

EDITORIAL

Implication of frailty and disability prevention measures during the COVID-19 pandemic

1 | INTRODUCTION

The new coronavirus disease 2019 (COVID-19), of which the first cases were reportedly confirmed at the end of 2019, quickly spread worldwide and was affecting people all over the world by early 2020. In Japan, a state of emergency was declared in April 2020, which called for major lifestyle changes, such as wearing masks, maintaining physical distancing, avoiding enclosed spaces without ventilation, and practicing thorough hand-washing hygiene. In addition, people of all ages were forced to live in an unprecedented environment; office work was replaced with remote work, restaurants and commercial facilities were closed, schools were closed, and online lectures were promoted, although complete lockdown measures were not adopted in Japan.

Older people may have been the ones who felt the most confused by these adjustments and found it difficult to fully adapt to such environmental changes. From the beginning, when the virus was first confirmed, it was reported that older people were more likely to become seriously sick; thus, their activities were severely restricted. In addition, older people were forced to cancel or request the cancellation of frailty and disability prevention programs nationwide, which had been emphasized in the past; this resulted in a significant loss of opportunities for them to be active and socially interactive. Herein, we summarize the impact of the COVID-19 pandemic on older people in Japan, which is a country with advanced longevity.

1.1 | Disability prevention program in Japan

In Japan, a disability prevention program has been implemented as a public service since 2006. The purpose of this program is to prevent or postpone the need for long-term care, and it is currently being implemented within a program called the Comprehensive Program, which consists of a disability prevention and lifestyle support service program and a general frailty prevention program.^{1,2} Disability prevention and life support service programs include home-visit and day-care services, whereas general frailty prevention programs include public awareness programs and community programs to support preventive activities for frailty.

In recent years, the government has been promoting the establishment of a “community salon” where residents can proactively

engage in frailty prevention. These salons are held once a week or every 2 weeks and include exercises, hobby activities, coffee breaks, and meals. The effects of participating in such places have been shown to be effective in preventing the need for long-term care³; various organizations, such as the national government, local governments, and various professional organizations, are working together to promote frailty and disability prevention.

1.1.1 | Community salons for frailty prevention in Japan

In December 2020, a questionnaire survey was conducted among 1741 local governments in Japan (569 valid responses) to ascertain the current status of these community salons. In April to May 2020, when the first emergency declaration for the COVID-19 pandemic was issued in Japan, only 1.6% of the local governments reported holding their salon activities as usual, whereas 24.9% reported holding only a portion of their related activities. Later, as of December 2020, 27.4% of the municipalities reported holding their salon events as usual, whereas 52.8% reported only holding a portion of their events, which is not enough to resume the activities. In addition, the majority of the community salons that have reopened have not returned to the prepandemic number of participants (Yamada M, et al, personal communication).

Although residents are the main players, appropriate infection control measures are being taken under the proper guidance of activities and government staff. In particular, measures, such as hand-washing hygiene, disinfection, ventilation, ensuring physical distance, and wearing masks, are being thoroughly practiced. The National Center for Geriatrics and Gerontology (NCGG) has issued an online application that mimics community salons; thus, the pandemic is changing the way community salons are organized.

1.2 | Balance between infection control measures and frailty prevention measures

Countermeasures against infection and frailty require conflicting measures. In the former, it is important to avoid movement and the

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gathering of people, as typified by avoiding closed spaces, crowded places, and close-contact settings. On the other hand, in the latter case, “social participation” is considered to be important, and human interaction is considered to be the basis of measures against frailty. In other words, there is a trade-off; if one is emphasized, then the other is forfeited. However, in Japan, the protection of human life through infection control has been given priority, and countermeasures for frailty have become insufficient.

1.2.1 | Spread of COVID-19 infection and the physical activity of older people

We surveyed the physical activity time of older people living in the community in January 2020, before the pandemic, and again in April 2020, during the pandemic. As a result, we found that the physical activity time of older people decreased by approximately 30% during the pandemic⁴ (Figure 1). This is similar to the result obtained in another study,⁵ in which it was thought that thorough infection control measures and a fear of unknown emerging infectious diseases caused physical activity restriction.

It has also been shown that such physical activity limitations have varied depending on the region of residence. Japan is a long island nation, and the size and culture of its cities vary greatly in each region. Older people in central Tokyo have been greatly affected by the change in physical activity, probably due to a large number of infections and local government policies, whereas those in other areas have been less affected.⁶ This is also evident in the rates of change in physical activity time reported from January to April 2020, which classify Japan into eight regional categories. The Kanto region, including Tokyo, showed a decrease of more than 30%, whereas Kyushu, Tohoku, and Hokkaido showed only a decrease of approximately 15% (Figure 2).

In June 2020, when the first emergency restrictions were lifted and society gradually started moving on, it was confirmed that the lives of older people had gradually recovered to their normal state. At this point, we conducted the physical activity survey again and found that the physical activity time had recovered to the same level as that reported before the pandemic, thereby indicating that the level of physical activity changes in response to the ways in which waves of infection spread.⁷ However, not all older people recovered in the same way; those who lived alone and had little interaction with their neighbors continued to have reduced levels of physical activity.

1.2.2 | Countermeasures for frailty in older people during the pandemic

While people were forced to refrain from activities as a countermeasure against COVID-19 infection, the frailty of older people and the need for long-term care have become an issue. In addition to the aforementioned understanding of the actual living conditions

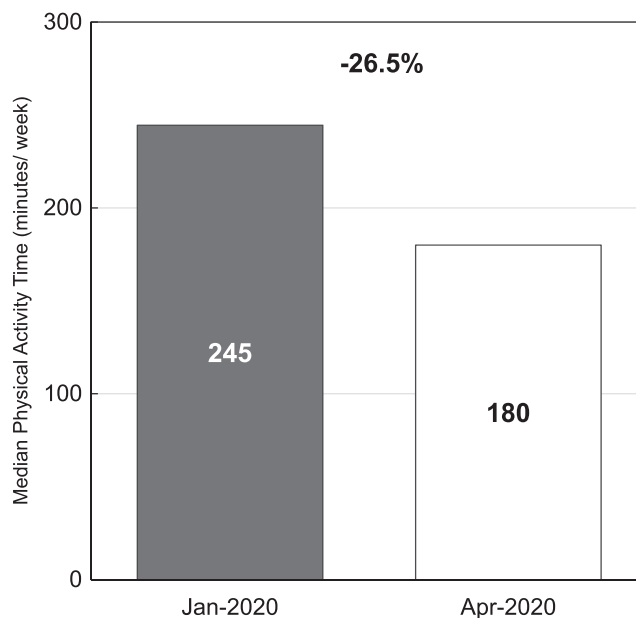


FIGURE 1 Influence of the coronavirus disease 2019 (COVID-19) pandemic on physical activity time in older people. We compared physical activity times in January 2020, before the COVID-19 pandemic, with those in April 2020, during the first wave of the pandemic in Japan. An online survey was conducted among 1600 older people. Physical activity time was assessed using the Short Version of the International Physical Activity Questionnaire. The results showed that the weekly physical activity time decreased from 245 minutes in January 2020 to 180 minutes in April 2020, which reflects a decrease of 26.5% (ref. 4)

of older people, many messages have been issued by various academic organizations. For example, the International Association for Gerontology and Geriatrics Asia/Oceania region⁸ and the Asian Working Group for Sarcopenia⁹ issued guidance and calls to action, respectively, on the importance of infection control and frailty prevention. In Japan, the NCGG published a guide for home activities called NCGG-Home Exercise Program for Older People (HEPOP),¹⁰ and the Laboratory for Care Prevention at the University of Tsukuba has published a web version of “Tsudoi-no-hiroba,” which shows measures that can be taken by older people alone through their use of the internet.

1.2.3 | Acceleration of frailty due to the pandemic

In Japan, the first declaration of a state of emergency was issued during the first wave of infection, the second wave followed in August 2020, and the third wave occurred in January 2021; however, the spread of infection continued intermittently. The physical activity of older people, which had temporarily recovered, was suppressed again in response to these waves of infection, which resulted in a continuation of low levels of physical activity throughout 2020.¹¹ In addition, the continuation of such a state led to a higher rate of new cases of frailty than those reported in ordinary times (Figure 3).¹² These effects were more pronounced among older people who lived

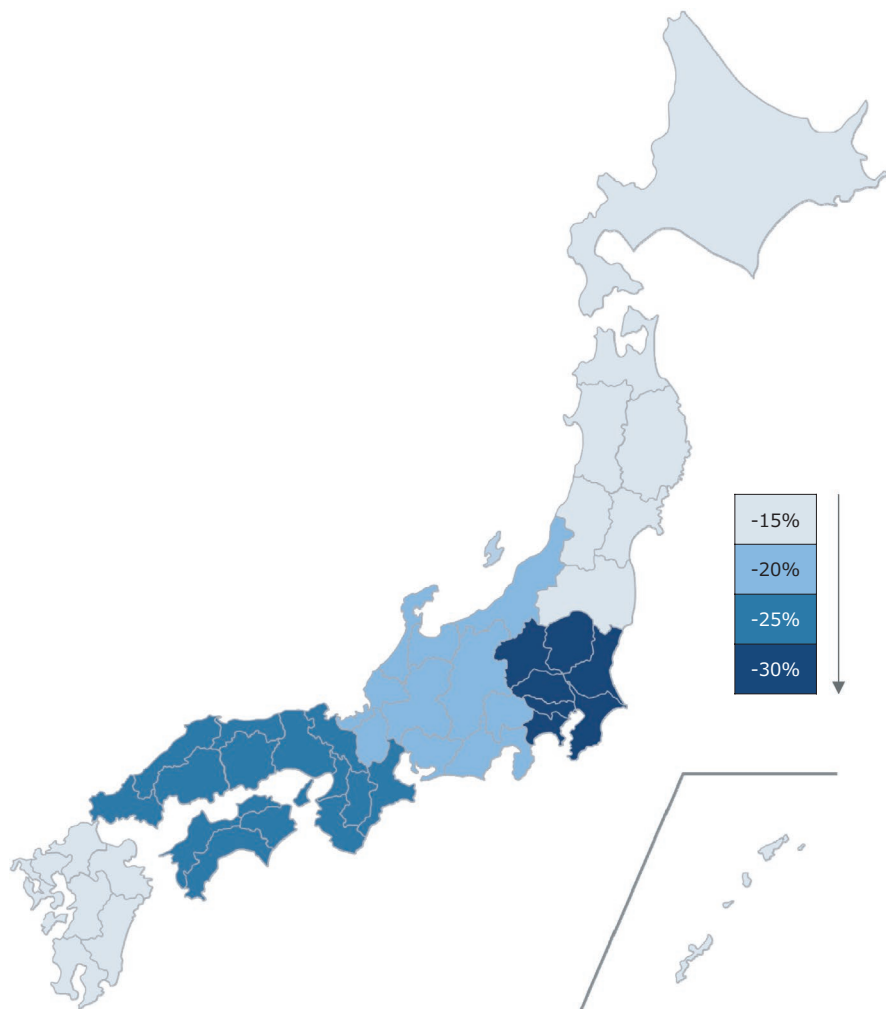


FIGURE 2 Impact of the pandemic on physical activity time of older people in each area of Japan. Japan can be divided into eight major regions: Hokkaido, Tohoku, Kanto, Chubu, Kinki, Chugoku, Shikoku, and Kyushu. In each of these eight regions, the percentage values of decrease in physical activity time from January to April 2020 were compared. An online survey was conducted among 5000 older people in various regions of Japan. Physical activity time was assessed using the Short Version of the International Physical Activity Questionnaire. The results showed that the Kanto region, including Tokyo (the capital), had the largest decrease with more than 30%, whereas Kyushu, Tohoku, and Hokkaido had only a 15% decrease (Yamada M, et al, personal communication)

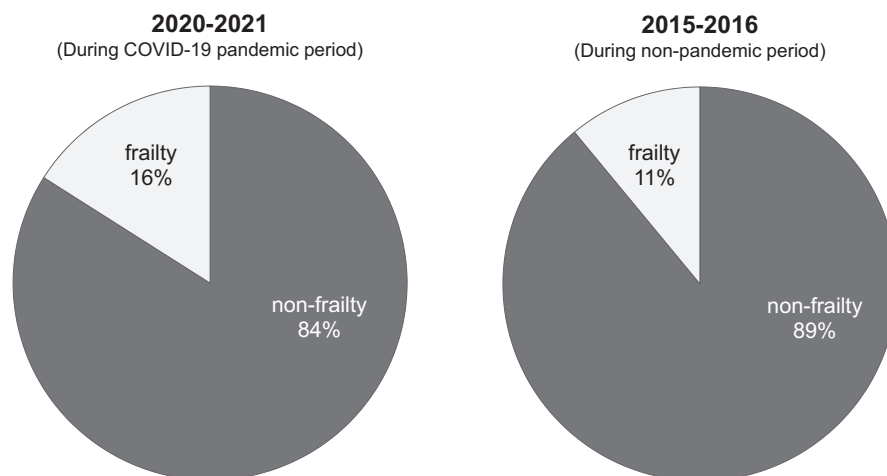


FIGURE 3 New onset of frailty during and before the pandemic. To examine the impact of the coronavirus disease 2019 (COVID-19) pandemic on the development of frailty, we conducted a 1-year follow-up study of 937 individuals who were not frail in January 2020 (before the pandemic). The results showed that the percentage of new cases of frailty in 2020 was 16%. To examine the magnitude of the impact of the pandemic on the development of frailty, we used propensity scores to extract 937 individuals with matched basic attributes from other cohorts surveyed in 2015. The results showed that the proportion of new cases of frailty during 2015 was 11%, which suggests that the pandemic period resulted in a significant increase in frailty incidence (odds ratio [OR] = 1.54, $p < 0.05$; ref. 12)

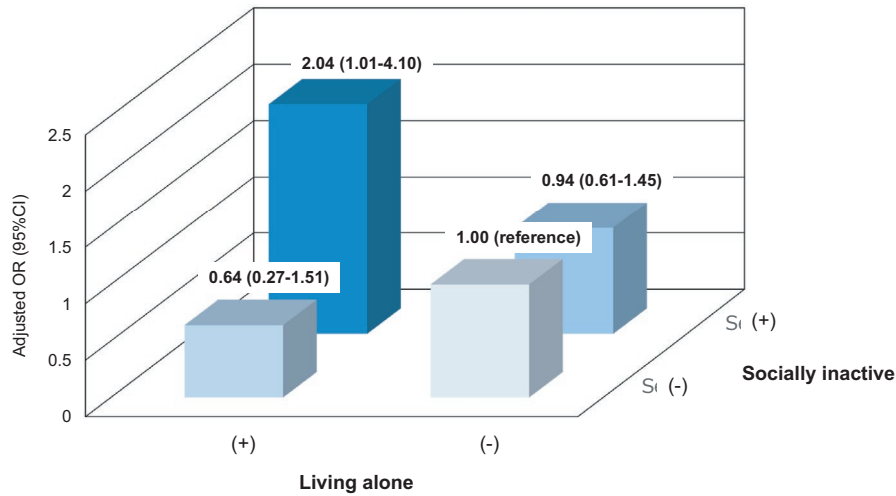


FIGURE 4 Effect of the combination of family structure and social activity on incident frailty during the pandemic. To examine which older people were likely to become frail during the coronavirus disease 2019 (COVID-19) pandemic, we conducted a 1-year follow-up survey of 937 people who were not in a frail state as of January 2020 (before the pandemic). The results showed that the rate of developing frailty was higher among those who lived alone and had little interaction with their neighbors; the adjusted odds ratio (OR) was 2.04 when those who were not living alone and interacted with neighbors were used as a reference (ref. 11). CI, confidence interval

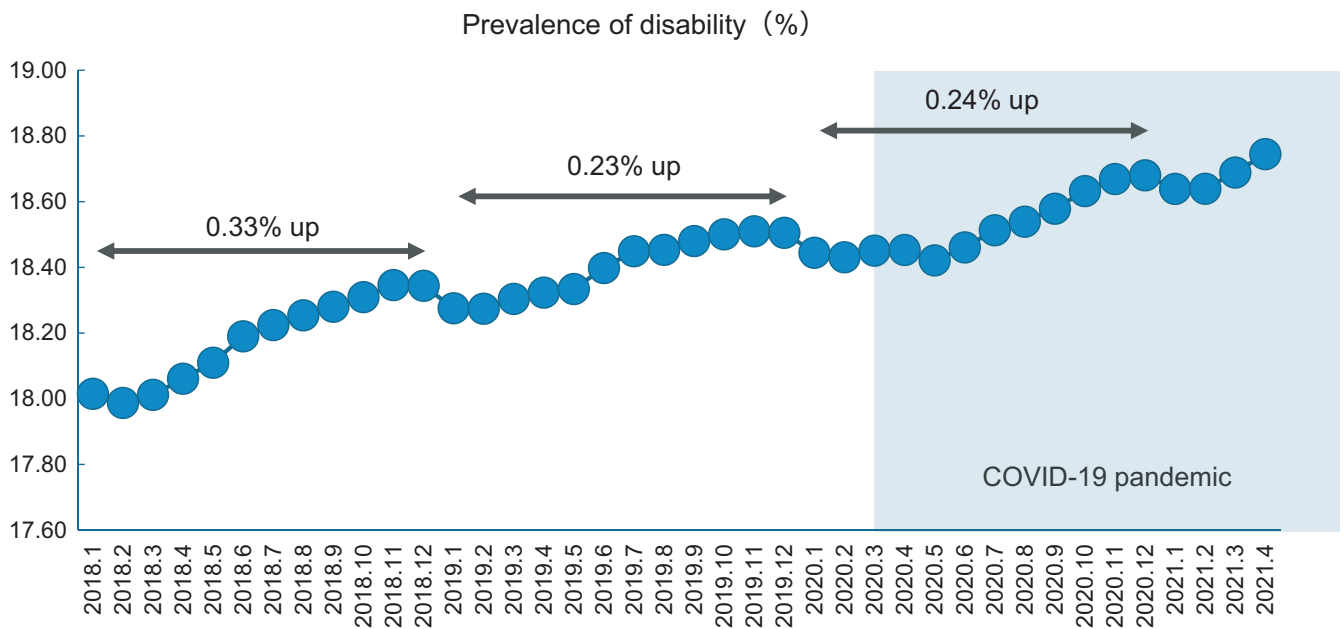


FIGURE 5 Changes in the percentage of people certified as requiring long-term care. The rate of people certified as requiring long-term care increased by 0.24% per year during the year of the coronavirus disease 2019 (COVID-19) pandemic; however, it also increased by 0.23% per year in 2019 and by 0.33% per year in 2018 (ref. 13)

alone and had less interaction with their neighbors, which suggests that a lack of social participation is a limiting factor in the face of major difficulties (Figure 4).¹¹

However, as of April 2021, there has not been a significant increase in the number of people requiring long-term care. It was thought that the restriction of physical and social activities due to the pandemic would lead to an increase in the number of people requiring long-term care, but, in fact, no clear impact has yet been confirmed. Calculating the change in the rate based on the

information about those who require long-term care reported by the Ministry of Health, Labor, and Welfare, it can be seen that the rate increased by 0.24% in the year of the pandemic, which is consistent with the increase of 0.23% that was reported in 2019 and that of 0.33% that was reported in 2018 (Figure 5)¹³; furthermore, the rate of those who require care in our country has been increasing over time. Because the long-term care certification rate is calculated by dividing the number of certified persons by the older people population, it is presumed that the rate is not directly affected by the aging

of the population but is rather caused by the increase in the percentage of older people aged 75 years old or over. However, in the future, there is a possibility that the certification rate will increase even more than the increase in the percentage of older people aged 75 years old or over; thus, the promotion of anti-frailty measures is required more than ever.

2 | CONCLUSIONS

Herein, we have summarized the impact of the COVID-19 pandemic on older people. The spread of COVID-19 infection has changed our lives and deprived us of many important things. However, it has also given us new ideas and bold strategies. As a gerontologist who has lived through this period, I argue that we must make use of this experience to help better realize long and healthy lives in the future.

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CONFLICTS OF INTEREST

Nothing to disclose.

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REFERENCES

1. Ministry of Health, Labor and Welfare The current and future role of the public long-term care insurance system [Internet]. Ministry of Health, Labor and Welfare; 2018. <https://www.mhlw.go.jp/content/0000213177.pdf>. Accessed August 5, 2020.
2. Yamada M, Arai H. Long-term care system in Japan. *Ann Geriatr Med Res*. 2020;24:174-180.
3. Yamada M, Arai H. Self-management group exercise extends healthy life expectancy in frail community-dwelling older adults. *Int J Environ Res Public Health*. 2017;14:531.
4. Yamada M, Kimura Y, Ishiyama D, et al. Effect of the COVID-19 epidemic on physical activity in community-dwelling older adults in Japan: a cross-sectional online survey. *J Nutr Health Aging*. 2020;24:948-950.
5. Tison GH, Avram R, Kuhar P, et al. Worldwide effect of COVID-19 on physical activity: a descriptive study. *Ann Intern Med*. 2020;173:767-770.
6. Yamada Y, Yoshida T, Nakagata T, Nanri H, Miyachi M. Letter to the Editor: age, sex, and regional differences in the effect of COVID-19 pandemic on objective physical activity in Japan: a 2-year nationwide longitudinal study. *J Nutr Health Aging*. 2021;25:1032-1033.
7. Yamada M, Kimura Y, Ishiyama D, et al. Letter to the Editor: recovery of physical activity among older Japanese adults since the first wave of the COVID-19 pandemic. *J Nutr Health Aging*. 2020;24:1036-1037.
8. Chhetri JK, Chan P, Arai H, et al. Prevention of COVID-19 in older adults: a brief guidance from the international association for gerontology and geriatrics (IAGG) Asia/Oceania region. *J Nutr Health Aging*. 2020;24:471-472.
9. Lim WS, Liang CK, Assantachai P, et al. COVID-19 and older people in Asia: Asian working Group for Sarcopenia calls to actions. *Geriatr Gerontol Int*. 2020;20:547-558.
10. Kamiya A, Noguchi M, Kibayashi T, Maeshima S, Osawa A, Arai H. Video demonstrating NCGG-HEPOP 2020 exercises for older adults. *Geriatr Gerontol Int*. 2021;21:871-872.
11. Yamada M, Kimura Y, Ishiyama D, et al. The influence of the COVID-19 pandemic on physical activity and new incidence of frailty among initially non-frail older adults in Japan: a follow-up online survey. *J Nutr Health Aging*. 2021;25:751-756.
12. Yamada M, Arai H. Does the COVID-19 pandemic robustly influence the incidence of frailty? *Geriatr Gerontol Int*. 2021;21:754-755.
13. <https://www.mhlw.go.jp/topics/0103/tp0329-1.html> (Japanese only). Accessed September 1, 2021.