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EDITORIAL

Implications of frailty interventions from Korean frailty and aging cohort study

1 | INTRODUCTION

Although the development of medical science has succeeded in controlling many diseases, increasing lifespan, and delaying the onset of disability to some degree, it does not entirely reduce the disability burden in older age; therefore, managing and preventing frailty is very important.[1] Frailty is defined as a significant decline in functional reserve, resistance, and extreme vulnerability of the individual to endogenous and exogenous stressors (like infection, injury or surgery, or some medicines), leading to a higher risk of accelerated functional decline and adverse health-related outcomes.[2] Especially in this COVID-19 pandemic, frail older adults can be more vulnerable due to increased chronic inflammation and immunosenescence.[3]

Frailty can be adequately assessed and managed only if comprehensively evaluated and followed based on service integration and multidisciplinarity.[4] As such, prevention and management of frailty requires multidisciplinary well evidence-based interventions. Physical exercise programs were shown to be generally effective for reducing or postponing frailty but only when conducted in groups.[5] A systematic review of randomized controlled trials on management of frailty shows that physical activity is one of the most effective frailty interventions, but the quality of evidence of the current review is still low.[6]

ICFSR guidelines recommended protein/caloric supplementation for persons with frailty when weight loss or undernutrition had been diagnosed, but the evidence level was very low.[7] Therefore, more evidence is needed for physical activity and protein supplementation for prevention and/or management of frailty.

2 | SOME IMPLICATIONS OF FRAILTY INTERVENTIONS FROM KFACS STUDY

The Korean frailty and aging cohort study(KFACS) is a multicenter longitudinal cohort study with the baseline survey conducted from May 2016 to November 2017.[8] The participants were community-dwelling residents in urban and rural areas nationwide in 10 study centers across different regions covering different residential locations (urban, suburban, and rural) including Jeju Island in South Korea. KFACS has been ongoing with follow-up every 2 years. Author has been working on KFACS as a principal investigator and I would present some implications to guide the intervention for prevention and management of frailty based on the KFACS cohort study and some intervention studies in parallel.

2.1 | Age is an important factor prevention of frailty

A paper based on 2-year follow-up data of KFACS showed that the middle-old group (70–79 year old) respondents with high level physical activity were more likely to show lower frailty scores after 2 years than those with low physical activity after controlling for covariates. However, in the oldest-old group (80–84), even high-level physical activity was not a preventing factor for frailty after 2 years.[9] The high level of physical activity means meeting one of the following two criteria, i.e., (i) vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-min/week, or (ii) ≥7 days of any combination of walking, moderate intensity, or vigorous intensity activities achieving a minimum of at least 3000 MET-min/week.

A paper from LIFE (Lifestyle Intervention and Independence for Elder) Trial shows similar results. The participants were 70–89 year old with SPPB(short physical performance battery) score ≤9.[10] They found that for younger older adults(70–80 years), Fried frailty score(0 to 5) came to reduce after 12 months in moderate physical activity (PA) group compared with the health education (HE) only group. But for the oldest old (80–89 years), moderate PA did not decrease frailty score more than HE only group. Though this study has a limitation that PA is used for intervention and also for evaluation of Fried frailty score, this study shows that age could be important factors in intervention trial for frailty.

FICSIT study showed that 10-week high intensity resistance exercise increased muscle strength and gait speed, physical activity compared with nonexercise group for nursing home residents with mean age of 87.1 year. High intensity resistance exercise, not just increasing PA, may be needed to reverse frailty in the oldest old.[11]

2.2 | The level of physical activity is important for reversing frailty or prefrailty

Another paper based on 2-year follow-up data of KFACS showed physical activities associated with improvement from frailty after

2 years were high level, but those associated with improvement from prefrailty after 2 years were middle level at the least. In this study, high participation in social activities and less number of chronic diseases were also important factors for improvement from frailty after 2 years, and not having depression was another important factor for improvement from prefrailty after 2 years.[12] Participation in social activities in this study was measured by the number of social activities such as alumni gatherings, religious activities, cultural activities, sports activities, political activities, civic participation, volunteer activities, and educational groups.

Otones et al. carried out a randomized controlled trial for community-dwelling pre-frail older adults aged 65 years or older with chronic pain attending a primary healthcare center. Most participants were women (78.1%) with a mean age of 77.2 years. The intervention was either 8-week moderate PA or HE program and participants in the PA group showed better results in frailty score (SHARE-FI) compared with education group after the intervention.[13]

On the other hand, LIFE trial did not show that moderate-intensity PA program, compared with a HE program, did not reduce frailty prevalence (by SOF index, three items) over 2 years among those sedentary frail community-dwelling older adults.[14]

2.3 | 1.5 g protein/kg/day is needed to gain in muscle mass and gait speed in short-term period for prefrail or frail older adults with risk of malnutrition

YS Park, one of KFACS members, underwent a randomized controlled trial to investigate a dose-dependent effect of protein supplementation on frailty in prefrail or frail malnourished elderly people.[15] It was a 12-week double-blind randomized controlled trial conducted in elderly subjects aged 70–85 years with ≥1 of the Fried's CHS frailty criteria and a Mini Nutritional Assessment score ≤23.5. Participants were randomly assigned to one of three groups: 0.8, 1.2, or 1.5 g protein · kg^{-1} · d^{-1}. After 12 weeks, protein intake of 1.5 g/kg/day was needed to increase not only muscle mass but also gait speed in prefrail or frail elderly at risk of malnutrition.

3 | CONCLUSION

For prevention and management of frailty, the age of the participants and the level of physical activity are important factors to determine the success of interventions. Protein intake of 1.5 g/kg/day is needed to increase not only muscle mass but also gait speed in prefrail or frail elderly at risk of malnutrition for a short-term period.

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CONFLICTS OF INTEREST

None.

Chang Won Won

Department of Family Medicine, College of Medicine, Kyung Hee University, Seoul, Korea

Correspondence
Chang Won Won, Department of Family Medicine, College of Medicine, Kyung Hee University, Seoul, Korea.
Email: chunwonvicky@yahoo.co.kr

ORCID

Chang Won Won https://orcid.org/0000-0002-6429-4461

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