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## Featured Article

# The influence of the down- and upscaling of activities in long-term care facilities during the COVID-19 visitor ban on caregivers' exhaustion and ability to provide care and support: A questionnaire study



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## ABSTRACT

In the Netherlands, a national visitor-ban was in place in LTCFs during the first outbreak of COVID-19 in 2020. Meaningful activities were cancelled or downscaled, while others were performed more often. It is known that a lack of activities has several negative effects on residents, while the impact on caregivers remains largely unexplored. Here we investigate the influence of the down- and upscaling of activities on caregivers' physical and emotional exhaustion and their perceived ability to provide care and support. Downscaling of activities for residents, in particular watching television and musical activities, had a negative impact on caregivers' emotional exhaustion. The downscaling of watching television increased caregivers' physical exhaustion. Furthermore, the downscaling of both activities had a negative impact on caregivers' perceived ability to provide ADL care and emotional support. This study triggers the need for more knowledge about the function of meaningful activities for residents, from a LTCF caregivers' perspective.

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## Introduction

In order to reduce COVID-19 transmissions within long-term care facilities (LTCF), a nationwide visitor ban for LTCFs was put in place in the Netherlands from 20 March 2020 onwards. Measures as part of the ban included: restricting residents from going outside their apartment or unit or facility, the elimination of communal dining, prohibiting anyone not deemed critical for (medical) care from entering the facilities, and the cancellation of all group activities taking place outside the unit, while some regular activities were replaced by alternative activities inside the unit.<sup>1–5</sup> When the visitor-ban was eased on 15 June 2020, LTCFs allowed visits under certain conditions and activities were re-started, albeit often in adapted form.<sup>6</sup> This sudden change in working conditions, everyday working routines and confrontation with acute care for those infected by COVID-19 imposes an additional strain on perceived emotional burden, an increase in stress and PTSD related symptoms in nursing and care staff working in healthcare including LTCFs.<sup>7,8</sup> An important aspect of the work of LTCF caregivers entails organizing and guiding meaningful activities for LTCF residents. Meaningful activities, which include a wide range of activities and interventions that are relevant and enjoyable to a

person,<sup>9</sup> are known to be beneficial for people living in LTCFs.<sup>10,11</sup> They can enhance their quality of life and social contacts, increase cognitive abilities and provide structure in daily life.<sup>12</sup> Simultaneously, being able to provide meaningful activities increases caregivers' sense of purpose and satisfaction of their everyday work, feelings that are known to safeguard against stress and burn-out.

The ability of nursing and care staff to organize alternative activities was obstructed by their additional responsibilities, related to COVID-19 infections in LTCFs and digitally involving family caregivers.<sup>13</sup> Besides effecting residents and their family members this change in organized activities had negative effects on caregivers as well. Caregivers had to deal with an increase in challenging behaviour of residents which have been attributed to changes in organized activities due to the COVID-19 measures.<sup>14</sup> Furthermore, caregivers were confronted with concerns of family members that their loved ones might "socially die" because of the lack of activities and social contact.<sup>15</sup> Indeed, previous research showed that an increase in activities was found to be among the major needs of residents during the pandemic.<sup>16</sup> All these changes, occurring throughout the pandemic, had an emotional impact on staff,<sup>16</sup> especially nursing home staff.<sup>17</sup> Aside from the emotional impact, nursing staff were also at increased risk for burnout and feelings of low personal accomplishment, due to the COVID-19 outbreak. These feelings are usually characterised by dissatisfaction with work results, as professional achievements fall

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below personal expectations.<sup>18</sup> Similar observations are made for healthcare professionals who provide acute care for COVID-19 patients which seem to be associated with an increase in symptoms of depression, anxiety, burn-out and PTSD.<sup>8</sup> Hence, LTCF staff is doubly affected by COVID-19, providing acute care for those infected and at the same time being unable to provide regular meaningful daily activities.

To date, research primarily focused on the impact of COVID-19 infections<sup>19</sup> and measures preventing COVID-19 transmissions on residents' wellbeing,<sup>20</sup> social isolation,<sup>21</sup> challenging behaviour,<sup>14</sup> family presence and communication,<sup>22</sup> as well as the particular influence of the visitor-ban.<sup>23,24</sup> It remains unclear to what extent the up- and downscaling of activities influenced caregivers' perceived ability to provide care and support and their physical and emotional exhaustion. In view of the importance of meaningful activities for both residents' wellbeing and caregivers, this paper aims to explore to what extent the down- and upscaling of activities during and shortly after the visitor-ban influenced caregivers' physical and emotional exhaustion and their ability to provide care and support, while taking into account specific factors known to impact professional caregivers during the COVID-19 pandemic.

## Methods

The results presented in this paper were obtained as part of a larger study that examined the impact of social isolation during the COVID-19 pandemic on socially vulnerable populations in the Netherlands ([www.coronatijden.nl](http://www.coronatijden.nl)).

### Design

Independent cross-sectional surveys were conducted amongst professional caregivers in LTCFs in the Netherlands on two moments in time. Data were anonymous and digitally collected between April 30 and May 27, 2020 (T1, six to ten weeks after implementation of the visitor-ban, during the first wave of the COVID-19 pandemic) and between June 23 and July 21, 2020 (T2, one to five weeks after the visitor-ban became less restricted). This is a sub-study of a larger data collection focussing on the impact of social isolation in nursing homes, focussing on residents, their family members and professional caregivers. Medical ethical approval for the study was provided by the Medical Ethical Committee of Amsterdam Institute for Social Science Research, the Netherlands.

### Setting and participants

Dutch LTCFs encompass nursing homes and residential care facilities. In nursing homes, residents have a private bedroom and usually share a communal living room with eight to twelve other residents. A unit can contain more than one living room. In residential care facilities, people live in their own apartments, and communal spaces for sharing meals, coffees, day-time activities or to socialize in the facility are available. Professional caregivers with different levels of training provide direct care. For this study, data were used from nurse aides and nursing assistants with two years of secondary vocational training; certified nursing assistants with two to three years of secondary vocational training; registered nurses with four years of secondary-vocational training; bachelor-educated registered nurses; and master-educated nurse practitioners.<sup>25</sup>

### Measures

The questionnaire was specifically developed for the study and contained questions on the demographics of participants (e.g., age, gender, professional level) and LTCFs characteristics (e.g., type of

facility: nursing home, residential care home or other type of facility, facility size (number of residents), type of care unit (psychogeriatric (PG) or somatic unit), number of residents staying at the unit, presence of current COVID-19 contaminations, whether residents had contact with relatives, if one fixed visitor per resident was allowed on the unit (only at T2), if multiple visitors per resident were allowed on the unit (only at T2), and if volunteers were allowed on the unit (only at T2)). Furthermore, in order to gauge residents' freedom of movement caregivers had to indicate whether residents were allowed to move freely in the unit and garden or not (by indicating: 'yes, with regular restrictions', 'only in the facility', 'no, only partly in the facility', 'no, only in residents on unit', 'no, residents are not allowed outside their room'). More importantly, the questionnaire contained themes relevant to the impact of COVID-19 in LTCFs. At T1 caregivers were asked to indicate on a five-point Likert scale the change in frequency of organized activities as compared to the period before the visitor-ban during the 'normal situation'. At T2 caregivers were requested to indicate the change frequency of the similar activities as compared to four weeks before the assessment. The included activities were physical/movement activities, creative activities, musical activities, living room moments (e.g. playing games, conversations), sharing meals together, watching television together, and household activities (cooking together, setting the table). Answer options were 'much less often', 'less often', 'just as often', 'more often', and 'much more often'.

The perceived ability to provide adequate care and emotional support were assessed by two questions. 'Currently I am well able to provide daily care to residents', and 'Currently I am well able to provide emotional support to residents'. Answers were provided on a 5-point Likert scale ('strongly disagree', 'disagree', 'neutral', 'agree', 'strongly agree').

Physical and emotional exhaustion were assessed with two questions from the Copenhagen Burnout Inventory<sup>26</sup>: 'How often are you physically exhausted?', and 'How often are you emotionally exhausted'. Answers were provided on a 5-point Likert scale ('always', 'often', 'sometimes', 'seldom', 'never/almost never').

### Procedure

An open invitation to participate was sent by email to 357 Dutch LTCF organizations which were registered nationally as nursing home care providers under the Chronic Care Act (W LZ). Care organizations were requested to distribute the invitation, the study information and the link to the online survey within their organisation via their digital channels to residents, family members and caregivers. This approach was chosen to minimize the burden for organisations. Because of this approach, we are unable to report the total number of invitations sent and participation rate. Participation was voluntary and anonymous, and respondents completed a digital informed consent form before starting the survey. In this paper, only data from caregivers are included in the analyses due to the nature of the research questions.

### Analysis

Two multivariate regression analyses (MANOVA) were performed. Only completed questionnaires were included in the analysis. In the first analysis, the effects of the up- and downscaling of activities on caregivers' physical and emotional exhaustion were examined, and in the second analysis the effects on care professionals' ability to provide adequate care and emotional support were studied. We opted for this multivariate approach due to the high correlation between the physical and emotional exhaustion subscales ( $r = .68, p < 0.001$ ) and between the providing care and providing emotional support subscales ( $r = .73, p < 0.001$ ). The regression models were

constructed with seven regressors (one for each activity domain) that coded for the downscaling (coding for both the response options 'much less often' and 'less often'), upscaling (coding for both the response options 'much more often' and 'more often') or no change (coding for the response option 'equally often') in frequency in the amount of activity provided to residents. No change in frequency was used as reference group. Type of facility (nursing home, residential care home, other facility; nursing home serving as reference group), current COVID-19 infections in the facility (yes or no; no serving a reference group), faculty size (small < 40 residents, average 40 to 100 residents and larger > 100 residents; large serving as reference group), and moment of measurement (T1-during ban or T2-after ban; T1 serving as reference group) were included as control variables in the regression model.

As a final step separate regression analyses were conducted for each dependent variable separately to characterise the possible effects of up- and downscaling of activities on caregivers' physical, emotional exhaustion, providing care and providing emotional support. Due to the presence of heteroskedastic in the regression residuals, bootstrapping was applied to regression analysis using 1000 replications in order to minimize its effects on the results.

All of the statistical analyses were performed using STATA 16.1 (Stata Corp L.L.C, 2019) and the *manova*, *mreg* and *regress* packages.

## Results

At T1 and T2, 623 respectively 241 professional caregivers participated. Respondent characteristics did not differ significantly between both measurements (Table 1); the vast majority of respondents was female, with an average age of around 46–47 years. Over 65% of the respondents were certified nursing assistants. Facility characteristics did differ between both measurements. At T2, more respondents worked in a residential care facility and fewer in a nursing home, as compared to T1 ( $p < 0.000$ ), and more respondents worked in a psychogeriatric (PG)-unit ( $p = 0.016$ ). At T2, 3.7% of the respondents reported COVID-19 infections in the facility, compared to 48.3% at T1. The freedom of movement for residents was also significantly higher at T2 and 90.9% of the respondents reported that multiple fixed visitors were allowed.

**Table 1**  
Respondent demographics and characteristics of the LTCFs in which they are working, assessed in two cross-sectional surveys. Significant p-values are marked in bold ( $p < .05$ ).

| Variable           |  | T1 (n = 623)      | T2 (n = 241)       | p            |
|--------------------|--|-------------------|--------------------|--------------|
| Age                | Mean age (SD)  | 45.8 (SD = 13.04) | 46.91 (SD = 12.35) | 0.254        |
| Gender             | Female (%)   | 592 (95.0%)       | 232 (96.3%)        | 0.160        |
| Professional level | Nurse aide (%)   | 17 (2.7%)         | 7 (2.9%)           | 0.860        |
|                    | Nursing assistant (%)                                    | 71 (11.4%)        | 29 (12.0%)         |              |
|                    | Certified nursing assistant (%)                          | 411 (66.0%)       | 157 (65.1%)        |              |
|                    | Registered nurse (%)                                     | 102 (16.4%)       | 38 (15.8%)         |              |
|                    | Bachelor-educated registered nurse (%)                   | 19 (3.0%)         | 10 (4.1%)          |              |
|                    | Master-educated nurse practitioner (%)                   | 3 (0.5%)          | 0 (0.0%)           |              |
| Type of facility   | Nursing home (%)   | 346 (55.5%)       | 112 (46.5%)        | <b>0.000</b> |
|                    | Residential care home (%)                                | 245 (39.3%)       | 106 (44.0%)        |              |
|                    | Other facility (%)                                       | 32 (5.1%)         | 23 (9.5%)          |              |
| Facility size      | Large > 100 residents (%)                                | 158 (25.6%)       | 55 (22.8%)         | 0.686        |
|                    | Middle 40–100 residents (%)                              | 214 (34.7%)       | 86 (35.7%)         |              |
|                    | Small < 40 residents (%)                                 | 244 (39.6%)       | 100 (41.5%)        |              |
| Unit               | PG unit (%)  | 246 (39.5%)       | 117 (48.5%)        | <b>0.016</b> |
|                    | Mean number of residents in unit (SD)                    | 17.33 (SD = 9.78) | 16.41 (SD = 10.10) | 0.239        |
| Measures           | COVID-19 in facility (%)                                 | 301 (48.3%)       | 9 (3.7%)           | <b>0.000</b> |
|                    | Freedom of movement (including regular restrictions) (%) | 299 (48.0%)       | 195 (80.9%)        | <b>0.000</b> |
|                    | Movement restrictions (%)                                | 309 (49.6%)       | 33 (13.7%)         |              |
|                    | All resident had contact with relatives (%)              | 347 (55.7%)       | 160 (66.4%)        | <b>0.004</b> |
|                    | One fixed visitor (%)                                    | -                 | 20 (8.3%)          |              |
|                    | Multiple fixed visitors (%)                              | -                 | 219 (90.9%)        |              |
|                    | Volunteers active (%)                                    | -                 | 119 (49.8%)        |              |

Due to the fact that not all respondents filled in all of the questions that were relevant for the current analyses, the data of 579 respondents were included in the main regression analyses. The missing data was distributed in following fashion per regressor of interest: physical/movement activities ( $n=4$ ), creative activities ( $n=15$ ), musical activities ( $n=21$ ), living room moments ( $n=16$ ), sharing meals together ( $n=36$ ), watching television together ( $n=165$ ), household activities ( $n=237$ ), faculty size ( $n=7$ ) and COVID-19 infections ( $n=10$ ).

### Change in frequency of activities

During the visitor-ban (T1), downscaling of all activities was reported by at least one third of the respondents (Figure 1). In particular activities performed outside the unit, such as physical, creative and musical activities, were often reported to be downscaled. On the other hand, approximately one quarter to one third of the respondents reported that a number of activities was organized (much) more often during T1, including living room moments, musical activities and creative activities. The distribution of the answers changed significantly at T2 for all activities ( $p < 0.000$ ), showing larger proportions for the upscaling of activities and smaller proportions for downscaling.

### Caregiver physical and emotional exhaustion

The MANOVA showed a significant Wilks'  $\lambda$  of the overall model of predictors on physical and emotional exhaustion ( $F(40,1114) = 1.90$ ,  $p < .001$ ). The main individual predictors of the activity 'watching television together',  $F(4, 1114) = 3.25$ ,  $p < .05$ , current COVID-19 contaminations,  $F(2, 557) = 10.12$ ,  $p < .001$ , and status of visitor-ban,  $F(2, 557) = 7.234$ ,  $p < .001$ , showed a significant statistical effect. Physical exhaustion was associated with a decrease in the frequency of watching television together ( $\beta = .53$ , 95% CI: .17, .88,  $p < .01$ ), presence of COVID-19 contaminations in the LTCF ( $\beta = .35$ , 95% CI: .17, .53,  $p < .001$ ), and alleviation of the visitor-ban ( $\beta = .33$ , 95% CI: .12, .54,  $p < .01$ ). A decrease in the frequencies of undertaking musical activities and watching television with residents showed positive associations with emotional exhaustion (respectively  $\beta = .26$ , 95% CI: .00, .51,  $p < .05$ ;  $\beta = .49$ , 95% CI: .12, .86,  $p < .05$ ). As did current COVID-19

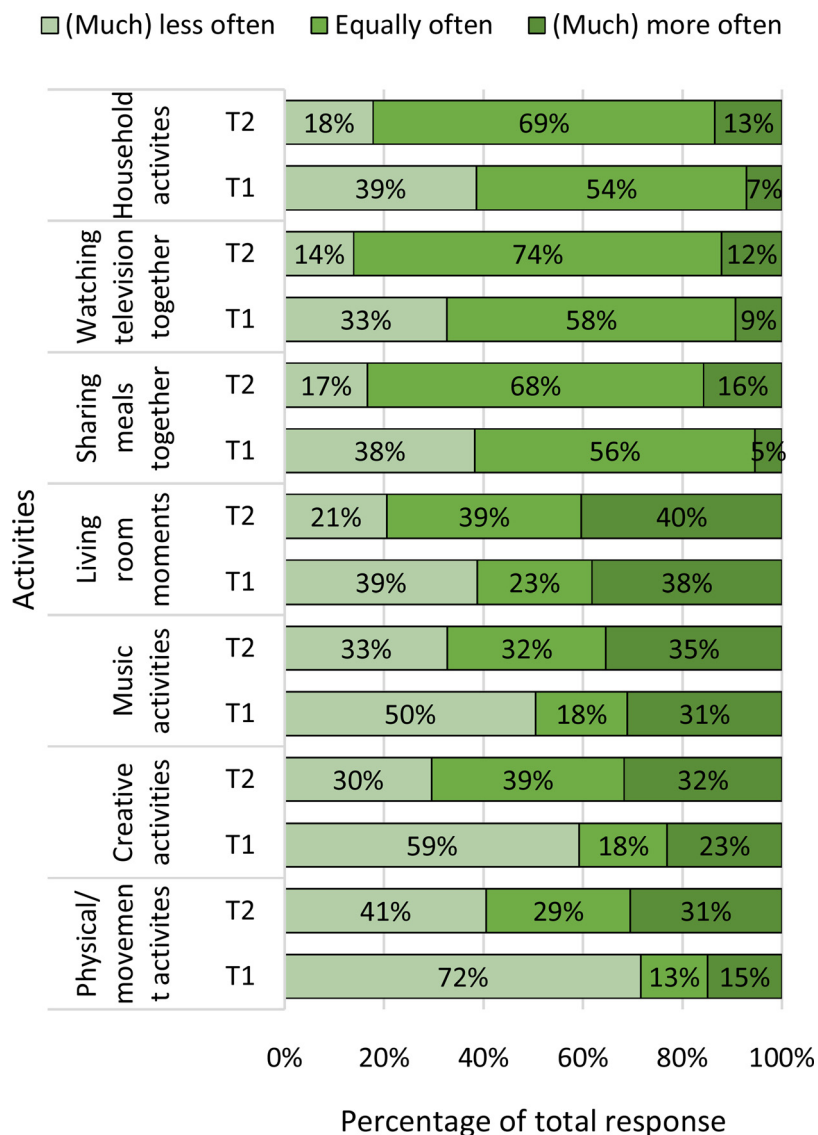


Figure 1. Change in the organization of activities for residents according to caregivers during T1 and T2.

contaminations, and alleviation of the visitor-ban (respectively  $\beta = .44$ , 95%CI: .24, .64,  $p < .001$ ;  $\beta = .42$ , 95%CI: .20, .63,  $p < .001$ ). See Table 2.

television ( $\beta = -.52$ , 95% CI:  $-.85, -.17$ ,  $p < .01$ ). See Table 3 for the regression coefficients of all predictors.

Caregivers' perceived ability of providing ADL care and emotional support

Wilks'  $\lambda$  of the multivariate model was significant for the full model, showing an overall effect of the predictors on both caregivers' perceived ability of providing ADL care and emotional support ( $F(4, 1114) = 1.44$ ,  $p < .05$ ). The individual multivariate predictors revealed a significant statistical effect for watching television together,  $F(4, 1114) = 2.54$ ,  $p < .05$  and facility type,  $F(4, 1114) = 3.41$ ,  $p < .01$ . Caregivers' perception of their ability to provide adequate ADL care was negatively associated with a decrease in the frequency of musical activities and watching television (respectively  $\beta = -.32$ , 95% CI:  $-.51, -.12$ ,  $p < .01$ ;  $\beta = -.47$ , 95% CI:  $-.81, -.14$ ,  $p < .01$ ). Furthermore, caregivers' perceived ability to provide adequate emotional support showed a negative relationship with both the frequency of musical activities ( $\beta = -.25$ , 95% CI:  $-.47, -.04$ ,  $p < .05$ ) and watching

Discussion

This study shows that the downscaling of certain activities during the first outbreak of COVID-19 had a negative impact on LTCF caregivers. The downscaling of watching television together and of musical activities negatively affected caregivers' exhaustion and their perceived ability to provide adequate ADL care and emotional support. On the other hand, changes in the frequency of physical or movement activities, living room moments, sharing meals together and household activities did not significantly affect caregivers' exhaustion or perceived ability to provide care and support. An explanation for this may be that listening to music – one of a range of musical activities – and watching television are relatively 'passive' activities in terms of residents' involvement, which require little active caregiver support and supervision. In general, these unsupervised moments are ideal for caregivers to perform tasks like administrative duties, preparations for medication distribution, or household-like activities. Since it is known that residents normally spent most of their

**Table 2**  
Overview of regressors coefficients, standard error and significance level for the physical exhaustion and emotional exhaustion regression analyses. Significant p-values are marked in bold ( $p < .05$ ).

| Regressor                           | Physical exhaustion |              |              | Emotional exhaustion |              |              |
|-------------------------------------|---------------------|--------------|--------------|----------------------|--------------|--------------|
|                                     | $\beta$ (SE)        | 95% CI       | p-value      | $\beta$ (SE)         | 95% CI       | p-value      |
| <b>Constant</b>                     | 2.17 (0.16)         | [1.85, 2.48] | <b>0.000</b> | 1.91 (0.16)          | [1.59, 2.23] | <b>0.000</b> |
| <b>Physical/movement activities</b> |                     |              |              |                      |              |              |
| Decrease                            | 0.16 (0.12)         | [-.08, .41]  | 0.186        | 0.24 (0.13)          | [-.03, .50]  | 0.079        |
| Increase                            | 0.11 (0.15)         | [-.19, .40]  | 0.486        | 0.17 (0.14)          | [-.12, .45]  | 0.252        |
| <b>Creative activities</b>          |                     |              |              |                      |              |              |
| Decrease                            | -0.19 (0.12)        | [-.43, .04]  | 0.109        | 0.02 (0.13)          | [-.23, .28]  | 0.858        |
| Increase                            | 0.02 (0.13)         | [-.24, .28]  | 0.862        | 0.04 (0.13)          | [-.22, .30]  | 0.768        |
| <b>Musical activities</b>           |                     |              |              |                      |              |              |
| Decrease                            | 0.22 (0.12)         | [-.01, .46]  | 0.058        | 0.26 (0.13)          | [.00, .51]   | <b>0.048</b> |
| Increase                            | 0.02 (0.13)         | [-.23, .26]  | 0.895        | 0.09 (0.13)          | [-.17, .36]  | 0.483        |
| <b>Living room moments</b>          |                     |              |              |                      |              |              |
| Decrease                            | 0.17 (0.13)         | [-.07, .42]  | 0.171        | -0.06 (0.14)         | [-.33, .21]  | 0.665        |
| Increase                            | 0.12 (0.11)         | [-.10, .33]  | 0.298        | 0.05 (0.12)          | [-.17, .28]  | 0.643        |
| <b>Sharing meals together</b>       |                     |              |              |                      |              |              |
| Decrease                            | -0.09 (0.16)        | [-.41, .23]  | 0.594        | -0.20 (0.16)         | [-.53, .12]  | 0.218        |
| Increase                            | -0.32 (0.22)        | [-.76, .12]  | 0.160        | -0.38 (0.23)         | [-.83, .06]  | 0.092        |
| <b>Watching television together</b> |                     |              |              |                      |              |              |
| Decrease                            | 0.53 (0.18)         | [.17, .88]   | <b>0.004</b> | 0.49 (0.19)          | [.12, .86]   | <b>0.010</b> |
| Increase                            | 0.05 (0.16)         | [-.26, .37]  | 0.730        | 0.28 (0.18)          | [-.08, .63]  | 0.123        |
| <b>Household activities</b>         |                     |              |              |                      |              |              |
| Decrease                            | -0.20 (0.14)        | [-.48, .08]  | 0.171        | -0.17 (0.15)         | [-.46, .13]  | 0.269        |
| Increase                            | 0.07 (0.18)         | [-.28, .43]  | 0.686        | -0.03 (0.18)         | [-.39, .34]  | 0.887        |
| <b>Facility type</b>                |                     |              |              |                      |              |              |
| Residential care home               | -0.01 (0.09)        | [-.18, .17]  | 0.935        | 0.06 (0.10)          | [-.13, .26]  | 0.527        |
| Other facility                      | -0.35 (0.20)        | [-.75, .05]  | 0.089        | -0.25 (0.21)         | [-.66, .15]  | 0.221        |
| <b>Facility size</b>                |                     |              |              |                      |              |              |
| Medium                              | 0.06 (0.11)         | [-.16, .28]  | 0.608        | 0.14 (0.12)          | [-.11, .38]  | 0.274        |
| Small                               | 0.09 (0.11)         | [-.12, .29]  | 0.419        | 0.07 (0.11)          | [-.15, .30]  | 0.508        |
| <b>Current COVID-19 infections</b>  |                     |              |              |                      |              |              |
| Yes                                 | 0.35 (0.09)         | [.17, .53]   | <b>0.000</b> | 0.44 (0.10)          | [.24, .64]   | <b>0.000</b> |
| <b>After ban</b>                    | 0.33 (0.11)         | [.12, .54]   | <b>0.002</b> | 0.42 (0.11)          | [.20, .63]   | <b>0.000</b> |

**Table 3**  
Overview of regressors coefficients, standard error and significance level for caregivers' perception of being able to provide care and emotional support regression analyses. Significant p-values are marked in bold ( $p < .05$ ). ADL = activities of daily living.

| Regressor                           | Perceived ability to provide adequate ADL-care |              |              | Perceived ability to provide adequate emotional support |              |              |
|-------------------------------------|--|--------------|--------------|---|--------------|--------------|
|                                     | $\beta$ (SE)                                   | 95% CI       | p-value      | $\beta$ (SE)  | 95% CI       | p-value      |
| <b>Constant</b>                     | 4.35 (0.15)                                    | [4.06, 4.65] | <b>0.000</b> | 4.13 (0.16)   | [3.82, 4.45] | <b>0.000</b> |
| <b>Physical/movement activities</b> |  |              |              |   |              |              |
| Decrease                            | -0.03 (0.10)                                   | [-.22, .17]  | 0.782        | -0.01 (0.11)  | [-.23, .20]  | 0.901        |
| Increase                            | -0.11 (0.14)                                   | [-.38, .16]  | 0.406        | 0.03 (0.15)   | [-.27, .32]  | 0.864        |
| <b>Creative activities</b>          |  |              |              |   |              |              |
| Decrease                            | 0.06 (0.12)                                    | [-.18, .30]  | 0.597        | 0.00 (0.12)   | [-.23, .24]  | 0.975        |
| Increase                            | -0.06 (0.12)                                   | [-.31, .18]  | 0.610        | -0.15 (0.13)  | [-.41, .11]  | 0.265        |
| <b>Musical activities</b>           |  |              |              |   |              |              |
| Decrease                            | -0.32 (0.10)                                   | [-.51, -.12] | <b>0.001</b> | -0.25 (0.11)  | [-.47, -.04] | <b>0.022</b> |
| Increase                            | -0.13 (0.11)                                   | [-.35, .09]  | 0.255        | -0.11 (0.12)  | [-.34, .11]  | 0.327        |
| <b>Living room moments</b>          |  |              |              |   |              |              |
| Decrease                            | -0.05 (0.13)                                   | [-.30, .20]  | 0.693        | -0.03 (0.12)  | [-.26, .21]  | 0.822        |
| Increase                            | 0.09 (0.10)                                    | [-.11, .28]  | 0.375        | 0.14 (0.10)   | [-.05, .34]  | 0.147        |
| <b>Sharing meals together</b>       |  |              |              |   |              |              |
| Decrease                            | 0.14 (0.14)                                    | [-.13, .41]  | 0.293        | 0.27 (0.14)   | [.00, .54]   | 0.052        |
| Increase                            | 0.07 (0.20)                                    | [-.33, .46]  | 0.745        | 0.03 (0.20)   | [-.35, .42]  | 0.875        |
| <b>Watching television together</b> |  |              |              |   |              |              |
| Decrease                            | -0.47 (0.17)                                   | [-.81, -.14] | <b>0.006</b> | -0.51 (0.17)  | [-.85, -.17] | <b>0.003</b> |
| Increase                            | 0.05 (0.13)                                    | [-.20, .31]  | 0.697        | 0.02 (0.14)   | [-.24, .29]  | 0.877        |
| <b>Household activities</b>         |  |              |              |   |              |              |
| Decrease                            | 0.15 (0.15)                                    | [-.14, .44]  | 0.300        | 0.20 (0.13)   | [-.05, .45]  | 0.119        |
| Increase                            | 0.00 (0.17)                                    | [-.34, .34]  | 0.993        | 0.09 (0.16)   | [-.22, .40]  | 0.564        |
| <b>Facility type</b>                |  |              |              |   |              |              |
| Residential care home               | 0.11 (0.09)                                    | [-.06, .28]  | 0.195        | -0.05 (0.09)  | [-.22, .13]  | 0.617        |
| Other facility                      | 0.31 (0.13)                                    | [.05, .56]   | 0.053        | -0.11 (0.17)  | [-.44, .23]  | 0.527        |
| <b>Facility size</b>                |  |              |              |   |              |              |
| Medium                              | 0.07 (0.12)                                    | [-.16, .31]  | 0.537        | 0.02 (0.12)   | [-.21, .25]  | 0.874        |
| Small                               | 0.07 (0.11)                                    | [-.14, .28]  | 0.513        | 0.11 (0.11)   | [-.09, .32]  | 0.281        |
| <b>Current COVID-19 infections</b>  |  |              |              |   |              |              |
| Yes                                 | -0.19 (0.10)                                   | [-.38, .01]  | 0.059        | -0.12 (0.10)  | [-.32, .07]  | 0.199        |
| <b>After ban</b>                    | -0.04 (0.10)                                   | [-.24, .16]  | 0.686        | 0.02 (0.10)   | [-.18, .23]  | 0.812        |

activity-filled time on watching television together and listening to music,<sup>27</sup> the downscaling of these activities has most likely put additional strain on caregivers' attention and time, on top of uncertain and changing working conditions. The COVID-19 measures induced many work-related changes, such as socially distancing, adherence to infection control measures, wearing personal protective equipment (which hinders communication with residents), informing relatives on residents' status, staff shortages due to high amounts of sick leave and absence due to suspected COVID-19 contaminations, facilitating (digital) contact between residents and relatives, and the management of fixed visitors after the alleviation of the visitor-ban.<sup>6</sup> The allowance of visitors following national guidelines, provided a higher organizational workload.<sup>28</sup> Since the workload in LTCFs is particularly high even under regular circumstances,<sup>13</sup> the downscaling of activities that require limited supervision and support may have added to caregivers' feelings of exhaustion and reduced ability to provide adequate care and emotional support. It is known that for healthcare workers employed in intensive care and emergency units feelings of not being able to provide the care that is needed lead to increased moral distress and burn-out symptoms,<sup>8</sup> further stressing the need for LTCFs to critically review the meaningful activities they provide from a resident's wellbeing perspective as well as from a care worker's wellbeing perspective.

Insufficient meaningful activities and a lack of time and staff were challenges in the long-term care sector before the pandemic,<sup>29</sup> but were amplified by COVID-19. In lieu of long-term sustainable solutions, some countries or regions took innovative measures. For example in Ontario, Canada, the provincial government sought to train newly unemployed individuals as Resident Support Aides (RSAs) who could assist LTCF residents with daily living activities including recreational activities.<sup>1,30</sup>

Our study also found an increase in caregivers' physical and emotional exhaustion after the visitor-ban ended, as compared to when the visitor-ban was fully in-act. The results may even be an underestimation, as caregivers' with severe exhaustion may have not participated or dropped out. This finding are in line with findings from the hospital setting,<sup>31</sup> and are not surprising after several weeks of dealing with the COVID-19 crisis under uncertain circumstances. Moreover, once the visitor-ban in the Netherlands ended and LTCFs were cautiously opened for visitors again, a significant increase in workload for staff was reported. This was caused by additional work in preparation of the visits (e.g. planning) and guiding the visits (e.g. registration and supervision).<sup>6</sup>

Our study also found an increase in caregivers' emotional exhaustion when there were COVID-19 infections in their LTCF. This is in line with earlier findings on COVID-19<sup>16,32,33</sup> and on other critical emergencies.<sup>8,34</sup> Nurses feel sad and emotionally overwhelmed when a resident dies or has to be isolated for testing positive for COVID-19.<sup>32</sup> In the Netherlands, cohort-units were often set up in LTCFs, where infected residents were separately cared for. This required large scale movements of residents within a LTCF, emotionally affecting residents as well as caregivers. These events may lead to feelings of powerlessness among caregivers or feelings of loss of control,<sup>16</sup> which may be reinforced by the reported increase in behavioural problems among residents during the visitor-ban.<sup>14,21</sup> Especially, as irritability and aggressive or agitated behaviour are known to contribute to caregiver burden and distress.<sup>35,36</sup> Finally, it has been found that health care workers who were at higher risk of getting infected with COVID-19 reported higher levels of anxiety and burn-out, partly due to the risk of transmitting the disease to family members at home.<sup>37</sup> Hence, in LTCFs with a higher number of infections, more emotional exhaustion may be expected among caregivers.

Our results show that during crises, like the COVID-19 pandemic, it is of the utmost importance to organize day to day LTCF care in

such a manner that caregivers have time to provide meaningful activities and at the same time have moments 'to catch their breath'. Both will increase caregivers' feelings of purpose and ability to provide adequate care, which has a dampening effect on the risk of burn-out and other stress related disorders. To mitigate possible negative outcomes, LTCFs should provide caregivers with preventive guidance on how to cope with stress and negative feelings related to these potentially traumatic events.

Several limitations of the study bear mentioning. LTCF organizations were under extreme pressure during the first COVID-19 outbreak, having ample time to participate in activities other than care provision. Hence, in order to conduct this study, a deliberate choice was made to minimize investments for participation, by inviting organizations to distribute study information and invitations to participate. No registration of participation was required and data were collected fully anonymous. Consequently, it is unknown how many LTCFs participated and information on non-response lacks. Also, aggregation of results at LTCF level is impossible. Even though all LTCFs followed the national regulations, policies regarding the management of activities and visitors might have differed between LTCFs. This approach can be regarded as a limitation of the study. However, earlier published results<sup>21</sup> were in line with other research.<sup>14</sup>

Despite these limitations, this study helps to better understand the impact of COVID-19 in LTCFs, especially on caregivers. It is one of the few studies based on quantitative data from fairly large study samples, collected at two points in time. Moreover, it is one of the first studies to address the influence of activities on caregivers' exhaustion and ability to provide care and support in LTCFs.

## Conclusions

The results of this study trigger the need for more knowledge about the function of activities for caregivers and the impact of changes in activities on both residents and caregivers in LTCFs. Even though these changes were amplified during the COVID-19 outbreak, they also occur in regular times. An adequate balance in the organization of different types of meaningful activities, which require different levels of supervision, is beneficial for residents and caregivers. Moreover, it might decrease caregiver exhaustion and contribute to feelings of personal accomplishment.

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## Conflict of interest

None.

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