Effectiveness of Weekend Physiotherapy on Geriatric In-Patients’ Physical Function

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Abstract

Purpose: Hospital-associated disability (HAD) is significant among geriatric patients admitted to acute care hospitals. The objective of the study is to evaluate the effectiveness of additional weekend physiotherapy on mobility impairments of high-risk older patients admitted to the acute medical unit.

Methods: A prospective, non-randomized controlled trial was conducted in one of the medical units in a northern Ontario hospital. A total of 41 patients were recruited using a consecutive sampling method and assigned to a control group (n = 19) and an experimental group (n = 22). The de Morton Mobility Index (DEMMI) and the Barthel Index (BI) were the outcome measures.

Results: A Mann-Whitney U test was used to analyze the group differences, and it showed that there was a statistically significant difference (p < .05) between the experimental and control groups on the DEMMI and the BI.

Conclusion: Additional weekend physiotherapy significantly improves elderly patients’ physical function and gets them physically ready for discharge when medically stable. This may significantly reduce the alternate level of care for patients.

Keywords
physical therapy modalities, geriatrics, hospitalization

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Background

Elderly patients admitted to the hospital are less active on weekends than on weekdays. It can be referred to as hospital-associated disability (HAD) (Loyd et al., 2020). HAD is one of the most pervasive threats to independence faced by older adults. Up to 60% of geriatric patients experience a functional decline due to hospitalization. Despite common knowledge that age-related sarcopenia is accelerated during periods of muscle disuse and that physical activity levels while in the hospital predict capacity to be discharged home, evidence suggests that even older patients who can walk independently spend over 23 hours per day lying in bed while in hospital (Bell et al., 2016; Tasheva et al., 2020).

HAD is associated with a longer length of stay (LOS), hospital readmission (Tonkikh et al., 2016), poor prognosis, and a risk of those elderly patients being placed under the alternate levels of care (ALC) category. According to the Canadian Institute of Health Information, “ALC designated patients are those who no longer require the intensity of resources and services provided in that care setting” (Canadian Institute of Health Information, 2016). ALC is a pressing concern in acute care settings. It significantly affects the effective use of hospital resources and patient flow (Costa

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et al., 2012). It also increases hospital crowding, cancellation of surgeries, and delays in diagnostic testing and day procedures (Costa et al., 2012). One ALC patient occupying one bed can block access to four patients in an emergency department (Sutherland & Crump, 2013). The burden of ALC patients occupying acute care beds is expected to increase with Canada’s aging population. To meet the increasing demand, it is crucial to develop and explore strategies to minimize the LOS of ALC patients.

Physiotherapy plays a major role in restoring function and is often recommended to improve physical function to facilitate an effective discharge from the hospital. Additional physical therapy improves the functional outcomes of patients with stroke, total knee replacement, and coronary artery bypass grafting (Peiris et al., 2018). However, to our knowledge, there is no study available that evaluates the effectiveness of additional weekend physiotherapy on elderly patients with acute medical conditions admitted to the general internal medicine units. In this pilot study, we aimed to evaluate the effects of additional weekend physiotherapy intervention on mobility impairments and the functional outcome/functional performance of high-risk older patients admitted to acute medical units and consequently diverting these patients from ALC beds.

**Methods**

**Study Design**

This prospective, non-randomized controlled trial was conducted in the medical unit at an Ontario hospital between September 2020 and August 2021. The study was conducted for up to 12 weeks after baseline assessment or until patients were discharged to slow-paced rehab or home/retirement home/assisted living—whichever came first. Ethics approval for this study was obtained from an Institutional Review Board of Health Sciences North Research Institute.

**Eligibility Criteria**

To be eligible, patients had to meet the following criteria: (1) 65 years of age and older; (2) live in a home or a retirement home with progressive decline in physical function; (3) before admission, the patient should have ambulated with or without an assistive device or was transferring independently from bed to wheelchair and wheelchair to commode/toilet and vice versa; (4) exercise intervention should not be affected by treatment of comorbid illness (e.g., dialysis); (5) have definite discharge destination following physiotherapy intervention such as home, group home, retirement home, shelter, or supportive housing with or without community services. Exclusion criteria include (1) medical instability; (2) lack of motivation; (3) weight-bearing restrictions excluding weight-bearing as tolerated; (4) restraints, acting out behavior, or wandering; (5) long-term care residents; (6) transfers using a mechanical lift at baseline; and (7) known psychiatric illness and behavioral issues.

**Outcome Measures**

Functional mobility was the primary outcome measure and was measured using the DEMMI and the BI. The DEMMI is primarily designed to measure mobility across 15 hierarchical mobility challenges in hospitalized elderly patients. It has been validated across different clinical settings (e.g., acute care settings, subacute rehabilitation settings, community living). The DEMMI is also validated for use by a range of health-care providers, such as physiotherapists, physiotherapy students, medical students, general practitioners, and nurses. It is a user-friendly tool that takes less time to administer as compared to other mobility outcomes measures. Other researchers have extensively investigated the psychometric properties of the DEMMI in the geriatric population. They have been deemed appropriate for application in a hospital setting (de Morton et al., 2010).

The BI is a functional assessment tool designed to measure activities of daily living and has been recommended for use in the geriatric population. The BI assesses 10 functional areas, including toileting, bathing, eating, dressing, continence, transfers, ambulation, and ascending and descending stairs. It has two versions: the original 10-item version and an expanded 15-item version. The most commonly used 10-item version was used for this study. The total score is calculated by summation of the scores of each item, and a higher score indicates greater independence. The reliability and validity of the BI have been studied by other researchers (Sainsbury et al., 2005).

**Data Collection and Intervention**

A total of 41 patients were recruited for this study and assigned to a control group (n = 19) and an intervention group (n = 22) by a consecutive sampling method. Written informed consent was obtained from all participants prior to data collection. Patients’ demographics and baseline assessments were completed within 24 hours of physiotherapy (PT) ordered by an attending physician, and posttests were completed within 24 hours prior to discharge. Participants in the control group received usual care (i.e., PT assessment and treatment were done on weekdays). Participants in the experimental group received additional PT assessment and
Additional weekend physiotherapy may have a positive impact on improving geriatric patients’ physical function and mobility during hospitalization. Future research should focus on a larger sample size with cost analysis that may provide better strategies to improve geriatric patients’ physical function and LOS.
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Author Contributions
All authors contributed to the idea and critical revision of the manuscript.

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Ethics Approval
This study received ethics approval from Health Sciences North Research Ethics Board.

Consent to Participate
Written informed consent was obtained from all the patients.

Data Availability
Data is available upon request.

Code Availability
Available upon request.

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