



Feature Article

Length of hospital stay and discharge disposition in older trauma patients



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A B S T R A C T

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As the number of older adults increases and life expectancies are increasing, more incidences of traumatic injury are expected in this population. In this study, the relationships between demographic variables, pain, days from admission to therapy evaluation, length of stay and discharge disposition were examined in 132 older adults who had experienced a traumatic event. Results showed that significant relationships existed between pain, age, comorbidities, injury severity and days from admission to therapy evaluation and length of stay; those with less pain, greater age and had more days between admission and when the first therapy evaluation occurred had longer lengths of stay. In addition, demographic variables, overall length of stay and pain intensity during therapy were associated with discharge location; for longer lengths of stay and higher pain, older trauma patients were less likely to be discharged to home.

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Discharge disposition and length of hospital stay in older trauma patients

From 1900 to 1994, the number of Americans aged 65 and older increased from three million to 33 million and is expected to reach 80 million by 2050.¹ As the population of older adults increases, the incidence of traumatic events in this population will also increase as older adults are remaining active longer.² Falls and motor vehicle accidents are the most likely mechanisms of injury in those over the age of 65 and 25% of all trauma incidents were in those over the age of 65.³

Impact of trauma on the health care system

Following a trauma admission, older adults commonly need and receive follow-up treatment in various settings.^{4–6} The appropriate discharge setting is decided upon by a multidisciplinary team, including the attending physicians, advanced practice nurses or physician assistants, physical, occupational and speech therapists, social workers, patient/family preferences and available resources and health insurance.^{7,8} The setting options include home or self

care (this would include assisted living, boarding homes, senior housing etc), short term general hospital, skilled nursing facility, intermediate care facility, home under care of organized home health service, inpatient rehabilitation, long term care hospital, and hospice care.⁹ Matching the discharge disposition correctly to the older trauma patient's needs and preferences has a major impact on the health care system, length of stay (LOS), patient function, appropriate resource allocation, and rate of readmissions.⁸

Length of stay for trauma patients varies widely and is dependent upon multiple factors. The impact of LOS on cost of care is significant^{10,11} thus the overall goal in trauma care is to decrease LOS in order to decrease cost. The obvious solution is to transition patients into lower levels of care as soon as possible post trauma.¹²

Factors that influence outcomes post trauma based on the Social–Ecological Model

The Social–Ecological Model (SEM)^{13–17} suggests that intra-personal factors, interpersonal factors, environment/community factors and policies/systems may influence outcomes. Intrapersonal factors are defined as those characteristics that are specific to the individual; interpersonal factors focus on the interactions between individuals that can influence outcomes; environmental factors include such things as the physical environment and why an

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individual might or might not be able to go for walk (e.g., no flat open areas; unsafe neighborhoods); and policies, culture and systems can influence what patients are allowed to do on the unit and whether or not, for example, they need to be tethered to pulse oximetry throughout the hospital stay. The levels in the SEM are interactive.

Intrapersonal factors and discharge disposition and LOS

Demographic variables including increased age, race/ethnicity, and gender have all been noted to be non-modifiable factors that influence LOS. Older trauma patients, when compared with younger trauma patients, have worse outcomes including: more admissions to the hospital,¹⁸ longer hospital stays,^{18,19} and a greater need for post-acute rehabilitation and/or long term care.^{4,10,20} The following patient factors have been associated with worse outcomes for older trauma patients: increased age, increased pain, being uninsured, having more comorbidities, having higher injury severity, and type of injury (traumatic brain injury, hip fracture, multi-trauma).^{21–23} The effects of gender^{24–27} and race/ethnicity^{28–30} on discharge outcomes have been mixed. Some studies have shown that women were more likely to be discharged to nursing homes,^{4,27,31–34} some showing that women were more likely to be discharged to home^{24,25,28} and others showing no differences.^{35,36}

With regard to the impact of race and ethnicity study results have not been consistent. In some studies African Americans and Hispanic patients had higher mortality^{28,37} and nonwhite patients were more likely to be discharged to home.^{4,34} In other studies there were no differences between African American, Hispanic patients and Caucasian patients.^{30,38}

Comorbidity, defined as the presence of disease conditions in addition to the condition for which the patient was admitted to the hospital,³⁹ influences outcomes post trauma.^{10,40–43} Comorbidities are generally non-modifiable factors; however, signs and symptoms of comorbidities in some cases are able to be controlled (e.g. blood sugar levels, dizziness, urinary frequency). Although the findings are not always consistent, comorbidities are associated with worse outcomes in older adults who have experienced trauma.^{34,44,45} Specifically, comorbidities influence LOS with more comorbid conditions being related to longer LOS.^{46–48}

Pain post trauma has also been reported to influence LOS and location of discharge and is a potentially modifiable intrapersonal factor. Prior research has shown that when older adults have acute pain it interrupts physical therapy in approximately a third of the patients.⁴⁹ If pain interferes with a patient’s ability or desire to participate in therapy, slower recovery times and increased length of hospital stays are likely to occur.^{50–52} Pain that is not well controlled limits an individual’s functional performance and may result in a lower level of care (i.e., a long term care facilities versus a skilled post-acute rehabilitation stay).

Interpersonal factors and discharge disposition and LOS

A potentially modifiable interpersonal factor is the type and timing of physical and occupational therapy. Physical and occupational therapy are an important part of a trauma patient’s recovery process. Older adults are known to have accelerated functional decline after a traumatic event.^{53–56} To prevent functional decline and assist older adults in returning to pre-injury functional levels, there has been a recent focus on early treatment and mobilization.^{57–61} Early physical rehabilitation programs have shown a length of stay reduction of 22% for patients in intensive care units and 19% for patients on general units.⁶²

The goal of discharge planning is to assure that patients receive needed services in the least restrictive setting. In addition, an appropriate discharge plan can decrease LOS and prevent readmissions to the hospital. Knowing what influences discharge disposition and LOS may help guide in improving the discharge planning process and decreasing LOS for older patients. The purpose of this study, therefore, was to comprehensively consider the factors associated with discharge disposition and length of stay among older adults hospitalized for traumatic injury. Specifically, it was hypothesized that demographic variables (gender, age), health related factors (comorbidities; injury severity; admitting diagnosis), pain and initiation of therapy would be directly and indirectly associated with LOS and discharge disposition (Fig. 1).

Methods

Design

This study was a secondary data analysis using data from inpatient rehabilitation services provided to patients during inpatient stays in a Level 1 trauma center. Data collection was done using a retrospective chart review from Powerchart, an electronic medical record used in the participating trauma center. Specifically, the data sources included computerized therapy (physical, occupational, and speech) notes for each exposure to therapy during the patients’ hospital stay or up to 30 days post admission.

Sample

Eligibility was based on the participants being 65 years or older and having been admitted to an urban Level I Trauma Center following a traumatic event. A sample size of 137 adults was randomly chosen from 1387 admissions over a two-year period from 2010 to 2011. Five of the participants were excluded as three

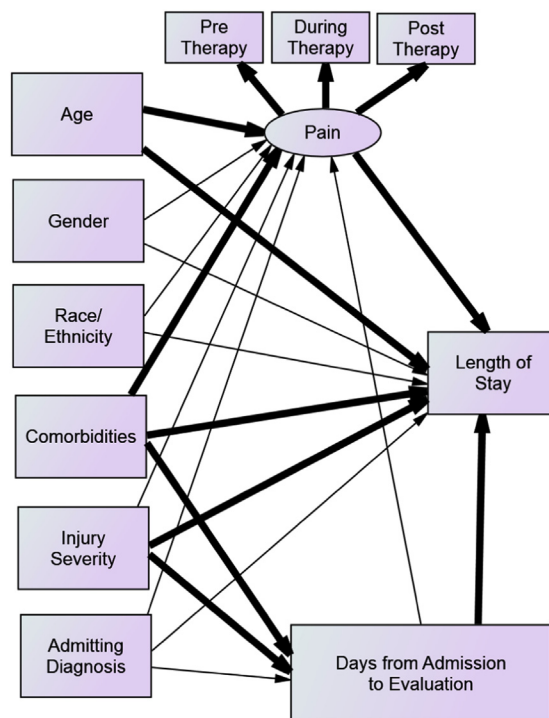


Fig. 1. Hypothesized Model.

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