk factors and implementing fall prevention strategies, and enhance patient's empowerment in order to support health promoting hospitals and effectively improve patient's safety.

Keywords: falls, hemodialysis, resistance exercises, care bundle