

# Direct and Indirect Effects of COVID-19 on Long-Term Care Residents and Their Family Members

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## Keywords

COVID-19 restrictions · Isolation of older adults · Behavioral issues for older adults · Israel · Nursing homes

## Abstract

**Introduction:** The first cases of COVID-19 in Israel were reported in February 2020. Family visits were prohibited from March 10, 2020, and then allowed on a limited basis on April 20, 2020. This article examines how COVID-19 impacted long-term care residents and their family members from the perspective of long-term care facility (LTCF) administrative staff. **Methods:** An online survey was sent to Israeli LTCF administrators between mid-July and mid-October 2020, resulting in 52 completed questionnaires. Quantitative analysis involved descriptive statistics using SPSS, with differences compared via *t* tests, ANOVA, and  $\chi^2$  tests. Qualitative analysis involved thematic analysis of responses to open-ended questions. **Results:** COVID-19 was reported to have multiple types of negative impact on residents, including direct effects on morbidity and mortality as well as indirect effects manifested as negative reactions to measures aimed at limiting infection, including isolation from relatives, decreased activities for residents, and COVID-19 testing. The impact of isolation on LTCF residents was reported as negative or very negative by over three-quarters of the respon-

dents. Behavioral problems among residents increased in 32% of the facilities. The qualitative results suggested that adverse effects on residents and family members were partially mitigated by the use of communication technologies. **Discussion/Conclusion:** The interplay of multiple factors affected LTCF residents against the backdrop of COVID-19 restrictions. The emergence of mitigating factors which provide solutions to some of the challenges has the potential of improving quality of care for LTCF residents as the pandemic continues and thereafter.

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## Introduction

COVID-19 affected long-term care facility (LTCF) residents and their families in multiple ways, both directly through infection, morbidity, and mortality, and indirectly through preventive measures intended to contain the pandemic. Long-term care residents encountered particularly high rates of mortality. A sample of 425,755 Canadian LTCFs and retirement home residents in Canada reported a COVID-19 infection rate of 4.1% as of May 2020. This older vulnerable population was said to account for 85% of COVID-19-related deaths in Canada [1]. The authors estimated a case fatality rate of 36%

(range 20–42%) in LTCF and retirement home residents, suggesting that the COVID-19 survival rate was far lower for institutionalized residents than for people over 80 years living in the community. In Israel, a similar pattern was observed in LTCFs [2, 3]. Larger and more crowded facilities were found to experience larger and deadlier COVID-19 outbreaks [4].

In addition to increased mortality, restrictions designed to curb the impact of COVID-19 were also found to have a major impact on the quality of care and residents' quality of life in LTCFs. For example, a study of caregivers and visitors of residents of an LTCF in Ireland, where 80% of the residents were reported to be cognitively impaired, reported that 27% of caregivers and visitors experienced reduced satisfaction with the care provided, with 38% indicating that visitation restrictions had impaired communication with nursing home staff. Close to half of caregivers and visitors (49%) reported that the resident with whom they were involved was not coping well with the COVID-19 restrictions [5]. The most common concerns of family members of nursing home residents in a facility in Taiwan were psychological stress of residents (38.5%), followed by the quality of nursing care (26.9%) and the level of daily activity (21.1%) [6]. The curtailing of visitation was seen as particularly grievous for those who were dying and their family caregivers because it precluded consoling activities such as saying goodbye and offering a comforting presence, which helps not only the dying but also the survivors in the process of bereavement adjustment [7]. Half or more of the staff members employed at Dutch LTCFs reported an increase in the severity of resident agitation, depression, anxiety, and irritability during the visitation ban, as compared to the prior period [8]. More than half of family members reported increased sadness, restlessness, and decrease in happiness among residents. The use of psychotropic drugs to control mood and behavior of residents was found to have increased with the pandemic [9], despite the well-known adverse effects of such drugs [10, 11]. In contrast, a study of the effect of permitting limited resumption of visitation at 26 Dutch nursing homes after the first COVID-19 lockdown [12] indicated positive impact on resident and family well-being, though it increased staff workload for preparation and supervision.

As curtailment of visitation emerged as a notable hindrance to the well-being of residents and their families, Monin et al. [13] analyzed the responses of 61 participant-respondents to an online survey of community-dwelling respondents in order to assess which commu-

nication methods, other than in-person visits, were associated with greater positive and lower negative emotional experiences for LTCF residents, their families, and friends during the pandemic. Greater phone conversation frequency was associated with less negative emotions, and greater e-mail frequency was associated with more perceived positive emotions among residents, but frequency of letters delivered was associated with negative emotions by study participants and more perceived negative emotions among residents. Monin et al. [13] recommended that long-term care providers establish practices or systems, including support for staff, to enable residents to use phones or other technologies. Video communication technology was tested with 22 residents of a British LTCF using Skype quiz sessions facilitated through the support of staff once a month during an 8-month trial [14]. Although residents with dementia did not recognize the technology, they were able to remember having conversations with people "outside" their facility and answering questions in a quiz. Residents expressed feelings of happiness when they recalled conversations with individuals outside their facility. They reported that video calls allowed them not only to see new faces but also to share their life stories with people of similar ages. The intervention also had a positive impact on nursing staff in that they observed the positive effects of video-call socialization on residents, both with and without dementia.

Each of the above studies focused on an aspect of the effect of COVID-19 impact on LTCF residents. In the current study, we aimed to provide a more holistic view of the processes affecting LTCF residents due to COVID-19, including and going beyond those enumerated in the literature in order to develop a larger framework for examining the processes impacting this population. To this end, we examine how COVID-19 impacted LTCF residents and their family members in Israel from the perspective of administrative staff. We also examine COVID-19's impact on recreational activities offered in LTCFs, a topic that has been addressed in only one other study that described therapeutic recreational staff perspectives on the impact of COVID-19 in Canada [15].

Our study was conducted in Israel, where the first cases of COVID-19 were reported in February 2020. Family visits were prohibited from March 10, 2020, resulting in involuntary isolation of residents from their families. The initial regulations were modified on April 20, 2020, allowing limited visitation by 1 visitor in a designated area, and requiring social distancing and protective gear.

## Methods

### Recruitment

The Israel Ministry of Health website lists 250 LTCFs which provide nursing care. Phone calls were attempted to all 250 LTCFs. Fifty LTCFs were never reached, and for 9, closure or invalid contact information prevented contact. Of the 191 LTCFs reached, 61 (32%) declined to participate in the survey. We sent online questionnaires and follow-up reminders to the remaining 130 LTCFs which had agreed to participate. Complete responses were collected from 52 LTCFs between mid-July and mid-October 2020. We endeavored to elicit responses from LTCF directors, but some of them authorized other knowledgeable staff to respond on their behalf (including occupational therapists, nurses, a social worker, and a gerontologist). Presumably well positioned to respond with knowledge and insight, these staff members added perspectives that likely provided a fuller understanding of COVID-19's effects on residents and their families. Furthermore, some directors assumed an additional role as a social worker or nurse-in-charge.

### Assessment

The questionnaire, developed specifically for this study, included background questions regarding institutional characteristics such as the number of residents, and the number and type of units. This article draws on the part of the questionnaire that included both open- and closed-ended questions regarding the impact of COVID-19 and associated restrictions on residents and their families. Questions inquired into difficulties that the facilities experienced during the pandemic, the general impact of COVID-19 on residents, the impact on group activities, changes in visitation procedures and their effect, and the experiences with alternative communication and activity formats (online suppl. material; for all online suppl. material, see [www.karger.com/doi/10.1159/000521146](http://www.karger.com/doi/10.1159/000521146)).

In order to estimate the emotional responses of residents to video calls, representatives of participating LTCFs were asked to rate residents' responses on a 5-point Likert scale (from 1 = not at all to 5 = to a very large extent) in six categories. Categories were divided into positive (joy and enthusiasm) and negative (frustration, sadness, anger, and behavior problems). Reliability analysis revealed a Cronbach's alpha of 0.82 for the positive index and 0.83 for the negative index. After preparation, the questionnaire was piloted via 2 phone administrations, which resulted in modifications based on the responses obtained.

### Analysis

#### Quantitative Analysis

Statistical analysis involved descriptive statistics using SPSS. Differences were compared via independent samples and paired *t* tests, repeated measures ANOVA tests, or  $\chi^2$  depending on the scale of measurement.

#### Qualitative Approach

Responses to open-ended questions and comments offered in response to questions were analyzed qualitatively. These were coded using an emergent-coding strategy [16], whereby 2 research staff members read, coded, and categorized the data independently and then revised the codes through discussion until consensus was reached. Their codes were reviewed by another research staff member, and the main themes were ultimately agreed upon by all researchers. Open-ended responses are presented as quotes which exemplify the categories developed.

## Results

### Characteristics of Participants and LTCFs

Most (80%) of the respondents were directors of LTCFs. Others were occupational therapists (8%), nurses (6%), a social worker (2%), and a gerontologist (2%). Over half (58%) of the respondents were women. Of the 52 LTCFs, 37 (71%) were for-profit LTCFs (P), and 15 (29%) not for profit (NP), of which 4 (8%) were kibbutz-sponsored LTCFs (K) for kibbutz members (a kibbutz is an Israeli collective community). Over half of the LTCFs (54%,  $n = 28$ ) were nursing homes, 27% ( $n = 14$ ) assisted living facilities – most with nursing care units, and 19% ( $n = 10$ ) long-term geriatric hospitals. The number of units per institution ranged from 1 to 10 (mean = 3.0, SD = 2.2), and the number of residents per institution ranged from 9 to 450 (mean = 100.8, SD = 90.1). We categorized the LTCFs by size: small (SM) (up to 38 residents, 34% of the LTCFs), medium (MED) (39–120 residents, 34%), and large (LG) (over 120 residents, 32%).

### Direct Impact of COVID-19: Infection, Morbidity, and Mortality

A third of the LTCFs ( $n = 17$ , 33%) reported having had either staff or residents test positive for COVID-19, and 6 (12%) reported fatalities at the time of completing the survey (Table 1). Among all participating facilities, an average of 2.8 (2.0%) residents were reported to have been infected (SD = 9.2, min = 0, max = 51, median = 0) and a mean of 0.9 (0.6%) died (SD = 3.0, min = 0, max = 14, median = 0). Regarding the 17 LTCFs where COVID-19 was found among residents or staff, a mean of 7.2 (5.1%) residents were infected (SD = 14.0, min = 0, max = 51, median = 1) and 2.2 (1.5%) died (SD = 4.5, min = 0, max = 14, median = 0). LTCFs where COVID-19 was identified tended to be larger ( $M = 150.4$  residents SD = 103.0) than LTCFs where COVID-19 was not identified ( $M = 75.3$ , SD = 71.3) ( $t_{(48)} = 3.012$ ,  $p < 0.01$ ).

### Indirect Impact

#### COVID-19 Tests

In an effort to contain COVID-19 outbreaks, LTCFs conducted frequent COVID-19 tests. At the time of our study, residents had been tested an average of 2.8 times (SD = 2.1, median = 2, min = 0, max = 11). When asked about resistance to testing, 16 LTCFs (31%) indicated problems with cooperation from some of the residents. Respondents reported that residents perceived tests as intrusive and unpleasant, as in “some of the residents panicked and [some]one had to hold them by force” (#2791,

**Table 1.** Direct impact of COVID-19 on residents

		Of all participating institutions ( <i>N</i> = 52)				Of institutions where either staff and/or residents tested positive for COVID-19 ( <i>N</i> = 17 <sup>a</sup> )			
		mean (SD)	median	min	max	mean (SD)	median	min	max
Tested positive									
Staff	<i>N</i>	2.0 (5.1)	0.0	0	25	5.1 (7.3)	3.0	0	25
Residents	<i>N</i>	2.8 (9.2)	0.0	0	51	7.2 (14.0)	1.0	0	51
	%	2.0	0	0	32	5.1	0.7	0	32
Deceased									
Staff	<i>N</i>	0.0 (0.0)	0.0	0	0	0.0 (0.0)	0	0	0
Residents	<i>N</i>	0.9 (3.0)	0.0	0	14	2.2 (4.5)	0	0	14
	%	0.6	0	0	13	1.5	0	0	13

<sup>a</sup> Six institutions reported fatalities among residents.

female respondent [F]-P-SM institution). Respondents commented that residents with cognitive impairment were averse to testing “and experience the test as a violent act” (#2621, F-K-SM).

#### Prohibition of Visitation: Contact and Communication with Family and Friends

LTCFs were asked to rate the extent to which visitation was discontinued during 3 time periods (the first month of the epidemic, the second month, and when the questionnaire was completed) from 1 = not discontinued at all to 5 = completely discontinued. In the first month, 40 of 49 facilities reported stopping visitation completely (82%), 3/49 to a large extent (6%), 3/49 to a small extent (6%), and 3/49 did not stop it at all (6%). Thus, the mean rating for discontinuation was 4.6 (SD = 1.0). In the second month, the mean was 3.5 (SD = 1.0), and in the third period, discontinuation was lowest ( $M = 2.8$ ,  $SD = 1.3$ ). Discontinuation of visits significantly differed between the 3 time periods ( $F_{2,94} = 37.35$ ,  $p < 0.001$ ). Post hoc tests using the Bonferroni correction showed that visit discontinuations during the first month were significantly higher than those during the second month ( $p < 0.001$ ), and banning visits in the second month was significantly higher than banning visits in the third month ( $p < 0.01$ ). When visitation was permitted or reintroduced, multiple restrictions were imposed, including wearing protective equipment (according to 92% of respondents), limitation on the number of family members (91%), held outdoors (88%), 2-meter distancing (87%), pre-visit registration (81%), and time limits (67%).

LTCFs were asked to rate the effect of family members' remoteness from residents from 1 = very negative to 5 =

very positive. The impact of isolation on residents was reported as negative or very negative by over three-quarters of LTCFs (76%), while the remaining LTCFs reported that isolation had no effect or a positive effect (17% and 7%, respectively). Isolation was experienced unfavorably by residents and family members alike, as in “It is difficult for the resident to handle no visits or limited visits, it has caused sad mood and nervousness. [It is difficult] dealing with families who want to visit residents” (#1212, F-P-SM). Respondents articulated a range of reactions, some surprising: “In general, the lack of visitation affected family members more than residents... As for cognitively intact residents, some expressed their displeasure with the lack of visitation, but there was also a resident who expressed joy that he was spared unwanted visits” (#1741, F-K-SM). This was further explained in “There are cases in which the families interfere with the residents' daily routine and the absence of families allowed them to eat quietly, participate in various activities and rest” (#2531, F-P-LG).

Prohibition or limitation of visitation impacted multiple aspects of LTCF life and atmosphere: “The engagement of residents in activities has decreased, families who had filled the building and provided sources of interest and company for residents do not arrive... The feeling that routinely fills the building with joy and activity – decreased” (#2081, F-P-SM).

During the prohibition of visitation, the LTCFs tried to mitigate the impact of isolation by enabling communication between the residents and their families via phone or video. One institution opened a WhatsApp group for family members and transmitted daily updates and photographs of group activities (#1392, F-NP-MED). Initial-

**Table 2.** Residents' reactions to video calls with family members<sup>a</sup>

Negative reaction variables	Mean (SD)	Positive reaction variables	Mean (SD)	Difference
Negative index <sup>b</sup>	2.1 (0.8)	Positive index <sup>c</sup>	3.6 (1.1)	$t_{(45)} = 6.47^{***}$
Frustration	2.4 (1.1)	Enthusiasm	3.6 (1.0)	
Sadness	2.3 (1.2)	Happiness	3.5 (1.2)	
Exacerbation of behavior problems	1.9 (1.0)			
Anger	1.6 (1.0)			

<sup>a</sup> 1, not at all; 2, to a small extent; 3, to a moderate extent; 4, to a large extent; 5, to a very large extent. <sup>b</sup>Cronbach's alpha = 0.83. <sup>c</sup>Cronbach's alpha = 0.82. \*\*\*  $p < 0.001$ .

ly, much of this communication was facilitated through the staff's phones. Thereafter, some LTCFs purchased or received donations of tablets and cell phones to reduce the burden on staff whose personal devices had been used at first. Participants were asked to rate residents' reactions to the video calls from 1 = not at all to 5 = a very large extent. As shown in Table 2, video calls were perceived by staff as strongly improving residents' positive emotions ( $M = 3.6$ ,  $SD = 1.1$ ), and these emotions significantly outweighed negative reactions ( $M = 2.1$ ,  $SD = 0.8$ ;  $t_{(45)} = 6.47$ ,  $p < 0.001$ ). Yet, negative reactions were also reported, particularly frustration (Table 2).

#### Impact on Relatives' Reactions

Administrators reported acceptance and understanding as common reactions by relatives: "Families accepted and understood the prohibition of visits" (#3121, F-P-SM). However, some relatives (per 19% of respondents) opposed enforced remoteness, e.g., "for the families, the distance [from residents] certainly created difficulties, even though they completely trusted the staff" (#3111, F-NP-SM). These responses involved concern about the older persons' well-being; "This causes emotional harm to the older persons ... loneliness results in functional decline, depression" (#1921, male [M]-P-LG), concern about the older person's approaching death, "[when relatives kept requesting, such as:] 'I can no longer not see Dad/Mom... I must see him/her'... 'He may die without [me] seeing him'... 'I must give him food I cooked for him'" (#1081, M-P-MED), or being upset by the reduced contact: "Some family members experience stress and helplessness, since they are less involved in the lives of their loved ones" (#1392, F-NP-MED). Other responses referred to longings, grieving, sadness, and frustration: "understanding the current need, but very much missing, and finding it difficult not to be able to see, hug, get clos-

er" (#2081, F-P-SM); "For the most part the families treated the issue with understanding while expressing grief and longing. There were a number of families who were really frustrated by the matter" (#1522, F-P-MED); "great sadness" (#2371, M-P-MED). Some relatives were described as expressing anger and incomprehension with regard to the institution (#1961, F-P-MED), with some removing a resident from the facility (#2561, M-NP-LG). One respondent said family members violated regulations: "they understand the need [for distance] but every family member thinks he is allowed not to follow [the restrictions]" (#3171, F-NP-SM).

The nature of family relationships affected perceptions: "Family members whose relationship with their loved ones was weak, for them there is no change. Family members who have a close relationship with the resident and used to come daily or many times a week for a long time during each visit, express a great difficulty in conversations with them and seek to ease the visit policy" (#1392, F-NP-MED).

#### Impact on Recreational Activities

Routinely, leisure activities for residents are provided by individuals from outside the institution, such as musical and other performers and lecturers, in addition to the institution's staff. Most of the former types of activities were canceled: "collaborations with schools, kindergartens, or volunteers were discontinued" (#1392, F-NP-MED) or "Regular operators do not come" (#2081, F-P-SM). Staff who had worked in multiple facilities were required to limit themselves to 1 facility, and thus drop their other jobs: "[The difficulty was] finding caregivers who work only in 1 institute (ours)" (#1851, F-P-MED) and "We are not hiring someone who works in another workplace" (#3111, F-NP-SM). This particularly affected activity staff, who often work part-time in multiple facilities.

Participants were asked to rate the consequent change in frequency and content of activities. Of the 48 participants who answered this question, 33 (69%) reported a decrease in the frequency of activities compared to the period before COVID-19, and 30 (63%) reported that content quality was diminished. Reports of reduced frequency were significantly associated with diminished content ( $\chi^2_1 = 11.95, p < 0.001$ ). Of respondents who reported reduced frequency of activities, 26 of 33 (79%) reported a reduction in the content quality of activities. In contrast, of the LTCFs where there was no decrease in the frequency of activities, only 4 of 15 (27%) reported a reduction in content quality. One respondent reported improvement in activity impact: “[Since large gatherings are forbidden], current activities take place inside the units, and therefore all the residents benefit from them [including those who did not get to the large-scale activities prior to the pandemic]” (#2771, M-P-MED).

#### Mitigating Initiatives

Some of the LTCFs undertook a range of initiatives to mitigate against or compensate for the decrease in activities. Such new directions were exemplified in responses such as “Instead of activity led by outsiders we tried to compensate by activity from inside [i.e., led by other staff]” (#3192, M-P-LG); “We purchased an internal TV channel and broadcasted ... exercise, greetings and messages of the director, recordings of lectures, recordings of shows we prepared and more...” (#3012, F-NP-MED); “We discontinued all external operators and continued only with our activities organized by staff. Since we have a screen and Barco [digital projection technology], we have invested a lot in musical films, as well as a lot of tablets” (#2771, M-P-MED); “Using Zoom, we added online lectures and additional content” (#2621, F-K-SM). When asked what types of help they would like to receive to handle COVID-19, participants referred to additional staff to conduct recreational activities: “Help by activity workers, by musicians” (#1081, M-P-MED).

#### Impact on Residents’ Well-Being and Mental Health

Many participants described the impact of diminished activity frequency and content and reduction of visitation as negatively affecting residents’ well-being, e.g., “There is a cognitive and health impact on residents due to the change in lifestyle and restriction of visits” (#2241, F-NP-SM); “Residents have worse mood, they get upset faster, and are more bored” (#1261, F-P-SM); “sadness and frustration” (#2621, F-K-SM); “anxiety and fear through disruption of their daily routine” (#1031, M-P-LG), and

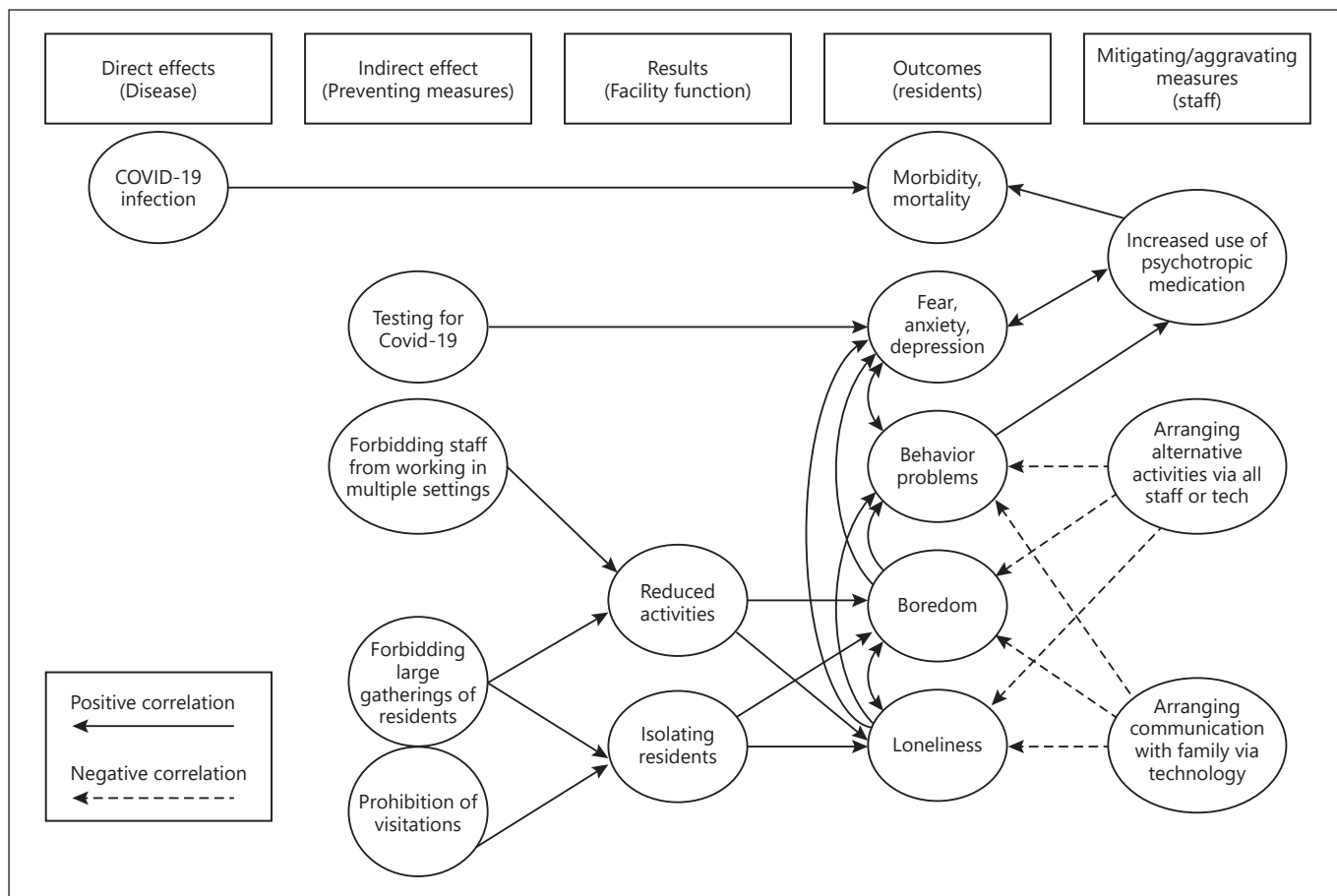
loneliness: “Loneliness has affected our people and caused weight loss, depression, sadness, and boredom. Some have stopped walking. We separated the different units, which created social isolation and affected the social relations of the residents with the staff and with the other residents” (#2651, F-P-SM).

LTCFs were asked about the effect of COVID-19 restrictions on residents’ behavioral problems and on the use of sedatives or antipsychotics. Close to a third (15/47, 32%) of LTCFs reported increases in the level of behavioral problems, while 62% reported no change, and the rest observed a decrease (6%). Two of the 3 LTCFs that reported a decrease in behavior problems reported an increase in frequency of activities offered “[adding] animal assisted therapy, tai-chi, dance” (#1641, F-NP-LG).

Regarding psychotropic medication use, 22% (10/46) reported an increase in use, 74% no change, and 4% a decrease. There was a significant association between an increase in behavioral problems and increase in medication use ( $\chi^2_1 = 14.34, p < 0.001$ , examining increase vs. no increase). Concerning LTCFs where an increase in behavioral problems was found, 57% (8/14) of respondents reported an increase in psychotropic medication use compared to 6% (2/31) of respondents from LTCFs which noted no increase in behavior problems.

#### Discussion

The results reveal an array of complex factors related to the effect of COVID-19 on LTCF residents (see Fig. 1. Direct and indirect effects of COVID-19 on LTCF residents). While COVID-19 brought physical symptoms and mortality to specific residents and to those around them, an even greater influence on resident and family reaction was attributed to the preventive measures instituted to protect LTCF residents. While the use of involuntary testing was an example of an unwelcome, but minor intrusion for residents, visitation restrictions and other isolation measures, such as diminishment in the frequency and quality of recreational activities, had a significant negative impact on the mental health of residents and on some family members. Some LTCFs were able to mitigate those negative impacts by supporting virtual contact with family members, and later, by facilitating limited visits, or adapting new activities to meet the exigencies of the pandemic via the use of other staff or technology or a combination thereof. The extent of such mitigating efforts varied among LTCFs. The nature of the relationship between residents and their visitors also



**Fig. 1.** Direct and indirect effects of COVID-19 on LTCF residents.

played a role, as a small portion of residents were perceived as benefitting from being spared visits which were unwanted, or which disturbed their routine. Overall, however, the different limitations imposed on residents' activities and opportunities for socialization resulted in substantial negative impact on resident well-being, on an increase of behavior challenges, and in increased use of psychotropic drugs, which are known to exact a toll of significant adverse effects [10, 11].

Two quotes from the qualitative data summarize the inherent problem with the COVID-19 restrictions: "The measures to prevent the spread of the disease and to prevent infection are in conflict with the values and foundations of our therapeutic professions" (#2231, F-NP-LG). Indeed, LTCF staff who are trained to foster socialization and meaningful activity for residents were required to follow instructions to isolate residents and disrupt their accustomed lifestyle. Another respondent said "[It is] a regulation that the public cannot abide by, [it is] illogical,

inhuman" (#1681, F-K-SM). Obviously, the conflict between the regulations and practicing good care was problematic and vexing for all parties, and mitigating measures were not universally facilitated, and could not fully compensate for good care practices.

The findings are important for policy in 2 main ways. First, prevention measures instituted in care facilities under pandemic conditions need to be re-examined in view of their impact on mental and overall health. Less restrictive preventive regulations need to be considered. In addition, potential mitigating measures need to be examined and pursued as opportunities for improved quality of care. Providing information about best practices, and enabling best practices, by means of providing technology, including cell phones and tablets, guidance on how to optimize visits, instruction concerning how to conceive, prepare, and present meaningful alternate activities, and similar initiatives can help LTCFs care for frail older persons when their usual resources are inaccessible, whether

due to health crises or other causes. The data which reveal that a small number of residents considered family burdensome rather than supportive prompt the need to further explore the prevalence of such experiences, their characteristics, and potential ways to improve visits or relationship quality.

A number of limitations should be noted. Although we approached many LTCF directors, most did not participate, mainly due to time and other pressures, presumably resulting from the novel demands of COVID-19. Our sample may be somewhat biased by a selection of directors most committed to report difficulties, and potentially also those providing somewhat better care, and therefore not hesitating to disclose actual problems. According to media reports, some LTCFs experienced desperate conditions, including reports that staff members who tested positive for COVID-19 were instructed to show up for work because otherwise, there would be no one to feed or clean residents [17]. Our sample responded to the study's online questionnaire between mid-July and mid-October 2020, and therefore, early responses may have differed from later ones given changes in regulations and rates of illness. Indeed, when we specifically asked questions relating to different stages of the pandemic, responses varied by timing.

A further limitation is the cross-sectional design, which provides us with data that were collected at a specific point in time. It is likely that additional insights can be gained from data collection at a later point in time for comparison with our findings, as various policies have been implemented and the nature of the health crisis has changed with the advent of the on-going vaccination campaign.

Another limitation is that we were unable to interview residents and family members directly. Future research should inquire directly of residents and family members about their experiences concerning COVID-19 and its associated restrictions. This survey was conducted in the context of Israel's unique health-care system. A fuller understanding will require both a larger sample and additional quantitative queries based on the findings reported here.

Notwithstanding these limitations, many indications suggest that generalization is likely. Mortality rates in LTCFs tended to represent a large portion of all deaths in Israel as in many countries around the globe [1, 18–20]. Visitation restrictions were instituted in many countries and were considered as negatively affecting residents' well-being [5, 6]. Some facilities tried to use technology to mitigate the effects of isolation [14]. The increase in

behavioral and emotional challenges and increased use of psychotropic medication have been described elsewhere [8, 9].

Drawing on our findings, we propose the following guidelines for the improvement of the quality of care in LTCFs during a pandemic:

On the institutional level:

- Training and mentoring staff to maintain a warm and calm atmosphere even at times of major challenges. This includes the introduction of additional activities and the training of staff to facilitate those activities for residents.
- Maintaining in-person visitation under protected circumstances, and, in parallel, enabling staff to maximize virtual or phone contact between residents and their family and friends through the use of technology.

On the system level:

- Requiring staff, residents, and visitors to be vaccinated or be tested prior to visits.
- Training and mentoring staff to prevent and manage infections.
- Providing additional funding for LTCFs in general, and in particular at times when financial and human resources are stretched beyond acceptable limits due to health crises or other emergencies.

## Conclusion

This is the first study to provide information from a large number of facilities, and an initial theoretical model of the interplay among multiple factors affecting LTCF residents during the course of the restrictions implemented in an effort to contain COVID-19. In addition to clarifying the larger picture, our findings provide new detail and bring to light nuances in the reported processes, such as those found in examples of solutions used by LTCFs to mitigate the response to strict regulatory restrictions and in the complex nature of responses, both positive and negative, by residents to some of those efforts.

## Statement of Ethics

The authors have no ethical conflict to disclose. Informed consent to participate was obtained verbally by telephone, and also inferred from the completion of the questionnaire/participation in the interview. Ethical approval was obtained from the Institutional Review Board of Tel Aviv University, no. 0001467-1.



## Conflict of Interest Statement

The authors have no conflicts of interests to declare.

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## Author Contributions

J.C.-M. conceptualized the study, developed the questionnaire, oversaw data collection, supervised data analysis and interpretation of data, and wrote and edited the manuscript. G.M. assisted

with acquisition and interpretation of data, analyzed the data, assisted in writing a portion of the paper, and reviewed and edited the manuscript.

## Data Availability Statement

Numerical data used for this study are available from the corresponding author in an anonymized form upon reasonable request after approval for sharing the data has been obtained from the Institutional Review Board. The open-ended data are not publicly available due to privacy and ethical concerns.

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