FRAILTY AND ITS ASSOCIATION WITH COGNITIVE FUNCTION AMONG NON-DEMENTED JAPANESE COMMUNITY-DWELLING OLDER ADULTS

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This research, using epidemiological observational data from a large cohort of community-dwelling elderly persons, provided empiric evidence of frailty and its association with cognitive function. Data were drawn from the baseline survey of the Sasaguri Genkimon Study, a cohort study carried out in a suburban community.

Firstly, a cross-sectional analysis including 1,527 community-dwelling older men and women aged 65 and over was conducted to screen for frailty. Frailty phenotypes were defined by the following five components: unintentional weight loss, low grip strength, exhaustion, slow gait speed, and low physical activity. Of these criteria, physical activity was objectively measured with a tri-axial accelerometer. To confirm the measure’s internal validity, a latent class analysis was performed to assess whether the five components could aggregate statistically into a syndrome. Then correlates of frailty was examined using multiple stepwise logistic regression models. The estimated prevalence of frailty was 9.3%; 43.9% were pre-frail. Objectively-assessed physical activity and other components aggregated statistically into a syndrome. Overall, increased age, poorer self-perceived health, depressive and anxiety symptoms, not consuming alcohol, no engagement in social activities, and cognitive impairment were associated with increased odds of frailty status, independent of co-morbidities.

Secondly, another cross-sectional analysis was performed among a sample consisted of 1,565 older adults with complete data and no evidence of dementia. Global cognitive performance was evaluated using the Montreal Cognitive Assessment and the Mini-Mental State Examination. Frailty phenotype was defined in the same way as the prevalence study, in which the low physical activity component was assessed with an accelerometer. Multinomial logistic regression analyses were performed to examine relationship between total and domain-specific Montreal Cognitive Assessment and the Mini-Mental State Examination scores, and odds of pre-frailty and frailty. Total Montreal Cognitive Assessment and the Mini-Mental State Examination scores and their domain-specific scores decreased across the non-frail, pre-frail and frail groups. Poorer total Montreal Cognitive Assessment and the Mini-Mental State Examination scores, as well as their domain-specific scores, were associated with the greater likelihood of being frail, but not with pre-frailty after full adjustment. The strength of the association with frailty was greater for total Montreal Cognitive Assessment score than for the total Mini-Mental State Examination score. Domain-specific scores for visuospatial abilities and
attention domains in both of the Montreal Cognitive Assessment and the Mini-Mental State Examination were consistently associated with the likelihood of pre-frailty and frailty, even after mutually adjusted for all domains.

To conclude, this research has contributed to the understanding of frailty and its association with cognition in several ways. The findings of the present research confirmed the internal construct validity of the frailty phenotype that defined the low physical activity domain with the objective measurement of physical activity. Accelerometry may potentially contribute to standardize the measurement of low physical activity and improve the diagnostic accuracy of the frailty phenotype criteria in primary care setting. The potential role of factors associated with frailty merits further studies to explore their clinical application. In addition, poor cognitive performance was associated with the likelihood of being frail. The significant association of frailty and cognitive performance in non-demented population indicated that there could seemingly be other intrinsic pathological/etiological pathways behind this link.