

Reducing risk of frailty through a varied diet during COVID-19 pandemic

Frailty can lead to a range of negative health outcomes, from disability to dementia. During restrictions imposed to limit spread of the COVID-19 pandemic, many people had reduced social connection. Studies have linked frailty with reduced dietary variety, especially among older people living alone. Dr Naoto Otaki and Miyuki Yokoro of Mukogawa Women's University, Japan, have conducted research into frailty, social interaction, and variety of diet. They have found that older adults living alone are at higher risk of frailty and have less varied diets, especially men. There is therefore a need to support older people living alone to improve their diet.

Frailty, a clinical condition associated with increasing age, is characterised by reduced physical function and increased vulnerability to stressors. Frailty can lead to negative health outcomes including falls, depression, dementia, hospitalisation, and a higher risk of death.

When COVID-19 struck in early 2020, many countries around the world declared a state of emergency. In Japan, social restrictions were in place for almost one month. Since then, social distancing measures have resulted in a reduction in peoples' everyday interactions. In a recent paper, Dr Naoto Otaki and colleagues at Mukogawa Women's University, Japan, highlight the need to screen older adults for frailty during 'lockdowns' due to this reduced social contact. Otaki's team aimed to understand the effect of COVID-19 restrictions on social activities, and the potential links between reduced social activity and frailty during this time. Demographic information was

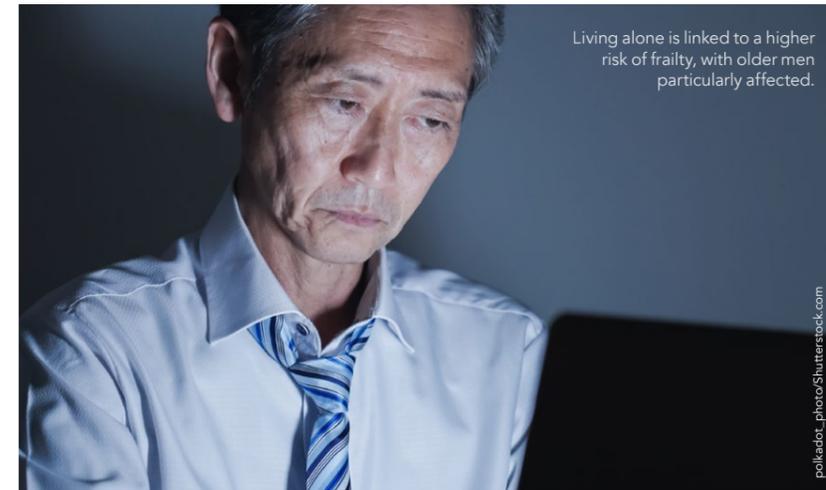
collected via a survey, as well as living arrangements, self-rated health, life satisfaction, eating habits, economic status, and illness.

The team used a 'dietary variety' score to analyse food group intake. They also used a five-item scoring system to analyse frailty. Questions on this topic included: 'Do you feel like you walk more slowly than before?', and 'Do you exercise at least once per week?' Based on their responses, participants were considered robust, prefrail, or frail.

SOCIAL ENGAGEMENT

Assessment of social activity explored the frequency of interaction with friends, family, and participation in community activities. 80% of respondents reported that COVID-19 restrictions had stopped them participating in social organisations, and 75% said the restrictions reduced the frequency of their interaction with family. Over 50% also reported a reduction in frequency of interaction with friends.

Otaki's team found a significant association between reduced interaction with friends and frailty score. This remained the case when the data were adjusted for age, BMI, number of illnesses, dietary variety score, and economic status. Consistent with previous studies, the results suggest that being with others protects against frailty, and that social connection is important to the health of older adults. The results also showed that the impact of COVID-19 restrictions on interactions with friends impacted vulnerability. Just over half of Japanese people in their 70s, and one fifth in their 80s, use the internet. Otaki therefore suggests encouraging older adults to use information and communication



Living alone is linked to a higher risk of frailty, with older men particularly affected.

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technology to protect against isolation and depression – especially in case of any future restrictions due to infectious disease outbreaks.

FOCUS ON FOOD

A second study by Otaki and Miyuki Yokoro's team, this time analysing the survey responses of 253 women aged 65 and over, reinforced this relationship between dietary variety and frailty and showed it to persist regardless of age. Here, Otaki explains that other studies have found an association between dietary variety score and skeletal muscle, grip strength, and walking speed, with a high dietary variety score suggesting higher consumption of

protein (needed to build and maintain muscle) and antioxidant (protecting cells from damage due to stressors) vitamins C and E. This study was not able to compare current eating habits with pre-pandemic dietary behaviour, and Otaki emphasises the need for a longer-term

Living alone is linked to an unhealthy diet, with eating alone being linked to oral frail status.

survey of eating habits to understand any changes in eating habits over time.

In a third study, Yokoro and Otaki's team investigated the associations between variety of diet and frailty in community-dwelling older people (as opposed to care home resident) who live alone.

Variety of diet may be impacted by a range of factors, including gender, economic status, chewing ability, intellectual activity, and food accessibility. Living alone is also linked to a higher risk of frailty, with older men particularly affected. While the reasons for this are not completely clear, it is understood that living alone is linked to an unhealthy diet, with eating alone being linked to oral frail status (reduced oral function accompanied by cognitive and physical decline). Here, men are more likely to have an unhealthy diet than women if they live alone.

DIET-FRAILTY CONTINUUM

Returning to the second study, Otaki's team set out to examine the variety of diet, frailty, and the link between the two in older people living in the community, comparing those living alone with those living with others. The study included 1,780 participants 65 years and older, living in Nishinomiya City, Japan. Participants completed questionnaires to assess their age, gender, living arrangements, height, weight, smoking habits, drinking habits, diseases, number of medications, economic status, social participation, variety of diet, and frailty.

To obtain a variety of diet score, the participants were asked to select how frequently within the last week they



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Otaki and Yokoro conducted research into frailty, social interaction, and variety of diet.



Otaki's research demonstrates the importance of social connection for maintaining health in older people.

had consumed the following ten food groups: fish and seafood, meats, eggs, dairy products, soybean and soybean products, green and yellow vegetables, seaweed, potatoes, fruits, and fat or oils.

for the questions regarding fruits and oils, significantly fewer men living alone answered 'almost every day' than men living with others; this was not the case for women.

EFFECT ON FRAILTY

The results revealed that a more varied diet results in lower frailty scores, even when adjusted for a range of variables. Dietary variety was significantly associated with frailty in both men living alone and men living with someone. However, the association was

The five-item frailty screening index was used to determine frailty scores. For both genders, BMI, alcohol consumption, number of illnesses, number of medications, physical activity, and social participation were similar for people living with others as those living alone. However, people living alone were significantly less financially secure than those living with others.

There were also some differences with gender. Average dietary variety scores were significantly lower for men living alone than men living with someone. Average frailty scores and the prevalence of frailty were significantly higher for men living alone than men living with someone. Neither of these findings applied to the women's group.

Regarding diet, significantly fewer people living alone answered 'almost every day' to the question about meat and green and yellow vegetable intake compared with people living with others. There was a gender split for the question on intake of potatoes, with significantly fewer women living alone answering 'almost every day' than women living with others. However, this was not the case for men. Similarly,

stronger in men living alone. Analysis of the women's group presented similar findings.

While variety of diet and frailty scores were significantly lower in men living alone compared to men living with someone, this was not observed for women. Regardless of gender, there was a stronger correlation between variety of diet and frailty scores in people living alone than in people living with someone.

Otaki's team cite Fukuda, who suggests that disparities in variety of diet according

to gender could be due to traditional gender roles. For example, older men in Japan are not traditionally involved in meal preparation. Notably, frailty and variety of diet among older women were not affected by whether or not they lived alone, and older women in Japanese society traditionally prepare meals.

NOURISHMENT FOR FRAILTY PREVENTION

The variety of diet scoring was based on nutrient intake from the dietary records of older Japanese people. Higher variety was associated with higher energy and protein intake, with the higher variety of diet group containing fewer people with inadequate energy intake. Consuming adequate energy and protein is essential for frailty prevention. Both men and women living alone reported eating vegetables less frequently than those living with someone, and men living alone reported eating less fruit than those living with someone. Diets high in vegetables and fruit are also associated with a reduction in frailty risk.

The results of this study show that a higher variety of diet score is linked to lower frailty score. Furthermore, the association is more pronounced in older adults living alone than those living with someone, regardless of gender. Improving dietary variety in

older people living alone is therefore important to prevent frailty. Indeed, the results of this study suggest a need for social support to encourage healthy dietary behaviour among older people, especially men, living alone.

Otaki's research demonstrates the importance of social connection for maintaining health in older people. The ability to interact with others, whether in the home or socially out of the home, appears to impact dietary choices and frailty. This will be an important consideration if restrictions on social interaction are enforced again in future.

The survey findings showed that the higher the dietary variety the lower the frailty scores, even when adjusted for a range of variables.

Behind the Research



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Research Objectives

Naoto Otaki and Miyuki Yokoro's research explores the impact of varied diets on frailty and the effect of the COVID-19 pandemic on healthy dietary behaviours.

Detail

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Bio

Naoto Otaki has been working at the Department of Food Sciences and Nutrition, School of Human Environmental Sciences, Mukogawa Women's University since 2009.

At present, Otaki and Yokoro undertake research at the Research Institute for Nutrition Sciences, Mukogawa Women's University.

Collaborators

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Personal Response

What types of social support do you think can be provided to encourage healthy dietary behaviour among older people, especially men, living alone?

Education to improve cooking skills and food choices is needed to help achieve healthy eating in older adults. Improving access to healthy foods including meal delivery services may help promote healthy eating behaviours. In addition, opportunities to enjoy meals with friends, neighbours, or family members living separately would improve the quality of meals. Community lunch events or community restaurants are good ways to promote eating together within communities.

 Mukogawa Women's University

