Predictors of Motor and Cognitive Domains of Functional Performance after Rehabilitation of Individuals with Acute Stroke

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Abstract : Background: Stroke is a serious health care concern and a major cause of disability in the United States. This condition impacts the individual's functional ability to perform daily activities. Predicting functional performance of people with stroke assists health care professionals in optimizing the delivery of health services to the affected individuals. The purpose of this study was to identify significant predictors of Motor FIM and of Cognitive FIM subscores among individuals with stroke after discharge from inpatient rehabilitation (typically 4-6 weeks after stroke onset). A second purpose is to explore the relation among personal characteristics, health status, and functional performance of daily activities within 2 weeks of stroke onset. Methods: This study used a retrospective chart review to conduct a secondary analysis of data obtained from the Healthcare Enterprise Repository for Ontological Narration (HERON) database. The HERON database integrates de-identified clinical data from seven different regional sources including hospital electronic medical record systems of the University of Kansas Health System. The initial HERON data extract encompassed 1192 records and the final sample consisted of 207 participants who were mostly white (74%) males (55%) with a diagnosis of ischemic stroke (77%). The outcome measures collected from HERON included performance scores on the National Institute of Health Stroke Scale (NIHSS), the Glasgow Coma Scale (GCS), and the Functional Independence Measure (FIM). The data analysis plan included descriptive statistics, Pearson correlation analysis, and Stepwise regression analysis. Results: significant predictors of discharge Motor FIM subscores included age, baseline Motor FIM subscores, discharge NIHSS scores, and comorbid electrolyte disorder ($R^2 = 0.57$, $p < 0.026$). Significant predictors of discharge Cognitive FIM subscores were age, baseline cognitive FIM subscores, client cooperative behavior, comorbid obesity, and the total number of comorbidities ($R^2 = 0.67$, $p < 0.020$). Functional performance on admission was significantly associated with age ($p < 0.01$), stroke severity ($p < 0.01$), and length of hospital stay ($p < 0.05$). Conclusions: our findings show that younger age, good motor and cognitive abilities on admission, mild stroke severity, fewer comorbidities, and positive client attitude all predict favorable functional outcomes after inpatient stroke rehabilitation. This study provides health care professionals with evidence to evaluate predictors of favorable functional outcomes early at stroke rehabilitation, to tailor individualized interventions based on their client's anticipated prognosis, and to educate clients about the benefits of making lifestyle changes to improve their anticipated rate of functional recovery.