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## Research Letter

## Nursing Home Resident Weight Loss During Coronavirus Disease 2019 Restrictions



### To the Editor:

To mitigate spread of the 2019 novel coronavirus (SARS-CoV-2), a Chicago area nursing home ceased all nonessential visitors on March 14, 2020 and replaced group meals with in-room delivery beginning March 23 following Center for Medicare and Medicaid Services and Department of Public Health guidelines.<sup>1</sup> Residents requiring assistance ate with a nursing assistant at staggered times. Intervals between meals were uneven, resulting in reduced appetite and consumption when meals were closer together than usual. Group activities ceased and residents were encouraged to stay in their rooms, eliminating a common source of physical activity. This restriction also reduced mealtime conversation and social interactions among residents that are known to support consumption during meals.<sup>2</sup> Finally, family visits ceased so residents did not receive outside food. This study evaluated the effects of these restrictions on nursing home residents' weight. We conducted a secondary data analysis of nursing home resident care plan weights from a single 240-bed nonprofit nursing home located in a suburban area, using all residents with at least 1 weight measurement per month from December 2019 through April 2020. For residents with multiple weight measurements in a month, we calculated an average value for the month. We defined a clinically significant weight change episode as  $\geq 5\%$  within a 30-day period or  $\geq 10\%$  within a 180-day period based on the definition in the Minimum Data Set.<sup>3</sup> A binary covariate was created to represent whether weights were recorded before (December, January, February) or after (April) implementing restrictions. March weights were excluded because some were made before and others after implementing nursing home restrictions. Weight measurements were nested within persons so a mixed model was estimated to account for dependencies between those observations.<sup>4</sup> This model included a fixed effect and random slope for the binary restrictions variable (within-person), and fixed effects for the time trend (within-person), age and sex (between-person), and unstructured residual covariances. Analyses were conducted in SPSS v 26 (IBM, Armonk, NY). The average age of the sample ( $n = 166$ ) was 86.9 years (range = 61–102 years) and 67.5% were female; 60.8% of residents had a cognitive impairment diagnosis and 52.2% had a depression or anxiety diagnosis. Mean December weight in pounds was  $156.75 \pm 42.05$ , January weight was  $156.23 \pm 41.10$ , February weight was  $156.00 \pm 41.52$ , March weight was  $154.77 \pm 41.20$ , and April weight was  $151.82 \pm 40.23$ . From February to April, 67%

( $n = 111$ ) of residents lost weight, and 23% ( $n = 39$ ) lost over 5% body weight. From December to April, 11% ( $n = 18$ ) lost  $>10\%$  body weight [vs 2% ( $n = 3$ ) who gained  $>10\%$  weight]. Most of the weight variability over a short-time period in this diverse sample was between people rather than within people (intraclass coefficient = .98). Coefficients from the mixed model are shown in Table 1. Older adults weighed 3.68 lb less after implementing nursing home restrictions than they averaged in the 3 months before restrictions before. This model adjusted for a linear trend of time from December through April (which was not statistically significant by itself), age-related weight differences of  $-1.92$  lb/year, and sex differences. Men weighed an average of 23.7 lb more than women. The random effect for the nursing home restrictions variable indicated that responses varied significantly between people. Significant weight loss occurred among nursing home residents in the month following implementation of restrictions on visitors and group dining due to COVID-19. Social distancing slows disease spread<sup>5</sup> but can also have unintended consequences and adverse physical health effects that impact vulnerable older adults. A comprehensive social distancing strategy should include countermeasures for those unintended consequences. Nursing homes must be diligent about weight monitoring and enriching care plans with nutritional and physical activity interventions to preserve nonlean and lean body mass. Other measures to address adequate food intake include training and engaging all staff (including administrators and activities staff) on meal assistance and engaging family caregivers and volunteers to assist; however, Centers for Medicare and Medicaid Services guidelines prohibit nonnursing staff from assisting with feeding and all family caregivers and volunteers were restricted from entering the nursing home during the COVID pandemic. Given the current strict regulations in the nursing home industry, policy changes that allow some flexibility for nursing

**Table 1**  
Multilevel Model Coefficients for Predictors of Weight Loss among Nursing Home Residents

Parameters	Estimate	SE	95% CI	Test Statistic	P
<b>Fixed effects</b>					
Intercept	151.68	3.52	144.72, 158.64	43.06	.000
Age	-1.92	0.33	-2.58, -1.26	-5.74	.000
Sex	23.74	6.90	10.11, 37.38	3.44	.001
Mo	-0.24	0.26	-0.76, 0.29	-0.89	.37
NH restrictions	-3.68	1.00	-5.65, -1.71	-3.68	.00
<b>Variance components</b>					
Intercept (1)	1393.94	164.18	1106.60, 1755.89	8.49	.000
NH restrictions (2)	27.32	6.81	16.76, 44.54	4.01	.000
Covariance (1, 2)	-58.57	23.90	-106.41, -11.73	-2.45	.014
Residual	20.91	1.72	17.80, 24.56	12.19	.000

CI, confidence interval; SE, standard error.

Age was centered around the mean of 86.91 years. Sex was coded as 0 (women) and 1 (men). Month was coded as 0 (December), 1 (January), 2 (February), and 4 (April). NH restrictions were coded as 0 (December/January/February) or 1 (April). Test statistics for fixed effects and variance components were *t*-tests and Wald *z*, respectively. NH restrictions are the time periods where nursing home restrictions were implemented.

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home operators in emergent situations to utilize creative strategies such as repurposing larger spaces for physical distant group dining or permitting private-duty caregivers may assist with feeding and ultimately, maintain resident health and well-being. Limitations of this study include the single site for data collection and the lack of randomization to restrictions. Research is needed to identify other unintended consequences of social distancing and evaluate the efficacy of countermeasures to protect the well-being of nursing home residents.

### Supplementary Data

Supplementary data related to this article can be found online at <https://doi.org/10.1016/j.jamda.2020.08.032>.

### References

1. Services CfMaM. Guidance for Infection Control and Prevention of Coronavirus Disease 2019 in Nursing Homes. Baltimore, MD: Centers for Medicare and Medicaid Services; 2020.
2. Palese A, Bressan V, Kasa T, et al. Interventions maintaining eating independence in nursing home residents: A multicentre qualitative study. *BMC Geriatr* 2018; 18:292.
3. Services Centers for Medicare and Medicaid Services. Long-Term Care Facility Resident Assessment Instrument 3.0, User's Manual. Baltimore, MD: Centers for Medicare and Medicaid Services; 2018.
4. Snijders TAB, Bosker RJ. Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling. 2nd ed. Thousand Oaks, CA: Sage Publishers; 2012.
5. Courtemanche C, Garuccio J, Le A, et al. Strong social distancing measures in the United States reduced the COVID-19 growth rate. *Health Affairs* 2020;39 (Project Hope).

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## The Impact of COVID-19 Measures on Well-Being of Older Long-Term Care Facility Residents in the Netherlands



The fear of the new Coronavirus Disease 2019 (COVID-19) globally forced health authorities to take drastic actions to prevent spreading of infections among citizens. Long-term care facility (LTCF) residents are especially susceptible for fatal or severe outcomes of COVID-19 infection because of high prevalence of frailty and comorbidity, sometimes atypical COVID-19 symptoms, and circumstances such as insufficient personal protective equipment and testing capacity, and staff working while having mild symptoms.<sup>1,2</sup> On March 20, 2020, the Dutch government implemented a visitor ban in all LTCFs. In many instances physical visits were replaced by social contact via telephone and video calls, or through windows. Many LTCFs closed social facilities and stopped daytime

programs. Although the LTCF's policy prioritized safety, scarce attention was paid to well-being and autonomy. The study aims to gain insight into the consequences of COVID-19 measures on loneliness, mood, and behavioral problems in residents in Dutch LTCFs.

### Methods

A cross-sectional design was applied. Data were collected anonymously between April 30 and May 27, 2020, in 3 independent samples of residents without severe cognitive impairment (CI), family members of residents with and without CI, and care staff from all unit-types in Dutch LTCFs (nursing homes and residential care facilities), using a semi-open online survey. A total of 357 LTCF organizations were invited by e-mail to participate by distributing information about the study and a link to the survey to eligible participants. Classification of residents' loneliness level was assessed with 1 item.<sup>3</sup> Mood in residents was assessed with the Mental Health Inventory 5-index (MHI-5; range 0–100, scores <60 indicate poor mental health).<sup>4</sup> Change in frequency of residents' mood symptoms since the start of the visitor ban was assessed among relatives who had contact with residents in the 4 weeks before the assessment. Change in severity of problem behavior on unit-level was assessed among staff working in direct care, using 10 domains of behavioral functioning from the Neuropsychiatric Inventory.<sup>5</sup> Descriptive statistics, frequencies, independent *t* tests and  $\chi^2$  tests were performed using SPSS 25.0 (IBM Corp, Armonk, NY).

### Results

A total of 193 residents participated; 1387 of 1609 relatives had spoken with a resident in the past 4 weeks; 849 (61%) were relatives of a resident with CI. There were 623 of 811 care professionals who worked in direct care; 246 (39%) in psychogeriatric units.

Loneliness was reported by 149 (77%) residents: 50% perceived themselves as moderately, 16% as strongly, and 11% as very strongly lonely. Relatives and staff classified respondents as not lonely (14%; 19%, respectively), moderately (50%; 34%), strongly (25%; 31%), and very lonely (11%; 16%). Staff classified residents without CI more lonely than residents with CI ( $P < .006$ ).

Mean MHI-5 score for residents was 56.6 (SD 20.4), 51% had scores <60. Only 27% of relatives reported no change in residents' mood status. On average, the frequency increased in 2.2 (SD 1.9) of 6 mood symptoms (Figure 1). Changes were reported more often in residents without CI ( $P = .035$ ). Happiness was less often and sadness was more often reported by family of residents without CI than with CI ( $P = .000$ ;  $P = .008$ , respectively).

More than half of the staff reported an increase in severity of agitation, depression, anxiety, and irritability (Figure 1). On average, an increased severity in 4.0 (SD 2.7) of 10 problem behaviors was reported on units. Increased severity was reported more often by staff of nonpsychogeriatric units as compared with psychogeriatric units [mean 4.4 (SD 2.5) vs 3.3 (SD 2.8);  $P = .000$ ]. The largest differences were found for increased severity of symptoms in appetite disorders, respectively nonpsychogeriatric units (57%) vs psychogeriatric units (22%), depression (78% vs 53%), and anxiety (76% vs 52%).

### Conclusions

During the COVID-19 measures, well-being of older LTCF residents was severely affected. Six to 10 weeks after implementation of the visitor ban, high levels of loneliness, depression, and a significant exacerbation in mood and behavioral problems were reported. Residents without CI seemed to be the most affected. The

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