was implemented as a software tool on the WinForms platform. It automated the FI calculation by counting deficits accumulation across multiple domains assessing medical conditions, cognition, balance, and dependency of activities of daily living. Debugging, testing, and optimization were performed to enhance the software performance with respect to automation accuracy (processing algorithm), friendly user interface (user manual and feedback), and data quality control (missing data and value constraints). Systematically-designed simulation dataset and anonymous real-world cases were both applied. The optimized assessment tool resulted in fast and convenient conductance of the CGA, and a 100% accuracy rate of the eFI-CGA automation for up to four decimals. The stand-alone eFI-CGA implementation has provided a PC-based software tool for use by geriatricians and primary and acute care providers, benefiting early detection and management of frailty at points of care for older adults.

A GENETIC ALGORITHM-BASED APPROACH TO OPTIMIZE THE CONSTRUCTION OF A FRAILTY INDEX

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The frailty index (FI) is a reliable prognostic indicator based on an individual clinical and functional deficits, which is strongly associated with poor outcomes. We hypothesize that an optimization algorithm may help to select the best candidate deficits to generate a highly-predictive FI. We aimed to optimize the predictive accuracy (area under the curve; AUC) of a FI employing a "genetic algorithm", an iterative meta-heuristic that selects and recombines the most accurate FIs among randomly-generated ones. We used data from 3363 individuals aged 60+ enrolled in the Swedish National Study on Aging and Care in Kungsholmen (SNAC-K). To avoid overfitting, the algorithm was run on a randomly-chosen subsample (70%) of 10 imputed datasets. About 825,000 FIs were built, evaluated, and recombined. The best genetic algorithm-based FI (ga-FI) was compared in terms of 3- and 6-year mortality prediction with a clinically-generated FI (c-FI) in the remaining 30% of the data. Ga-FI showed better AUCs in comparison to the c-FI, overall and in all age and sex subsamples. Several sensitivity analyses were carried out. The major AUC improvement was seen among participants aged <75 [3-year mortality AUC: 0.83 vs 0.63; p<0.001]; 6-year mortality AUC: 0.76 vs 0.63; p<0.001], while smaller differences were seen among participants aged ≥75 [3-year mortality AUC: 0.86 vs 0.84; p=0.216; 6-year mortality AUC: 0.84 vs 0.81, p=0.017]. The genetic algorithm is a feasible method to optimize the construction of a highly performant FI that might be used to assess health comprehensively both in clinical and research settings.

MULTIDIMENSIONAL FRAILTY SCORE IS SUPERIOR TO PREDICT COMPLICATIONS AFTER SURGERY THAN CONVENTIONAL RISK FACTORS

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Frail older adults are at increased risk for postoperative morbidity compared with their robust counterparts. We compared predictive utility of multidimensional frailty score (MFS) with physical performance parameters or conventional risk stratification indicators to identify postoperative complication in older surgical patients. From January 2016 to June 2017, 648 older surgical patients (age≥ 65) were included for analysis. The MFS was calculated through comprehensive geriatric assessment (CGA). Grip strength and gait speed were measured preoperatively. The primary outcome was postoperative complication (eg, pneumonia, urinary tract infection, delirium, acute pulmonary thromboembolism, and unplanned ICU admission). Secondary outcome was 6-months all-cause mortality. Sixty-six (10.2%) patients experienced postoperative complications and 6-months mortality was 3.9% (n=25). Grip strength, gait speed, MFS and ASA classification could predict postoperative complication but only MFS (Hazard Ratio = 1.564, 95% CI, 1.283-1.905, p < 0.001) could predict 6-months mortality after full adjustment. MFS (C index = 0.747) had superior prognostic utility than age (0.638, p value = 0.008), grip strength (0.566, p value < 0.001) and ASA classification (0.649, p value = 0.004). MFS only had additive predictive value on both age (C-index of 0.638 (age) vs 0.754 (age +MFS), p = 0.001) and ASA classification (C index of 0.649 (ASA) to 0.762 (ASA + MFS), p < 0.001) for postoperative complication, but gait speed or grip strength had no statistical additive prognostic value on both age and ASA classification.

DOES PHYSICAL FUNCTION RESPONSE TO INTENTIONAL WEIGHT LOSS IN OLDER ADULTS VARY BY SEX-GENDER?

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The purpose of this study is to explore whether the effect of intentional weight loss on physical function in older adults varies by sex/gender. Individual level data from 1369 older, (67.7±5.4 years), obese (BMI: 33.9±4.4 kg/m2), adults (30% male, 21% African American) who participated in eight randomized controlled trials of weight loss were pooled. All studies were 5-6 months in duration and collected baseline demographic and pre/post gait speed (n=1296), short physical performance battery (SPPB; n=866), and grip strength (n=401) data. Treatment effects were generated by weight loss assignment [weight loss (WL; n=764) versus non-weight loss (NWL; n=605)], as well as categorical amount of weight change (high loss: >-7%, moderate loss: -7 to -3%, and weight gain/stability: <-3%). Analyses were adjusted for age, race/ethnicity, study, education, baseline BMI, and baseline value of the outcome measure of interest. Sex/gender