International Journal of Nursing Studies 56 (2016) 54–62

Contents lists available at ScienceDirect

International Journal of Nursing Studies

journal homepage: www.elsevier.com/ijns

Enhanced interdisciplinary care improves self-care ability and decreases emergency department visits for older Taiwanese patients over 2 years after hip-fracture surgery: A randomised controlled trial

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ARTICLE INFO

Article history:
Received 22 May 2015
Received in revised form 3 November 2015
Accepted 14 December 2015

Keywords:
Functional performance
Hip fracture
Older persons
Rehabilitation

ABSTRACT

Background: Little evidence is available on the longer-term effects (beyond 12 months) of intervention models consisting of hip fracture-specific care in conjunction with management of malnutrition, depression, and falls.
Objective: To compare the relative effects of an interdisciplinary care, and a comprehensive care programme with those of usual care for elderly patients with a hip fracture on self-care ability, health care use, and mortality.
Design: Randomised experimental trial.
Setting: A 3000-bed medical centre in northern Taiwan.
Participants: Patients with hip fracture aged 60 years or older ($N = 299$).
Method: Patients were randomly assigned to three groups: comprehensive care ($n = 99$), interdisciplinary care ($n = 101$), and usual care (control) ($n = 99$). Usual care entailed only one or two in-hospital rehabilitation sessions. Interdisciplinary care included not only hospital rehabilitation, but also geriatric consultation, discharge planning, and 4-month in-home rehabilitation. Building upon interdisciplinary care, comprehensive care extended in-home rehabilitation to 12 months and added management of malnutrition and depressive symptoms, and fall prevention. Patients' self-care ability was measured by activities of daily living and instrumental activities of daily living using the Chinese Barthel Index and Chinese version Instrumental Activities of Daily Living scale, respectively. Outcomes were assessed before discharge, and 1, 3, 6, 12, 18, 24 months following hip fracture. Hierarchical linear models were used to analyse health outcomes and health care utilisation, including emergency department visit and hospital re-admission.

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http://dx.doi.org/10.1016/j.ijnurstu.2015.12.005

Results: The comprehensive care group had better performance trajectories for both measures of activities of daily living and fewer emergency department visits than the usual care group, but no difference in hospital readmissions. The interdisciplinary care and usual care groups did not differ in trajectories of self-care ability and service utilisation. The three groups did not differ in mortality during the 2-year follow-up.

Conclusion: Comprehensive care, with enhanced rehabilitation, management of malnutrition and depressive symptoms, and fall prevention, improved self-care ability and decreased emergency department visits for elders up to 2 years after hip-fracture surgery, above and beyond the effects of usual care and interdisciplinary care.

What is already known about the topic?

- Hip fractures among older adults are a serious health issue which often leads to excessive mortality and many patients never regained their pre-fracture level of physical functioning.
- Comprehensive care, which included not only geriatric consultation, rehabilitation, and discharge planning but also nutrition consultation, depression management, and fall prevention for elders with hip fracture, has been shown to improve patient's outcomes during the period of 12 months after hospitalisation.

What this paper adds

- Comprehensive care, with enhanced rehabilitation, management of malnutrition and depressive symptoms, and fall prevention, improves self-care ability including activities of daily living (ADLs) and instrumental ADLs during a period of 24 months following hospitalisation for the hip fracture.
- The comprehensive care was able to reduce emergency department visits of the patients during the 24 months after hospitalisation.

1. Background

Hip fracture in Taiwan, as in many other countries, has become a serious geriatric health issue (Liou et al., 2002). Higher mortality rates were reported to last 2–8 years after hip-fracture surgery (Johnston et al., 2010; Robbins et al., 2006), and only 5.6–56.1% of older persons with hip fracture regained their physical function 1 year after surgery (Hershkovitz et al., 2012; Shyu et al., 2004).

Recovery following hip fracture has been shown to be enhanced by care models including various clinical interventions (e.g. geriatric consultation, rehabilitation, and discharge planning) for older persons in Western countries (Adunsky et al., 2003; Halbert et al., 2007; Vidán et al., 2005) and in Taiwan (Shyu et al., 2008). Additional strategies, including nutritional interventions, depression management, and fall prevention, have shown some beneficial effects (Olofsson et al., 2007; Schoenfelder and Van Why, 1997; Zimmerman et al., 1999). However, the vast majority of studies has focused on the short-term effects (i.e. less than 1 year) of these interventions. Less is known about the effects of these interventions beyond the first year, particularly among older patients of hip fracture in Asian countries.

Our prior studies have shown that older persons with hip fracture were at high risk for malnutrition (Shyu et al., 2008), depression (Shyu et al., 2009), and subsequent fall (Shyu et al., 2010). We have also previously shown that an acute/subacute care model enhanced with management of malnutrition, management of depressive symptoms, and fall prevention effectively improved self-care ability and health-related quality of life as well as decreasing risk for depression and malnutrition during the first year following hip fracture (Liu et al., 2014; Shyu et al., 2013a,b). This paper extends the results of the same study by exploring changes in the intervention effects beyond 12 months. Analysing the effects of care models beyond 12 months after hip fracture is important because empirical evidence shows that even after this period, a substantial proportion of patients did not fully recover to their pre-fracture level of functioning, and some patients might also develop new disability (Magaziner et al., 2000).

In this paper, we compared the effects of usual care and a more conventional interdisciplinary care model with those of a comprehensive care model, which included not only hip fracture-specific care but also management of malnutrition and depressive symptoms and fall prevention during 2 years after hip fracture. We hypothesised that during the 2 years following hip fracture, subjects who received comprehensive care would have better self-care ability [i.e. performance of activities of daily living (ADLs) and instrumental ADLs (IADLs)], less health care utilisation (i.e. hospital readmissions and emergency department visits) and lower mortality than those who received interdisciplinary care or usual care.

2. Methods

2.1. Design and setting

A randomised controlled trial with repeated measures was implemented at a medical centre in northern Taiwan from September 2005 to July 2010.