

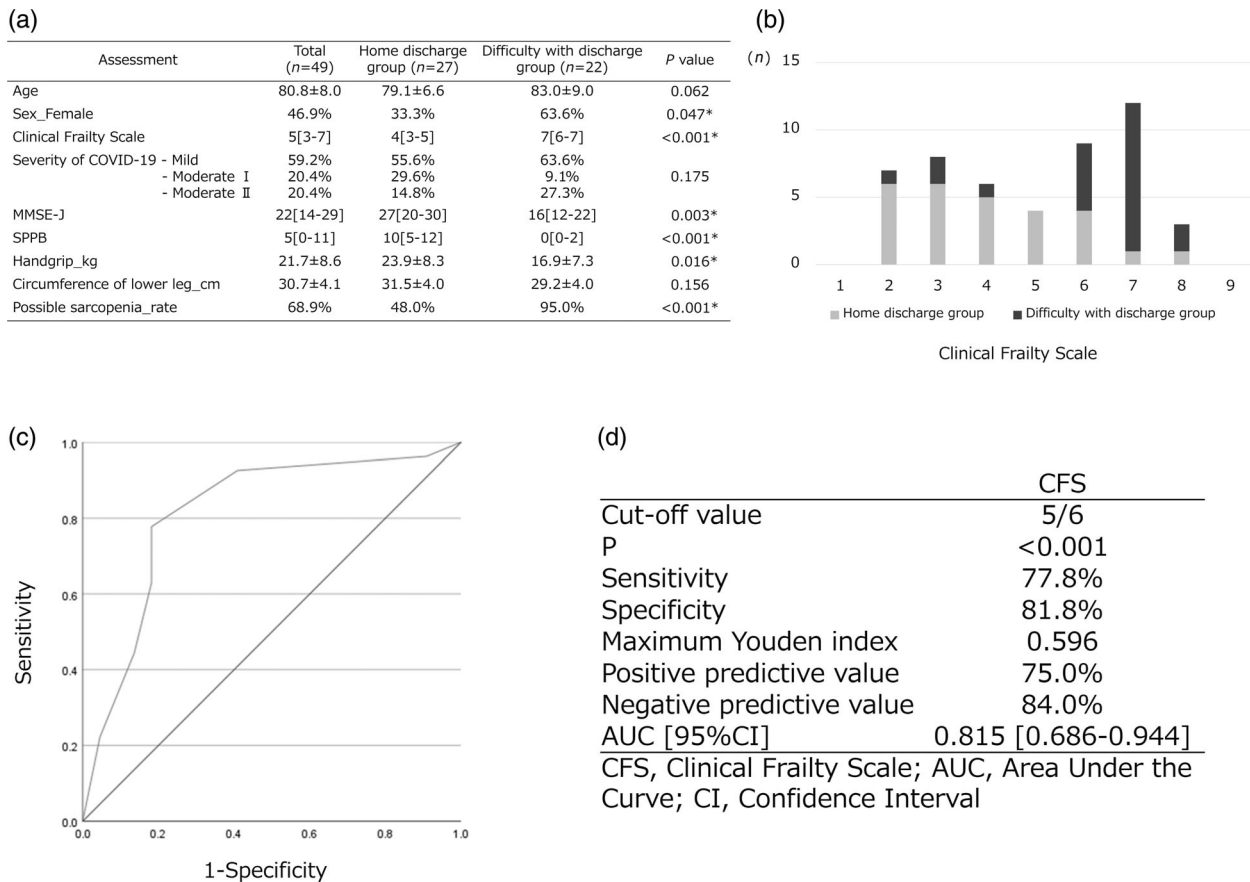
# Prediction of the possibility of return to home based on frailty assessment at the time of admission to the COVID-19 treatment unit

Dear Editor,

The worldwide pandemic of the novel coronavirus disease 2019 (COVID-19) has been prolonged.<sup>1,2</sup> Our center has established a ward dedicated to COVID-19 patients (COVID-19 Treatment Unit) and has been treating mainly older patients who have been judged to have mild to moderate disease. We have experienced many cases in which the patient could not be discharged home due to a decline in activities of daily living (ADLs) caused by physical inactivity during acute treatment for COVID-19. To clarify which patients have difficulty returning home, we investigated whether the degree of frailty at the time of admission of older SARS-CoV2-positive patients predicted whether they could

be discharged home after completion of the acute phase of treatment.

Of 58 SARS-CoV2 PCR-positive patients admitted to the COVID-19 Treatment Unit of the National Center for Geriatrics and Gerontology from January to March 2022, 49 (26 men/23 women), excluding nine patients who were aged <65 years, who had serious illness or were institutionalized before admission were included in the study, and medical record information was examined retrospectively. The degree of frailty was determined using the Japanese version of the Clinical Frailty Scale (CFS) translated by the Japan Geriatrics Society (2021).<sup>3</sup> The end-point was whether the patient could directly return home from the COVID-19 Treatment Unit. The patients were classified into two groups:



**Figure 1** Characteristics and calculation of cut-off values. (a) Comparison of the clinical characteristics between the “Home discharge” group and the “Difficulty with discharge” group. (b) Distribution of Clinical Frailty Scale scores in study participants. (c) Receiver operating characteristic curves for cutoff values of Clinical Frailty Scale scores for possible return home directly from COVID-19 Treatment Unit. (d) Sensitivity and specificity cut-off value for CFS. Data are presented as the mean ± standard deviation and median [interquartile range]. \* $P < 0.05$ , Mann–Whitney  $U$ -test,  $\chi^2$ -test, Fisher’s exact test. MMSE-J, Mini-Mental state Examination-Japanese; SPPB, Short Physical Performance Battery.

those who could be discharged home directly after completing the acute phase of COVID-19 treatment (home discharge group), and those who continued to be hospitalized and required rehabilitation (difficulty with discharge group). Secondary end-points included COVID-19 infection severity,<sup>4</sup> cognitive function (Mini-Mental State Examination-Japanese), physical function (Short Physical Performance Battery) and the presence of possible sarcopenia based on the Asian Working Group for Sarcopenia 2019 consensus criteria<sup>5</sup> (grip strength, lower leg circumference). Statistical analysis was carried out using the Mann-Whitney *U*-test,  $\chi^2$ -test or Fisher's exact test to compare the acceptability of discharge home and the secondary end-points, and receiver operating characteristic analysis was carried out with the acceptability of discharge home as the state variable and CFS as the test variable. We used SPSS version 28.0 (IBM, Armonk, NY, USA) with a significance level of 5%.

The mean age of the patients was  $80.8 \pm 8.0$  years, the average length of stay in the ward was  $10.2 \pm 3.1$  days, and was mild disease in 29 patients, moderate disease I in 10 patients and moderate disease II in 10 patients. Among all patients, 30.6% were not frail (CFS  $\leq 3$ ) before admission. Comparison of the two groups for each end-point, distribution of CFS and results of receiver operating characteristic analysis are shown in Figure 1. Comparison of the groups by whether or not the patient could be discharged home showed significant differences in sex, CFS, Mini-Mental State Examination-Japanese, Short Physical Performance Battery, grip strength and rate of possible sarcopenia. The cut-off value for CFS by receiver operating characteristic analysis was 5 out of 6 points, with a sensitivity of 77.8% and a specificity of 81.8%. The progress of the four patients with CFS of  $\leq 5$  who could not be discharged home was as follows: two patients had mild symptoms of COVID-19, but their discharge was postponed, because their high fever did not improve and their general condition was expected to deteriorate; one patient had mild symptoms of COVID-19, but had a history of respiratory disease and needed rehabilitation due to a tendency to decline in respiratory function; the other patient had a history of Parkinson's disease and needed physical rehabilitation before discharge because of difficulty in climbing stairs due to disuse during COVID-19 treatment.

These results show that approximately 70% of older patients admitted to the COVID-19 Treatment Unit had some form of frailty, and patients who could not be discharged home had significantly lower cognitive function, physical function, muscle strength and muscle mass, and reduced mental, psychological and physical reserves, even if their COVID-19 symptoms were relatively mild at admission. Patients who needed even minimal assistance with ADL (moderate frailty) were more likely to have been physically inactive due to isolation and reduced activity during treatment, and were more likely to have difficulty returning home.<sup>6,7</sup> However, even with a CFS of  $\geq 5$ , patients with pre-existing conditions or comorbidities affecting respiratory or physical function need to be carefully evaluated for discharge. The omicron variant is highly infectious, but has a low mortality rate.<sup>8</sup> As shown in the present study, even if the disease is mild and the patient is hospitalized for a short period of time, older people with a high prevalence of frailty and possible sarcopenia are likely to have impaired ADL. Therefore, acute care with appropriate physical rehabilitation and nutritional interventions is needed with the view of reintegration into society after treatment is completed.<sup>9</sup> The results of this study suggest that CFS is useful as a screening tool for determining the need for continued rehabilitation before returning home after completion of acute treatment.

Because this study was carried out at a single institution for a limited period of time, it cannot be generalized to all COVID-19 patients. Whether this is a trend specific to COVID-19 patients or is similar for other diseases requires further investigation. In the future, we would like to follow patients who had difficulty being discharged home, and clarify the long-term effects of COVID-19 on ADL in older people.

## Ethical considerations

The study protocol complied with the Declaration of Helsinki, and written informed consent was obtained from each participant. The ethics review board of the National Center for Geriatric and Gerontology approved the study (approval no. 1582).

## Funding source





This study was supported by The Research Funding for Longevity sciences (21–37) from National Center for Geriatrics and Gerontology (NCGG), Japan.

## Disclosure statement

The authors declare no conflict of interest.

## Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Koki Kawamura,  Aiko Osawa,  Masanori Tanimoto, Naoki Itoh, Toshihiro Matsuura,  Izumi Kondo and Hidenori Arai   
National Center for Geriatrics and Gerontology, Obu, Aichi, Japan

## References

- World Health Organization. WHO Coronavirus (COVID-19) Dashboard. [Cited 5 Apr 2022] Available from: <https://covid19.who.int/>
- Ministry of Health LaW. About COVID-19. [Cited 5 Apr 2022] Available from: [https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000164708\\_00079.html](https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000164708_00079.html)
- Rockwood K, Song X, MacKnight C *et al*. A global clinical measure of fitness and frailty in elderly people. *CMAJ* 2005; **173**: 489–495. <https://doi.org/10.1503/cmaj.050051>.
- Grant for Research Project for Promotion of Health and Labor Administration in 2021. *COVID-19 Clinical Practice Guide (Version 7.1)*. Tokyo, Japan: 2. Ministry of Health LaW, 2022.
- Chen LK, Woo J, Assantachai P *et al*. Asian working Group for Sarcopenia: 2019 consensus update on sarcopenia diagnosis and treatment. *J Am Med Dir Assoc* 2020; **21**: 300–307.e2. <https://doi.org/10.1016/j.jamda.2019.12.012>.
- Peterson MJ, Giuliani C, Morey MC *et al*. Physical activity as a preventative factor for frailty: the health, aging, and body composition study. *J Gerontol A Biol Sci Med Sci* 2009; **64**: 61–68. <https://doi.org/10.1093/gerona/gln001>.
- Evans SJ, Sayers M, Mitnitski A, Rockwood K. The risk of adverse outcomes in hospitalized older patients in relation to a frailty index based on a comprehensive geriatric assessment. *Age Aging* 2014; **43**: 127–132. <https://doi.org/10.1093/ageing/af156>.
- Bouzid D, Visseaux B, Kassassey C *et al*. Comparison of patients infected with Delta versus omicron COVID-19 variants presenting to

Paris emergency departments: a retrospective cohort study. *Ann Intern Med* 2022; 175: M22–M0308. <https://doi.org/10.7326/M22-0308>.  
 9 Pranata R, Henrina J, Lim MA *et al*. Clinical frailty scale and mortality in COVID-19: a systematic review and dose-response meta-analysis. *Arch Gerontol Geriatr* 2021; 93: 104324. <https://doi.org/10.1016/j.archger.2020.104324> Epub 2020 Dec 15.

**How to cite this article:** Kawamura K, Osawa A, Tanimoto M, *et al*. Prediction of the possibility of return to home based on frailty assessment at the time of admission to the COVID-19 treatment unit. *Geriatr. Gerontol. Int.* 2022;22:815–817. <https://doi.org/10.1111/ggi.14460>

## COMMENTS

# Factors related to a sense of security with medical and long-term care services among community-dwelling middle-aged and older adults in Japan: Methodological issues to avoid misinterpretation

Dear Editor-in-Chief,

I was interested to read the paper by Fujita and colleagues that was published in *Geriatrics and Gerontology International* in May 2022.<sup>1</sup> The authors aimed to assess the factors related to a sense of security regarding medical and long-term care services among community-dwelling middle-aged and older people. The results of multiple regression analysis demonstrated that a 1 unit increase in consultation for medical and long-term care (with medical professionals), and experience and place of death of a close person at a hospital led to a predicted increase of 0.079 and a decrease of –0.073 in a sense of security, respectively. Although interesting data were presented on the association between a sense of security and related factors, some methodological and statistical issues should be considered to avoid misinterpretation. In Fujita *et al.*'s study, clinical judgments were overlooked in the interpretation of regression coefficients, because clinically, a 0.079 increase and –0.073 decrease in the means of each score are negligible. A larger sample size can easily lead to a significant *P*-value.<sup>2</sup> When interpreting results, clinical importance carries more weight than statistical significance.

The original scale of “sense of security” in this paper seemed to be verified in both previous and present studies.<sup>3–5</sup> However, it was unclear whether the external validity was confirmed in previous studies. In particular, it was unclear whether the previous studies in the reference section of this paper confirmed the concurrent validity and predictive validity of the sense of security scale. A thorough discussion of the use of this scale is needed.

There were no associations between a sense of security and general trust in social capital.<sup>1</sup> Analyzing not only the main effect, but also the interaction in the regression model, might be necessary. In addition, as there are disagreements among researchers regarding the use of only a single item in the questionnaire for the measurement of general trust, further consideration is needed.

Finally, it should be discussed whether a single measure of sense of security can be treated as a representative value of the sense of security at a within-individual level. Just as emotional states, such as a sense of security, can vary at both the between- and within-person levels, so also can its causes, such as daily consultation and experience of medical and long-term care. Although

Fujita *et al.* described that their study was cross-sectional and exploratory research, micro-longitudinal research at the between-person level and within-person level might be expected.

## Disclosure statement

I declare that I have no conflicts of interest.

Ryuno Hirochika 

Kobe University, Graduate School of Health Sciences,  
Kobe, Japan

## References

- 1 Fujita J, Fukui S, Fujikawa A, Iwahara Y, Ishikawa T. Factors related to a sense of security with medical and long-term care services among community-dwelling middle-aged and older adults in Japan. *Geriatr Gerontol Int* 2022 Jun 16. <https://doi.org/10.1111/ggi.14417>. [Online ahead of print].
- 2 Yoshida T, Murai J. Various issues surrounding the use of multiple regression analysis in psychological research. *Jpn J Psychol* 2021;92:178–87. (Japanese)
- 3 Funk LM, Allan DE, Stajduhar KI. Palliative family caregivers' accounts of health care experiences: the importance of “security”. *Palliat Support Care* 2009; 7: 435–447.
- 4 Igarashi A, Miyashita M, Morita T *et al*. A scale for measuring feelings of support and security regarding cancer care in a region of Japan: a potential new endpoint of cancer care. *J Pain Symptom Manage* 2021; 43: 218–225.
- 5 Milberg A, Wahlberg R, Krevers B. Patients' sense of support within the family in the palliative care context: what are the influencing factors? *Psychooncology* 2014; 23: 1340–1349.

**How to cite this article:** Hirochika R. Factors related to a sense of security with medical and long-term care services among community-dwelling middle-aged and older adults in Japan: Methodological issues to avoid misinterpretation. *Geriatr. Gerontol. Int.* 2022;22:817. <https://doi.org/10.1111/ggi.14441>