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O2 : Development of a Thai Hospital Frailty Risk Score for Hospitalized older patients using data from medical records, a study from a large medical school in Thailand

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Background: Frailty is a condition of reduced physiologic reserve in multiple health domains in older adults which could lead to negative outcomes such as prolonged hospital stay and increased mortality. However, assessment of frailty validated to utilize for hospitalized older patients has been limited.

Objective: To develop a risk score for frailty based on the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10) codes to identify frailty in hospitalized older adults in Thai context.

Materials and method: We analyzed 5,000 patient records of adults aged ≥ 60 years who were admitted to Siriraj Hospital between 2016-2017 using two-step cluster analysis and divided into 'frailty' and 'non-frailty' based on resource consumption and diagnosis related to frailty. The risk score was developed by selecting the ICD-10 codes within 3 months before admission that were twice as prevalent in frailty cluster and rate a score according to beta-coefficients. The scores were add-up and classified as low, intermediate, and high-risk score then analyzed its association with 30-day mortality, readmission and prolonged hospital stay adjusted by age and sex.

Results: Included population had mean age of 71.7 years and 52 % female. There were 1,926 patients (38.5%) classified in frailty cluster. The frailty cluster was older (74.1 vs. 70.2 years), had higher hospital cost (121621.8 vs. 76339.5 baht), and higher 2-year mortality (13.9% vs. 3.8%). The risk score included 52 codes, such as acute renal failure, sepsis, hemiplegia, electrolyte abnormality, anemia, delirium and dementia. The score was calculated and categorized as low (<26.0), intermediate (26.0-51.7), and high risk (51.7-186.4). Compared to the low-risk group, the intermediate and the high-risk group associated with higher risk of prolonged hospital stay (Intermediate: adjusted odd ratios (AOR) 1.29 [95%CI 1.06-1.57]; High: AOR 2.34

[95%CI 1.88-2.91]) and 30-day readmission (Intermediate: AOR 1.27 [1.01-1.60]; High: AOR 1.71 [1.30-2.26]). For 30-day mortality, the high-risk group had higher mortality with AOR of 4.15 [2.91-5.92]).

Conclusions: The Thai Hospital Frailty Risk Score associated with adverse outcomes among hospitalized older adults in dose-response fashion. This score is a potential tool for detecting frailty in hospitalized older adults to provide targeted intervention. However, additional studies to reaffirm the validity of the score is warrant.

Keyword: Frailty, Hospital Frailty Risk Score, Elderly, Thailand