

Care pathway costs and frailty in patients aged 75 and over: a trajectory analysis

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Abstract

Background: Population aging is accelerating globally, placing increasing pressure on health and social care systems. Frailty —a common, multidimensional, and potentially reversible geriatric syndrome — is strongly associated with adverse health outcomes and higher healthcare utilization. Despite its clinical relevance, the economic impact of frailty remains insufficiently studied at scale.

Objective: This study aims to analyze the care pathways of individuals aged 75 and older in order to estimate their associated healthcare costs and evaluate their potential correlation with frailty levels, as measured by the Hospital Frailty Risk Score (HFRS).

Methods: Utilising data from the French National Health Data System, we conducted a retrospective national cohort study of individuals aged 75 years or older who were admitted to a medical or surgical department for a hospital stay between January 1, 2017, and December 31, 2017. Patients were classified into three frailty risk categories (low, intermediate, high) based on their HFRS score at the time of the first hospital admission. Total healthcare consumption was analysed over a two-year follow-up period. To identify homogeneous groups of trajectories, we applied an unsupervised k-means clustering method for longitudinal data.

Results: 4 clusters have been identified. The four clusters differed mainly in terms of their levels of healthcare expenditure and their healthcare utilisation profiles. Cluster A had high expenditure and low mortality, cluster B had lower expenditure and a heterogeneous profile, cluster C had the highest frailty, highest mortality and higher adjusted costs, while cluster D had an intermediate profile with mortality occurring later in life. Moreover, healthcare expenditure levels appear to be a key factor distinguishing the different care trajectories, consistent with the observed utilization profiles.

Conclusion: This study shows that early and appropriate management of frailty could minimize healthcare costs and reduce post-hospitalization mortality.

Keywords: Frailty, Care pathway, Hospital Frailty Risk Score, trajectory analysis, SNDS.