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Changes in older people's activities during the Covid-19 pandemic in Japan

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LETTER TO THE EDITOR

TITLE: Changes in older people's activities during the Covid-19 pandemic in Japan

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RUNNING TITLE: Mobility during Covid19

KEY WORDS: COVID-19, mobility, older people, social distance message

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SUMMARY: Behaviors of older adults, the population most vulnerable to Covid-19, may be one of keys in tacking the virus as a country, though it is not usually covered in a mobility big data. Our unique IoT data shows older adults have considerably decreased their social and physical activities in response to social distancing messages from community.

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DECLARATION OF COMPETING INTERESTS

None declared.

INSTITUTIONAL REVIEW BOARD APPROVAL

The Institutional Review Board (IRB) of Kyoto University approved the study (R1669). We obtained written IC from all participants. We analyzed data anonymously using research ID while we securely use a resident name table linking to the research ID for making individual feedback sheets. This research was conducted in accordance with the principles embodied in the Declaration of Helsinki

Changes in older people's activities during the Covid-19 pandemic in Japan

The rapid spread of the coronavirus disease 2019 (Covid-19) pandemic has led state and local leaders to introduce social/physical distancing and self-isolation. Aggregated mobility data collected by private companies has been available to help understand the impact of such measures on population mobility patterns.[1] However, because the older population is not likely to be represented in such data, partly due to their technology adaptation issues, [2, 3] we may not know how older adults have reacted to these community/policy messages.

We had access to a unique dataset comprising behavior logs of older adults living in a continuing care retirement community (CCRC), which enabled us to estimate the time spent in common areas and walking distance within the CCRC. We analyzed data from 114 residents aged 67 to 92, 70.4 % female. All of them were residents in independent apartment units and carried a beacon transmitter daily as part of a research project since September 2018. [4]

During the follow-up period from January 1, 2020 until May 25, 2020, there were two major messages related to Covid-19 to senior residents: first, the CCRC announced the cancellation of all upcoming in-facility events/exhibitions and the closure of some common facilities as a

precaution measure (24 February); subsequently, the state of emergency was declared by the prime minister, asking people to stay at home (7 April), and this was eventually lifted by the end of the follow-up period. Figure 1 shows (a) daily time spent in common areas and (b) daily walking distance over the follow-up period. According to our interrupted time series analysis,[5] the time spent in common areas decreased immediately following the CCRC announcement by 12.7% (10.9 min [95% confidence interval (CI) = -17.2, -4.5]). After the CCRC announcement until the state of emergency declaration, the time spent in common areas remained at a low level, while the walking distance gradually decreased at a rate of 0.5% (5.4 m/day [95% CI= -10.4, -0.4]). The state of emergency declaration had a further significant acute impact on the time spent in common areas by 7.8% decrease (6.5 min/day [95% CI = -11.1, -1.8]) and the daily walking distance by 20.3% decrease (-186.8 m [95%CI = -333.0, -40.6]) (Table S1).

The time spent in common areas is likely to be related to face-to-face social interaction, which is usually an important aspect of healthy ageing; however, such interaction is to be avoided during the Covid-19 pandemic. The data showed that older adults reduced their social time largely in response to the message from their immediate community, although there was no explicit request to avoid social contact. The state of emergency, which was not enforceable, had a further reducing effect on social time. A known characteristic of Japanese

individuals quoted as “the government asked, people listened” has been suggested as one of the possible reasons for the relatively low mortality rate of Covid-19 as of 15 July 2020 in Japan without adopting draconian measures for tackling the virus.[6] Our study seems to support this hypothesis, applicable at least to the population most vulnerable to Covid-19. On the other hand, the reduction of walking distance over the period needs a different implication. It is a physical activity conducted individually or as a pair and residents were under no restrictions in moving in and around the various buildings in the CCRC during the period. Psychological impact from Covid-19-related messages on people’s behaviors should be concerned here and the possible health impact of these suppressing social and physical activities during the pandemic could be an important research issue in gerontology in the future.

51 **FIGURE CAPTIONS**

52

53 Figure 1

54 Title: Changes in levels and trends of older adults' activities during the Covid-19 pandemic

55

56 Description: Means of daily time spent in common area (a) and walking distance (b) between January 1
57 and May 24, 2020. The left dotted line indicates the day when the continuing care retirement community
58 (CCRC) announced the cancellation of all in-facility events and closure of some facilities (Feb 24, 2020),
59 and the right dotted line represents the day when the state of emergency was declared (April 7, 2020).

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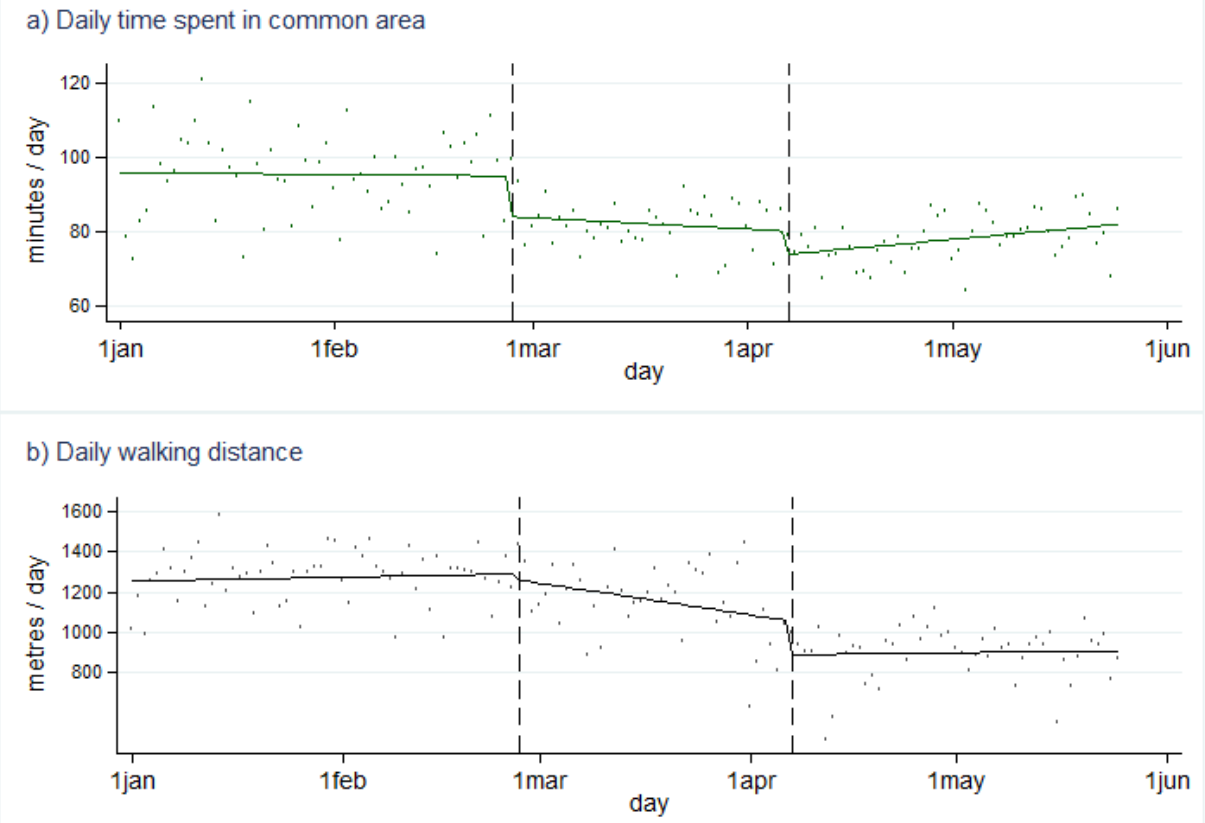
a) Daily time spent in common area
minutes / day
120
100
80
60
1jan
1feb
1mar
1apr
1may
1jun
day
b) Daily walking distance
metres / day
1600
1400
1200
1000
800
1jan
1feb
1mar
1apr
1may
1jun
day