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The moderating effect of care-burden on formal caregiver's mental health during COVID-19

Ziv Karni-Efrati MA, Doctoral Student[1] | Yuval Palgi PhD, Professor[1] |
Lee Greenblatt-Kimron PhD, Lecturer[2] | Ehud Bodner PhD, Professor[3,4]

[1]Department of Gerontology, University of Haifa, Mount Carmel, Israel

[2]School of Social Work, Ariel University, Ariel, Israel

[3]Interdisciplinary Department of Social Sciences, Bar-Ilan University, Ramat-Gan, Israel

[4]Deprtment of Music, Bar-Ilan University, Ramat-Gan, Israel

Correspondence
Yuval Palgi, Department of Gerontology and the Center for Research and Study of Aging, University of Haifa, Mount Carmel 3498838, Israel.
Email: ypalgi@research.haifa.ac.il

Abstract

Background: Homecare organisations employ professionals (i.e. gerontologists, nurses, occupational therapists, physiotherapists and social workers) to help their clients gain rights and supervise non-professional formal caregivers. Formal caregivers, and especially those who work closely with impaired older people, are at greater risk of infecting or being infected by SARS-Cov-2 (COVID-19). During the first waves of COVID-19, older people were encouraged to stay home; and the care-burden inflicted on their caregivers has increased.

Objectives: This study examined formal caregiver's mental health during the COVID-19 pandemic, that is, the association between anxiety and depression symptoms and how care-burden moderated this association.

Methods: A cross-sectional online survey conducted in the home care services sector throughout Israel. A sample of 400 formal caregivers of older people (M_{age} = 47.7, SD = 13.8) completed a questionnaire regarding their levels of care-burden, general anxiety symptoms, and depressive symptoms.

Results: A significant positive relationship was found between anxiety and depressive symptoms among formal caregivers. The level of care-burden moderated this relationship, showing that caregivers with higher care-burden demonstrated a stronger association between anxiety and depressive symptoms.

Conclusions: Professionals may use ADL/IADL as a practical index to assess care-burden and the risk of mistreatment.

Implications for Practice: Formal caregivers with higher care-burden should get enhanced professional's support to reduce adverse mental health outcomes.

KEYWORDS
anxiety, care-burden, depression, formal-caregiver, home care, mistreatment, prevention

This study examined a unique and transparent population of formal caregivers of older impaired people. It demonstrate that significant positive relationship exist between anxiety, care burden and depressive symptoms among caregivers and that the level of care-burden moderates these relationships. The findings illustrate that formal caregivers in time of COVID-19 crisis are at-risk group and specifically those who care for older people that exhibit more ADL and IADL deficiencies. It suggests that to ensure continuity of care during the pandemic, professionals should screen care-recipients' ADL/IADL, use it as a proxy to measure their caregiver's care-burden and take rapid actions to prevent mistreatment.

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1 | INTRODUCTION

Over the last few decades, older people' choice to age at place requires increasing reliance on formal care. Due to the growing number of older people with severe illness and/or physical or cognitive functioning impairments, global care-burden has risen (Barnett et al., 2012; Sherwood et al., 2005). In Israel, the number of seriously ill and/or functionally impaired older people eligible for publicly funded home care is continuously growing, reaching 20% of the older population (Freund & Band-Winterstein, 2019). Of 197,700 older people who received home care benefits in 2019, more than 50% had a moderate to severe impairment level (National Insurance Institute, 2019). Previous studies showed that lower functional state results in higher care-burden for their caregivers (Sherwood et al., 2005; Williams et al., 2018).

Pandemics can be considered as resulting from the climate change (Rhoades et al., 2018). The SARS-Cov-2, which causes COVID-19, spreads by close human contact through respiratory droplets. Hence, closer contact between formal caregivers and care-recipients increases the risk of infection for both parties (CDC, 2020; Chu et al., 2020). At the beginning of the COVID-19 pandemic, the number of home care recipients in Israel has reached 232,000 and the demand for formal caregivers increased (National Insurance Institute, 2020a, 2020b). Given that home care recipients number and care-burden increases (Sherwood et al., 2005; Williams et al., 2018), it is essential to examine how care-burden affects caregiver's mental health during pandemics. Unlike other populations (i.e. informal caregivers or professional workers), little is known about formal caregivers' care burden and mental health during climate change events, and in particular the ongoing COVID-19 pandemic. A better understanding of the relationships between these factors may promote both quality and continuity of home care services.

1.1 | Home care

To understand the unique condition formal caregivers confront in the COVID-19 era while providing home care, a short glimpse into the system of home care services is required. Home care services for community-dwelling older adult are allocated according to a periodical measure of their daily performance. The most common instruments that measure performance is the Activities of Daily Living (ADL) scale, which measures people's ability to take care of their body's self-maintenance, and the Instrumental Activities of Daily Living (IADL) scale that measure people's ability to perform more complex activities in daily life (Lawton & Brody, 1969). The ADL/IADL scales have been used by three of the largest surveys on the aged population (the Health and Retirement Survey, the English Longitudinal Study of Aging, and the Survey of Health, Aging and Retirement in Europe) to measure functional state (see Chan et al., 2012). In Israel, the National Insurance Institute committee, headed by physicians, nurses and social workers, uses both instruments periodically to determine the volume of care benefits

What does this research add to existing knowledge in Gerontology?

- The interaction between care-burden and anxiety predicts higher depression among formal caregivers of older people during the COVID-19 pandemic.

What are the implications of this new knowledge for nursing care with older people?

- Caregiver's poor mental health leads to a higher risk of mistreatment of older impaired people.
- Professionals must screen and address caregiver's care-burden to ensure continuity of care.

How could the findings be used to influence policy, practice, research, or education?

- Professionals may use ADL/IADL as a practical index to assess care-burden and the risk of mistreatment.
- Formal caregivers with higher care burden should get better psychological support.

allocated. According to quality-of-care policies, professionals make regular home-visits to assess care recipient's needs and to supervise home care services provided by caregivers (Freund & Band-Winterstein, 2019; Iecovich, 2011). These visits are considered as excellent opportunity to examine and address formal caregiver's care burden.

1.2 | Home care during the COVID-19 outbreak

In the first waves of COVID-19, older people were encouraged to stay home (Ministry of Health, 2020). This made a significant change in the work conditions of their formal caregivers, as they could no longer be outdoors with the older person they care for. In addition, the social-distance policy and lockdowns derived from the COVID-19 morbidity, impeded family member's opportunities to visit the older person at home; therefore, they shifted more care tasks to the formal caregiver. Moreover, formal caregivers who had to travel by public transportation from one home to another and work closely with more severely impaired older people were at greater risk to infect them or to be infected themselves. In some countries, homecare delivery to non-urgent cases was scaled back or cancelled (van den Bulck et al., 2022). Due to their position in emergency work, Israeli formal caregivers provided home care even during government enforced lockdowns. In contrast, foreign caregivers were forbidden to leave the care-recipient's home (Ministry of Labor & Welfare, 2020; National Insurance Institute, 2020a, 2020b).

On account of the COVID-19 outbreak, healthcare teams and long-term care workers have been recognised as 'heroes'; this heroism came with a price as they were constantly exposed to higher

health risks (Fingerman & Pillemer, 2021). For the formal caregivers, the situation was somehow different. During the first wave of COVID-19, formal caregivers were instructed not to visit isolated older persons. However, it was later announced that their work should include caring for older people diagnosed with COVID-19 or in isolation (National Insurance Institute, 2020a, 2020b).

1.3 | Care burden

According to the *complementary model* (Chappell & Blandford, 1991), informal caregivers (mostly family members) and formal caregivers share the burden of care. However, the *substitute model* (Tennstedt et al., 1993) asserts that formal caregivers' burden increases when informal caregivers cannot attend to care-recipient needs (Freund & Band-Winterstein, 2019). An informal caregiver's burden refers to the emotional reaction to the situation's demands, which results from care demands being more significant than caregiver's resources (Sherwood et al., 2005; Williams et al., 2018). Conversely, formal caregiver's burden stems directly from the care-recipient's functional status. Thus, professionals can map the number of nursing tasks that formal caregivers perform with impaired older people, to confirm the burden inflicted upon them. In addition to their assistance of older people, formal caregiver's work may be characterised by higher exposure to respiratory viruses during visits to medical clinics, more intense communication with healthcare teams, care-recipients and family members, and by increased performance of health maintenance tasks (Stone & Bryant, 2019).

Previous studies have shown that caregivers' anxiety and depression is increasing in concordance with increased workload (Sjoberg et al., 2020). However, publicly funded home care is provided according to a pre-set schedule determined by the allocation of nursing-benefits. Thus, in cases where care-recipients need more help with ADL and IADL activities, it is not workload that increases, rather care-burden. Such care-burden exacerbates with time, as an older person's impairment or illness is an accumulating process (Clegg et al., 2013). Higher care-burden has been found to interact with feelings of entrapment, anxiety and depression (Griffiths et al., 2018) and may lead to mistreatment or neglect of the older person (Ayalon, 2016). However, the relationship between care-burden and these psychiatric symptoms during climate change events such as COVID-19, has yet to be examined.

1.4 | The current study

The initiative for the current study was based on the above-mentioned changed employment conditions of formal caregivers during the COVID-19 outbreak (National Insurance Institute, 2020a, 2020b) and previous findings showing that higher care-burden evolves from providing care to an older person with worse functional and/or mental status (Williams et al., 2018). This study is also

based on research that elucidate the adverse effect of objective stressors of the COVID-19 pandemic (i.e. social distance, shortage of personal protective equipment, reduced public transportation, closure of day-care centers, and extended working hours) on formal caregivers (Pfefferbaum & North, 2020). Altogether, these stressors may parallel care-burden with feelings of entrapment, anxiety and depression (Griffiths et al., 2018) especially when COVID-19 vaccines were not yet available. Therefore, it was first hypothesised that a strong positive relationship between anxiety and depression and between care-burden and depression would be found among formal caregivers of older people during the pandemic. The second hypothesis maintained that care-burden would moderate the association between general anxiety and depressive symptoms, so that among caregivers with high care-burden, the association between general anxiety symptoms and depressive symptoms would be stronger.

2 | RESEARCH DESIGN AND METHOD

2.1 | Participants

The sample consisted of 400 participants from across Israel. Participants ranged in age from 19 to 85 years (M = 47.7, SD = 13.8). Most were female participants (n = 368, 92.9%), married or in a committed relationship (n = 236, 59.0%), with high-school level education (n = 196, 49.0%). All participants were formal caregivers. The majority reported that they were not diagnosed with any of the medical conditions related to increased risk due to COVID-19 complications (n = 322, 80.5%). More than half (n = 239, 59.8%) had not been exposed to COVID-19 risk situations. Overall, 79% of the participants completed the Hebrew version, while 8.5%, 6% and 6.5% completed the Arabic, English and Russian versions, respectively. No significant differences in level of depressive symptoms were found between the groups, and therefore, they were treated as one group.

2.2 | Measures

2.2.1 | Demographic and covariates

Four items assessed demographic background characteristics. The participants reported their *age*, *gender*, *education* on a scale ranging from 1 (elementary school) to 6 (tertiary education) and on their *marital status* 1 (not married), 2 (married or cohabitating).

Chronic medical conditions were measured by the presence of chronic diseases known for increased risk of death due to COVID-19 complications (CDC, 2020). We used a single item 'Have you been diagnosed with one or more of the chronic diseases: cardiovascular disease, chronic respiratory disease, diabetes, hypertension or cancer?' Participants were asked to answer 1 (yes), 2 (no).

Exposure to COVID-19-related risk situations was measured with a seven-item questionnaire developed for this study. Participants

were asked to report if they were exposed to COVID-19 risk situations. (i.e. 'I know people who were/are in isolation', 'my family or close friends were/are in isolation', 'I know people who were infected', 'my care-recipient was/is in isolation', 'my care recipient was/is infected', 'I was in isolation', 'I was infected by the virus') on a 1 (yes), 2 (no) scale. Higher number of positive answers indicated higher exposure to COVID-19 risk.

2.3 | Care-burden

Care-burden was measured with an adaptation of 18 items taken from the ADL and the IADL scales (Lawton & Brody, 1969). The participants were asked to report whether they helped care-recipients with each daily living activity, on a 0 = (no), 1 = (yes) scale (i.e. 'do you help care-recipient to: take a bath, get dressed, eat, walk across a room, change diaper, wear shoes, cut fingernails, comb or shave hair, get-up from bed or chair, clean, cook, manage laundry, shop at food stores or pharmacy, take a trip outside, make postal or financial arrangements'). Internal reliability for the care-burden items was very good (Kuder Richardson $KR = 0.885$) and the count of positive answers summed for a final score.

2.4 | Depressive symptoms

Depression was measured with the Patient Health Questionnaire-9 (PHQ-9). The PHQ-9 is the depression module of the PRIME-MD (Primary Care Evaluation of Mental Disorders) diagnostic instrument for common mental disorders and scores each of the 9 DSM-IV (Diagnostic and Statistical Manual of Mental Disorders) criteria on a scale of 0 = (not at all) to 3 = (nearly every day). The sum score indicates the degree of depression, with scores of ≥5, ≥10, and ≥ 15, representing mild, moderate, and severe levels of depression, respectively (Kroenke et al., 2001). An acceptable cutoff >10 defines the presence of depressive symptomatology (Gilbody et al., 2007). In this study, the Hebrew version was applied (Palgi et al., 2020) and the internal reliability was very good ($\alpha = .86$).

2.5 | General anxiety

Anxiety was measured with the Generalised Anxiety Disorder-7 (GAD-7) instrument, which measures anxiety symptoms over the last 2 weeks (Lowe et al., 2008). Based on seven items on a Likert scale from 0 = (not at all) to 3 = (nearly every day), the risk of GAD based on the DSM-IV criteria was determined. The sum scale ranges from 0 to 21, and a higher total score reflects more severe symptoms of generalised anxiety disorder. An acceptable cut-off ≥10 is equivalent to a clinical diagnosis of GAD (Spitzer et al., 2006). In the current study, we applied the Hebrew version (Palgi et al., 2020) and the internal reliability was very good ($\alpha = .90$).

2.6 | Procedure

The Institutional Review Board at Bar-Ilan University in Israel approved this study proposal (Approval no. 0520). A convenient sample was designed using a snowball recruitment method. As most Israeli formal caregivers are Jews, Arabs, former soviet-union Jews immigrants or foreign caregivers, we translated the Hebrew version of questionnaire to Arabic, English and Russian, using back and forth method. Between May and June 2020, we invited participants from non-governmental and private home care agencies via employees' WhatsApp groups to answer an online questionnaire through links from the Qualtrics Web-based public platform. All participants signed an electronic informed consent before they began to answer the questionnaire. Inclusion criterion was the ability to complete an online questionnaire by mobile phone or computer. Of 400 submitted questionnaires, 12 were incomplete and therefore were excluded from the analysis.

2.7 | Data analysis

A univariate analysis of variance examined the effects of mother's tongue and religion on depressive symptoms' level and a t-test for independent groups compared between Israeli born and non- Israeli born participants. No effect was found for language ($F[393,3] = 0.13$, $p = .94$), religion ($F[383,4] = 56$, $p = .69$) or country of origin ($t[393] = 0.55$, $p = .58$). Therefore, all participants were treated as one group. All main predictors were mean centered before the analyses. At first, we performed a hierarchical multivariate regression to predict depression according to the hypotheses. Demographics and covariates (age, sex, marital status, education, chronic medical conditions and exposure to COVID-19) were entered in the first step of the regression. Anxiety and care-burden were entered in the second step. Potential multicollinearity between the predicting variables was rejected, as the values available at both tolerance and variance inflation factor (VIF) for the study variables ranged between 0.71 and 0.96, and between 1.04 and 1.39, respectively, which is in line with literature requirements (see O'Brien, 2007). The interaction between anxiety and care-burden was added in the third step. Significant interactions were probed using the PROCESS 3.1 computational tool (Hayes, 2012), which enabled probing the significance of slopes ($\pm$SD) of the moderator (care-burden).

3 | RESULTS

In the current sample, 6% of the participants reported a clinical level of depressive symptoms (above the cut-off ≥10). More specifically, 2.2% reported a moderate level, 2.5% reported moderate–severe depression, and 1.3% reported severe depression (PHQ-9 ≥ 10, ≥15 and ≥ 20, respectively). In a bivariate correlation analysis, depression correlated with anxiety ($r = .561$, $p < .001$), with chronic medical condition ($r = -.117$, $p < .05$), and with care-burden ($r = .107$, $p < .05$).

A clinical level of generalised anxiety symptoms was reported by 16.3% of participants. More specifically, 7.9% reported a moderate level (≥10), while 8.4% reported a severe level of anxiety symptoms (≥15). Anxiety correlated with education ($r = −.156$, $p < .05$) and with depression ($r = .561$, $p < .001$).

Care-burden (calculated by the number of daily activities caregivers helped care-recipients) negatively correlated with age ($r = −.174$, $p < .001$) and positively correlated with depression ($r = .107$, $p < .01$). The average number of daily activities that formal caregivers helped their clients with was $M = 8.9$, $SD = 5.25$, and the most common daily activities were cleaning (72.3%), buying food or medication (68.7%), cooking (67.9%), escorting to clinic visits (63.5%), managing laundry (61.0%), dressing (61.2%), bathing (60.6%), taking a trip outside (58.8%) and escort to shopping (58.2%). For more details, see Table 1.

To test our first and second hypotheses, we conducted multivariate linear regression analysis to examine the moderating effect of care-burden on the association between anxiety and depressive symptoms. After controlling for demographics and covariates in Step 1 (age, sex, education, marital status, chronic medical condition and exposure; accounting for 2.8% of the variance of depressive symptoms), anxiety and care-burden were entered in Step 2; but only anxiety was significantly related to depressive symptoms ($B = 0.44$, $\beta = 0.56$, $t = 12.77$, $p < .001$; $B = 0.05$, $\beta = 0.06$, $t = 1.33$, $p = .183$, respectively, accounting for an additional 31.8% of the variance). Finally, the interaction between anxiety and care-burden was entered in Step 3 ($B = 0.02$, $t = 3.58$, $p < .001$) accounting for an additional 2.3% of the variance. For further information, see Table 2.

Next, to probe the source of the interaction, we used a computational procedure (PROCESS; Hayes, 2013) that estimated the effects when individuals perceived their care-burden level at ±1 SD. It was found that for caregivers who reported that their care-burden level was 1 SD below the mean (low care-burden), each additional general anxiety symptom score was associated with a significant increase of 0.30 points in their depressive symptoms ($B = 0.308$, $t = 6.01$, $p < .001$). For caregivers who reported that their care-burden level was 1 SD above the mean (high care-burden), each additional general anxiety symptom score was associated with a significant increase of 0.55 points in their level of depressive symptoms ($B = 0.55$, $t = 12.16$, $p < .001$). For further information, see Figure 1.

4 | DISCUSSION

Previous studies examined social vulnerability to climate change among other population groups; that is, women and older adults (Connor et al., 2020; Gamble et al., 2013). Through the gerontological nursing perspective, this study focused on pandemic as climatic stressor that bears high risk for both caregivers and their clients. During the first waves of COVID-19, many formal caregivers felt they were left alone in an unsafe environment, with limited access to information and resources and with many dilemmas regarding safety precautions (Osakwe et al., 2021; van den Bulck et al., 2022). Such a state of mind might result in higher anxiety and depressive symptoms. Therefore, this study examined the relationship between anxiety and depression among formal caregivers of older people during the COVID-19 pandemic, and in particular, the moderating role of care-burden in this relationships. As hypothesised, a strong positive relationship between anxiety and depression and between care-burden and depression was found among caregivers during the pandemic. Moreover, those caregivers with high care-burden reported a stronger association between anxiety and depressive symptoms.

TABLE 1 Means, standard deviations and correlations of the study variables

	Mean (SD)	1	2	3	4	5	6	7	8	9
1. Age	47.7 (13.8)	—								
2. Sex[a]	1.93 (0.2)	−.10	—							
3. Education[b]	4.37 (1.0)	−.09	−.13**	—						
4. Marital status[c]	2.14 (0.7)	.35***	.04	−.08	—					
5. Comorbidities[d]	1.83 (0.3)	−.32***	.05	.08	.08	—				
6. Exposure[e]	0.80 (1.1)	.006	−.12*	.03	−.03	−.01	—			
7. Care burden[f]	8.97 (5.1)	−.17**	−.05	.02	−.07	.07	−.08	—		
8. Anxiety	4.45 (5.9)	−.02	.05	−.15**	−.07	−.08	.02	.08	—	
9. Depression	2.39 (4.6)	−.004	.07	−.07	.006	−.11**	−.04	.10*	.56***	
N		380	393	383	390	387	400	397	390	397

Note: *$p < .05$, **$p < .01$, ***$p < .001$.

[a]1 = male, 2 = female.

[b]The scale ranged from 1 (elementary school) to 6 (tertiary education).

[c]1 (not married) 2 (married or cohabitating).

[d]Higher score = greater exposure to COVID-19 related risk situations.

[f]1 = have, 2 = do not have one or more of 5 chronic illness.

[e]Higher score = help care recipients with more activities of daily living.

In line with the first hypothesis, our results indicated that formal caregivers reported a general high level of adverse mental health outcomes during the COVID-19 pandemic. As mentioned, 16.3% of caregivers reported anxiety, 6% of caregivers reported depressive symptoms, and 45.5% of caregivers reported higher than average care-burden during the first waves of the COVID-19 pandemic. The high level of mental health outcomes found in this study are in line with a preliminary study that found informal caregivers during the COVID-19 to report lower mental health than non-caregivers (Park, 2020). The results also support previous studies that illustrated the effect of objective stressors of the COVID-19 pandemic on formal caregivers (Pfefferbaum & North, 2020), which may equate care-burden with feelings of entrapment, anxiety and depression (Griffiths et al., 2018) before the COVID-19 vaccines were available.

Consistent with our second hypothesis, caregivers with high care-burden also reported a strong association between general anxiety symptoms and depressive symptoms. This finding underscores that formal caregivers with a high level of general anxiety symptoms and high care-burden are at greater risk for depression, and therefore, during the COVID-19 pandemic are a group at risk, in particular those who care for older people with more ADL and IADL deficiencies. In addition, the finding corresponds with previous studies which reported that the risk of being infected by COVID-19 was higher for caregivers with a higher-than-average level of care-burden due to their work's intimate nature (CDC, 2020), and that caregivers with an increased workload experienced higher levels of mental health symptoms (Griffiths et al., 2018; Sjoberg et al., 2020).

The study should be interpreted in light of some limitations. First, it was based on a cross-sectional design and therefore, cannot provide any causal explanations. More specifically, it did not examine the studied relationships before the COVID-19 pandemic and afterwards. Future studies should examine these questions longitudinally (e.g. at times when the effect of the pandemic is less apparent as compared to times when the pandemic out brakes again). Second, data was collected through an online panel survey. This method may bias the results, and specifically in this study population, as caregivers with a lower education level and those from various nationalities may have difficulty in reading

TABLE 2 Coefficients and interaction between anxiety and care-burden predict depression

Predictor	ΔR^2	B	β	T
Step 1	.028			
Age		−0.01	−0.04	−0.69
Sex		1.2	0.06	1.23
Education		−0.16	−0.03	−0.65
Marital status		0.08	0.01	0.24
Comorbidities		1.76**	−0.14	−0.2.61
Exposure		−0.14	−0.03	−0.68
Step 2	.318			
Care burden		0.05	0.06	1.33
Anxiety		0.44***	0.56	12.77
Step 3	.023			
Anxiety X		0.42***	—	12.44
Care–burden		0.05		1.37
Total R^2	.369			

Note: All continuous variables were mean-centered before analyses.
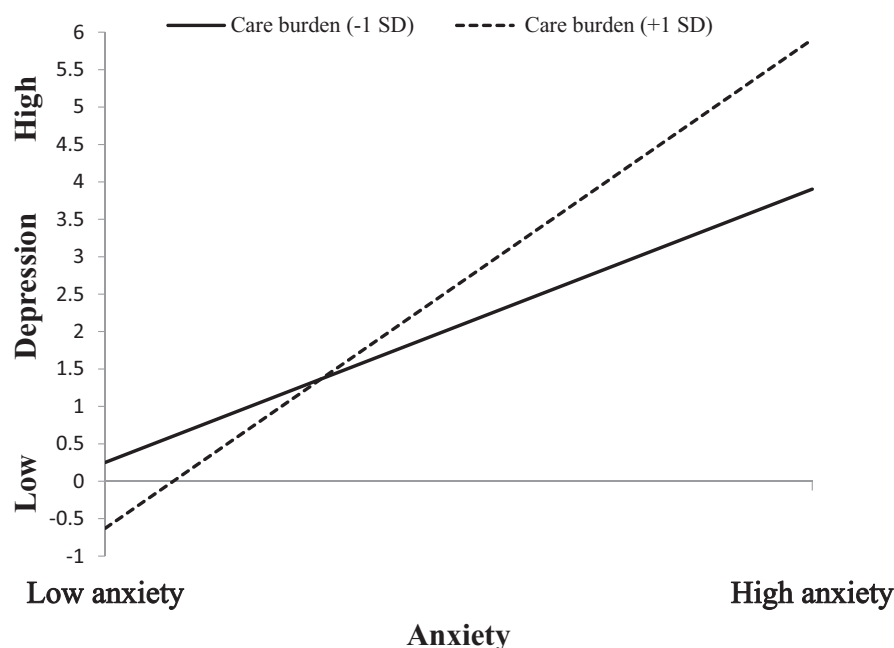*p < .05, **p < .01, ***p < .001.

FIGURE 1 The moderating role of care-burden on the association between anxiety and depressive symptoms

and understanding the questions. To mitigate this methodological deficiency, we translated the questionnaire into three additional languages, allowing most participants to read it in their mother tongue.

5 | CONCLUSIONS

The findings have theoretical and practical implications for the prevention of adverse mental outcomes among formal caregivers of older people during pandemics. Theoretically, this study broadened existing knowledge by examining a unique and transparent population of formal caregivers in light of the *complementary* and the *substitute models*. We assumed that COVID-19 quarantines would promote higher reliance on formal care as a substitute for informal care. In this regard, the fact that caregivers with higher care-burden demonstrated a stronger association between anxiety and depressive symptoms may suggest that professionals should promote better cooperation between informal and formal caregivers. Based on the study's findings, we recommend that professionals should measure and address care-burden. This recommendation leans on the reasoning that the more impaired the older persons, the more activities of daily living they need assistance with by formal and informal caregivers. Our conclusions regard care burden especially during pandemics and other climate-change-related crisis. In the current study, care-burden was measured with a practical index; the number of daily activities caregivers assist their care-recipient. On a practical level, professionals are advised to screen both older people and their caregivers using the ADL/IADL tools. As the COVID-19 pandemic continues to escalate throughout the world, this study provides gerontological nurses and other professionals with a practical tool to identify caregivers who are at risk of developing adverse mental health symptoms.

To conclude, our findings are correspondent with previous studies, which showed that higher anxiety increases depression, and higher depression among formal caregivers increases the risk for mistreatment of older care-recipient (Ayalon, 2016). Thus, it is vital to take preventive action that focuses on mitigating care-burden to prevent caregiver's depression, thereby preventing the mistreatment of impaired older people. Furthermore, better communication between professionals and formal caregivers regarding safety precautions may result in sufficient knowledge, and together with better cooperation between formal and informal caregivers, may assure continuity of care. To maintain continuity of care and prevent mistreatment during the coming climate change events, professional nurses of older people should identify and support caregivers who experience higher levels of care-burden. Supportive actions may include encouraging vaccination, arranging transportation to care-recipients' locations, sufficient allocation of personal protective equipment and the implementation of safety and stress management practices.

6 | IMPLICATIONS FOR PRACTICE

Pandemic is a climatic stressor that might lead to higher care burden, anxiety and depression levels, therefore it bears higher risk for both formal caregivers and their older clients. The interaction between care-burden and anxiety predicts higher depression among formal caregivers and thus higher risk for mistreatment of older impaired people. Policy makers should make sure that formal caregivers with higher care burden get better training and psychological support from professionals. In practice, professionals must regularly screen and address caregiver's care-burden and mental health to ensure continuity of care.

CONFLICT OF INTEREST
We have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT
We hereby state that we have full control over all of the primary data and we are willing to allow the Journal to review the data, upon request. All authors meet the criteria for authorship stated in the Uniform Requirements for Manuscripts Submitted to Biomedical Journals.

ETHICAL APPROVAL
As specified in the Method section, this study received ethical approval from the Institutional Review Board at Bar-Ilan University in Israel.

ORCID
Ziv Karni-Efrati https://orcid.org/0000-0001-7727-7911
Yuval Palgi https://orcid.org/0000-0002-8675-5513
Lee Greenblatt-Kimron https://orcid.org/0000-0003-1039-3736
Ehud Bodner https://orcid.org/0000-0003-2815-8734

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