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Original Article

No adverse impact of depressive symptoms on the effectiveness of postacute care service: A multicenter male-predominant prospective cohort study

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Abstract

Background: Although the clinical effectiveness of community hospital-based postacute care (PAC) services has been shown, little was known regarding the impact of depression on the clinical outcomes of older patients receiving PAC services in Taiwan.
Methods: From January 2009 to August 2010, patients aged 65 years and older referred from tertiary medical centers or acute wards of community hospitals to PAC units were invited for study. All patients received the 4-week Comprehensive Geriatric Assessment-based intervention program in the PAC units. The functional assessment was composed of Geriatric Depression Scale–Short Form (GDS), Mini-Mental Status Examination, Barthel Index, Instrumental Activities of Daily Living, and Braden Score.
Results: Among the 401 participants (mean age, 82.0 years; 95.5% males), 66 (16.5%) patients were depressed at PAC unit admission. Depressed patients had significantly lower Barthel Index (38.1 ± 2.4 vs. 47.6 ± 1.2, $p = 0.002$) and Braden Score (17.7 ± 0.3 vs. 18.8 ± 0.2, $p = 0.004$) than nondepressed patients. Improvement was noted on all measures of functional outcome among patients receiving PAC services. Furthermore, GDS was significantly improved in depressed patients (from 6.4 ± 0.2 to 2.8 ± 0.2 in depressed patients vs. from 1.6 ± 0.1 to 0.9 ± 0.1 in nondepressed patients, $p < 0.001$).
Conclusion: Depression was common when patients were newly admitted to PAC services, which was highly associated with poorer physical function. Improvement in physical function and depressive symptoms among all patients after PAC service was found, and the presence of depressive symptoms at PAC admission did not predict any adverse outcome of PAC services.

Keywords: community hospital; depression; functional independence; intermediate care; postacute care

1. Introduction

Population aging has become a global phenomenon, affecting both developing and developed countries, and Taiwan is no exception. Taiwan became an aging country (people aged over 65 years exceed 7% of the total population)

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in 1993 and is estimated to become an aged country (percentage of elderly people exceeds 14% of the total population) in 2017, which makes Taiwan the fastest aging country in the world.[1,2] When people get older, they tend to become frail and suffer from multiple comorbid chronic conditions and disabilities.[3] Therefore, a wide range of services are needed for the multiple complex needs of older patients to promote functional recovery and physical independence, and to reduce hospital readmissions, premature long-term care facility placement, and mortality.

Intermediate care, interchangeable with postacute care (PAC), was introduced in England to support timely discharge.[4] The aim of PAC services is to improve functional independence and facilitate timely and safe transition from hospital to home, which should be delivered to patients without delay.[5] PAC services can be provided in a variety of settings, including community hospitals (CHs), nursing homes, residential care, day programs, and home-based care. Among all service models, the CH-based PAC service is cost-effective,[6] and is valued for its location, homelike environment, quiet and calm atmosphere, comfortable accommodation, encouragement of social interaction, and kind attitude of the professional care staff.[7] It has been reported that CH-based PAC services provide greater functional recovery than district general hospitals with similar cost-effectiveness.[8] In addition, CH-based PAC services also significantly reduced acute hospital readmissions without an increase in mortality or stays in institutions.[9] In Taiwan, CH-based PAC services have been developed, with their clinical effectiveness clearly shown,[10] and more characteristically, the functional improvement of PAC services significantly reduced 12-month mortality.[11]

A Canadian study revealed that major depression has become a common problem among elderly medical inpatients, with a prevalence of 14.2–44.5%.[12] In Taiwan, depression is the leading geriatric psychiatric problem, and its prevalence significantly increases with age.[13] The prevalence of major depressive disorders was 1–4% among people aged 65 years and older,[14] and it is twice as high in people older than 85 years than in those who are 70 years old.[15] In addition, depressed medical patients more often presented with a higher burden of disease-specific symptoms than nondepressed patients.[16] A number of studies have revealed that depression is associated with physical dependence, functional disabilities, poor treatment adherence, and poor rehabilitation outcomes in different settings.[16–18] Moreover, the presence of depressive symptoms was associated with higher risk of in-hospital deaths and being transferred to step-down facilities for rehabilitation.[19] Furthermore, depressive symptoms are associated with poorer rehabilitation outcomes in older patients with hip fracture or stroke participating in PAC programs.[17,20] An explanation for this is that the comorbid depressive symptoms may reflect a condition of frailty and an increase in physical burden.[17] However, the adverse impact of depressive symptoms on PAC services was not universally observed.[21] Although the clinical effectiveness of CH-based PAC services has been shown in Taiwan, little is known about the impact of depressive symptoms on the clinical outcomes of PAC services. The main purpose of this study was to evaluate the impact of depressive symptoms on clinical outcomes of PAC services among older patients admitted to PAC units in Taiwan.

2. Methods

2.1. Participants and program

All patients aged 65 years and older admitted to the PAC units in five CHs in Taiwan were enrolled for the study. These PAC units provided homelike environments that were staffed as CHs. All patients, inclusive of those referred from tertiary medical centers and acute wards of CHs, were cared for by interdisciplinary geriatric teams that had received universal training programs conducted by the Center for Geriatrics and Gerontology of Taipei Veterans General Hospital (Taipei, Taiwan). The inclusion/noninclusion criteria and the comprehensive geriatric assessment (CGA)-based intervention program have been reported previously.[11] A psychiatrist was consulted to evaluate the depressive symptoms. If the patients met the diagnosis of major depressive disorder as determined by the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, Fourth edition[22] or if they needed pharmacological treatment, they would be excluded. In our study, management of depressive symptoms was done primarily by nonpharmacological interventions, such as physical activities, counseling, and cognitive–behavioral therapy. The research was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of Taipei Veterans General Hospital and Kaohsiung Veterans General Hospital (Kaohsiung, Taiwan). Written informed consent was obtained from all participants after they had been provided with an adequate understanding of the study.

2.2. Outcome measurements

In this study, depressive symptoms were assessed by Geriatric Depression Scale—Short Form (GDS).[23] All patients with GDS score of ≥ 5 at PAC unit admission were categorized as the depressed group, and those scoring < 5 were placed in the nondepressed group.[24] Cognitive function was evaluated with the Mini-Mental State Examination (MMSE) in this study.[25] Activities of daily living were evaluated by the Barthel Index (BI),[26] and the instrumental activities of daily living (IADL) were evaluated using the Lawton–Brody Instrumental Activities of Daily Living scale.[27] The Braden Scale (BS) was used to evaluate the risk of developing pressure ulcers.[28]

2.3. Data analysis

Continuous variables are expressed as mean ± standard error, and categorical data are expressed as percentages. Comparisons between continuous variables were done using Student *t* test or Mann–Whitney *U* test, whereas comparisons