

Potential Risk Factors of Prolonged Length of Stay in Acute Hospitalized Older Adults

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Introduction: Prolonged hospitalization is not uncommon for older adults, and it may lead to adverse outcomes, including acute delirium, functional decline, and socioeconomic burden, etc. Therefore, identifying the risk factors associated with prolonged hospitalization in older adults is a crucial issue.

Objectives: Our study aims to explore the potential risk factors of prolonged length of stay in acute hospitalized older adults

Methods: We conducted a retrospective cohort study, and data was collected in a tertiary medical center from June to September 2018. We collected comorbidities, medications, geriatric syndromes (including falling, depressive mood, cognitive impairment, urine incontinence), and length of stay as the outcome variable. Synthetic minority oversampling technique (SMOTE) was used to deal with imbalanced data. The classification and regression tree (CART), a decision tree algorithm, was used to investigate the association between variables and prolonged length of stay in older adults. We randomly split the entire sample into a 70% training set (202 patients) and a 30% testing set (86 patients).

Results: There were 288 older adults in the final analysis by using SMOTE. Among the study cohort, 144 older adults belonged to prolonged length of stay, and 144 older adults belonged to non-prolonged length of stay. The results showed that women with depress mood (29%), and men with impaired cognition (8%) were relatively associated with prolonged length of stay.

Conclusion: By using decision tree algorithm, we identified potential risk factors of prolonged hospitalization in older adults. The results could be taken as a reference for clinical practice.

Keywords: older adults, prolonged length of stay, synthetic minority oversampling technique, classification and regression tree