Neurocognitive Frailty Index as a Predictor of Cognitive Function: An Opinion Letter

Sarah Pakzad*, Paul Bourque¹, Nader Fallah² and Amir A Sepehry³

1School of Psychology, University de Moncton, Canada
2Department of Medicine, University of British Columbia, Canada
3Clinical and Counseling Psychology Programs, Adler University, Canada

Introduction

Frailty defined, and prevalence in general population

Frailty can be defined as a dynamic age-related vulnerability emanating from multidimensional loss of energy, physical status, cognitive functioning, and general health reserves. This multifaceted state of being renders an individual prone to adverse life outcome relative to individuals who are, i.e., more physically fit. In the elderly individuals, a clinically detectable syndrome, this state tends to phenotypically manifest by the presence of 3 or more of the following symptoms, including weight loss of 10 lbs in the past year, self-reported exhaustion, weakness (e.g., grip strength), slow walking speed, and low physical activity Fried [1]. The evidence emerging from the Canadian Health Measures Study of general population (cycles 1-3; n = 10,995, age ranging between 18-79) shows that the prevalence of frailty, using two different approaches, was between 1.8-5.3% in the 18-34 age group, 4.3-5.7% in the 35-49 age group, 6.9-11.6% in the 50-64 age group, and 7.8-20.2% in the 65+ age group Kehler [2]. Additionally, a systematic review and meta-analysis of 47 studies, conducted in 2017, emerging from low-income and middle-income countries, examining the rate of prevalence of frailty in community-dwelling older adults aged ≥60 years, found a pooled prevalence of 17.4% Siriwardhana [3]. This knowledge point at the high heterogeneity across studies on how the frailty status were obtained, and that younger adults are at higher risk for frailty than commonly recognized as a geriatric syndrome. This in turn informs of an important window for treatment and prevention implementation, when frailty correlates with other late-life related conditions such as cognitive aging, Alzheimer’s disease or Vascular dementia.

Frailty and its implications

There are indications that frailty status can be a predictor of late-life depressive symptoms Kojima [4] risk of falls Kojima [5], bone fracture Kojima [6], disability Kojima [7], metabolic syndrome such as hypertension Vetrano [8], early hospitalization Kojima (b) [9], lower quality of life Kojima, lliffe [10], development of Alzheimer’s disease and cognitive change Ko Rockwood & jima, Taniguchi [11], Searle & Rockwood [12] and affecting survival rate Shamiyan [13]. Particularly, in the current context, evidence from a meta-analysis of scarce data (population-based longitudinal studies and a cohort study) including 936 frail elderly individuals of an overall average age of 73.3 years, shows the relations between the higher risk of incident geriatric cognitive disorder in frail older adults in contrast to that of non-frails Borges [14]. By the same token, scientific hard signs exist from the retrospective observational study of 1,584 patient’s data from TREDEM Registry (Treviso Dementia) to show the link between frailty status and the presence, degree, and some localization of cerebral brain atrophy Gallucci...
[15]. The list goes on, only to suggest that knowledge of frailty status in older adult is important and has significant ramifications. Additionally, noteworthy that general health practitioners and nurses are at the forefront for viewing and examining frailty status in community dwelling elderly individuals, and particularly those with Mild Cognitive Impairment (MCI), i.e., the prodromal stage of AD, or the so-called Mild Neurocognitive Disorder (MND) due to AD as characterized by the Diagnostic and Statistical Manual of Mental Disorder-Fifth edition (DSM-5) American Psychiatric Association [16]. Thus, the use of a psychometrically sound and easy to use assessment scale by professionals become imperative.

Frailty assessment

The assessment of frailty, and important geriatric syndrome, via an innovative yet psychometrically reliable and valid tool that can be used by primary care professionals and others is a must, in order to detect cognitive decline at a germinating stage, and potentially slow the disease progression (e.g., neurodegeneration), and optimize quality of life. Given the mechanisms, pathways, and risk factors differences across genders for developing neuropsychiatric and neurodegenerative conditions such as depression and Alzheimer Disease Mielke [17] that in turn affects cognition and their association with frailty status Son [18], a measure that takes into account this diversity, is crucial. To this end, norm-based measures used to assess neurocognitive functions predicting neurocognitive frailty status and providing an accurate prognostic probability by taking into account of the gender differences for developing dementia and related conditions play a significant role, not only in community settings, but also for clinical trials where treatment for dementia and related conditions play a significant role, not only in community dwelling elderly individuals, and particularly those nurses are at the forefront for viewing and examining frailty status in community dwelling elderly individuals, and particularly those with Mild Cognitive Impairment (MCI), i.e., the prodromal stage of AD, or the so-called Mild Neurocognitive Disorder (MND) due to AD as characterized by the Diagnostic and Statistical Manual of Mental Disorder-Fifth edition (DSM-5) American Psychiatric Association [16]. Thus, the use of a psychometrically sound and easy to use assessment scale by professionals become imperative.

To achieve this particular goal, we recommend the use of novel Neurocognitive Frailty Index (NFI) scale with an accompanying application, that have demonstrated validity-evidence for showing the relationship between frailty status and cognitive change overtime in elderly individuals generally Pakzad [21], and those with hypertension and heart disease Pakzad [22]. Presently, the on-line prototype of NFI measure is being developed for use in clinical settings to provide an evaluation of the probability of developing dementia in people over the age of 50.

Acknowledgments

None

Conflicts of Interest

The authors declare that they have no conflict of interest.

References