



Stress and Emotional Consequences of Caregiving to Relatives with Dementia, Cancer, and Acute Health Issues

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ABSTRACT

Background: Most studies comparing family caregivers' mental health have focused on stress and depression. No studies to date have examined guilt and loneliness across caregivers of relatives with different conditions. **Method:** Participants were 182 family caregivers (dementia = 104, cancer = 52, and acute health problems = 26). Sociodemographic variables, frequency, and distress associated with behavioral and psychological symptoms of the care recipient (BPSD), loneliness, guilt, and anxiety and depressive symptoms were assessed. **Results:** Loneliness was more frequent among dementia caregivers and least common in cancer caregivers; guilt was highest in acute conditions, followed by cancer caregivers. Caregivers of cancer patients reported fewer BPSD. Anxiety, depression, and BPSD-related distress were most frequent in caregivers of acute conditions, followed by dementia caregivers. **Conclusions:** Although all groups experienced high levels of distress, distinct profiles were observed. Interventions could be tailored to the specific characteristics and needs of each caregiver group.

El estrés y las consecuencias emocionales del cuidado de familiares con demencia, cáncer y problemas de salud agudos

RESUMEN

Antecedentes: La mayoría de los estudios que comparan la salud mental de los cuidadores familiares se han centrado en el estrés y la depresión. Hasta la fecha, ningún estudio ha analizado la culpa y la soledad entre los cuidadores de familiares con diferentes afecciones. **Método:** Participaron 182 cuidadores familiares (demencia = 104, cáncer = 52 y problemas de salud agudos = 26). Se evaluaron las variables sociodemográficas, la frecuencia y el malestar asociados a los síntomas conductuales y psicológicos de la persona cuidada (MSCP), la soledad, la culpa y los síntomas de ansiedad y depresión. **Resultados:** La soledad era más frecuente en los cuidadores de personas con demencia y menos común en los cuidadores de pacientes con cáncer; la culpa era mayor en los casos de afecciones agudas, seguidos de los cuidadores de pacientes con cáncer. Los cuidadores de pacientes con cáncer informaron de menos MSCP. La ansiedad, la depresión y el malestar asociado a los MSCP eran más frecuentes en los cuidadores de pacientes con afecciones agudas, seguidos de los cuidadores de pacientes con demencia. **Conclusiones:** Aunque todos los grupos experimentaron gran malestar, se observaron perfiles distintos. Las intervenciones podrían adaptarse a las características y necesidades específicas de cada grupo de cuidadores.

Caring for a family member with health problems is a demanding task that places considerable strain on caregivers, which add to the challenges of everyday life. Although positive consequences of caregiving have been reported, such as a sense of purpose and feeling valued, most studies agree that this experience is primarily associated

with negative emotional outcomes, including stress, loneliness, and psychological distress (Geng et al., 2018; Hajek et al., 2021).

There is solid consensus that caregivers experience higher levels of stress and psychological distress than the general population. A landmark meta-analysis conducted by Pinquart and Sörensen

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(2003) showed that caregivers reported significantly more stress and depression, as well as lower well-being, compared to non-caregivers. The observation of high levels of stress among caregivers helps explain why theoretical models such as Lazarus and Folkman's (1984) Transactional Model of Stress and Coping have received substantial empirical support in caregiver populations (e.g., Gilhooly et al., 2016). This model contributes to understanding why, although most caregivers face a large number of stressors, not all of them show similar levels of psychological distress, including loneliness feelings, guilt, and depressive and anxiety symptoms. Differences between caregivers in sociodemographic variables such as gender or kinship, coping strategies, social support, and emotion regulation strategies help explain the observed differences in caregiver distress (e.g., Losada-Baltar et al., 2025). Furthermore, differences between caregivers appear to vary according to the care recipient's condition. Pinguart and Sörensen (2003) found that the impact on depression was greater in caregivers of people with dementia than in other groups (e.g., cancer or heart diseases). However, this and other classic studies (Ory et al., 1999) did not provide detailed differentiation among specific caregiver groups beyond dementia, limiting the generalizability of their results.

When studies directly comparing specific caregiver groups (e.g., caregivers of people with dementia, cancer, or stroke) have been analyzed, mixed results were found. On the one hand, some studies did not identify significant differences in psychological distress according to the care recipient's illness. For example, Haley et al. (2001) compared caregivers of patients in palliative care with cancer or dementia. They observed that dementia caregivers were older and had been providing care for longer, whereas cancer caregivers provided more weekly hours. However, no differences were found in depression, anxiety, or problematic behaviors. Similarly, Kim and Schulz (2008) reported comparable levels of burden and distress among caregivers of dementia and cancer patients, as well as caregivers of people with diabetes or frail older adults. Tang et al. (2019) also found no differences in anxiety and depression symptoms between Alzheimer's caregivers and caregivers of other chronic conditions such as cancer, diabetes, heart disease, or stroke. Similar findings were reported by Secinti et al. (2022), who found no differences in health-related quality of life among caregivers of dementia, cancer, and other illnesses. Kojima et al. (2024) also reported similar levels of depression and quality of life among dementia and stroke caregivers, although stroke caregivers experienced a greater financial impact. Similarly, other studies found no differences in caregiver burden between dementia and stroke caregivers (Thommessen et al., 2002), nor in levels of burden and psychological distress (Draper et al., 1992; Mayor et al., 2009).

On the other hand, some studies have identified differences between caregiver groups based on the care recipient's condition.

Clipp and George (1993) observed that dementia caregivers were older, provided care for longer periods, and exhibited higher stress, negative affect, and loneliness than cancer caregivers, in addition to lower satisfaction with social activities and a greater need for support. Papastavrou et al. (2012) compared caregivers of cancer, schizophrenia, and Alzheimer's patients, finding that dementia caregivers reported higher burden, whereas cancer caregivers reported more depression. Spatuzzi et al. (2022) found that caregivers of relatives with dementia experienced higher emotional burden than those caring for cancer patients. Harding et al. (2015) showed that burden was highest in caregivers of acquired brain injury, intermediate in dementia caregivers, and lowest in cancer caregivers. Muraki et al. (2008) reported that caring for people with dementia was associated with higher burden than caring for stroke patients, although comorbid dementia-stroke was not associated with additional burden compared to dementia alone.

In summary, the existing literature suggests that the emotional impact of caregiving varies according to the care recipient's condition, although results are not conclusive. Most studies have focused on stress, burden, and depression, while variables such as anxiety, loneliness, or social satisfaction have received less attention. In particular, guilt has scarcely been studied, despite being a frequent and disturbing emotion for family caregivers (Losada et al., 2010). Available evidence indicates that guilt may play an important role in caregiver well-being. For example, in a four-year longitudinal study, Losada-Baltar et al. (2025) found that increases in guilt predicted increases in depressive symptoms among caregivers of people with dementia. Guilt thus seems to be an important variable that may contribute to the understanding of caregivers' well-being.

Considering the above-mentioned issues, further research is needed comparing the experiences of caregivers of relatives with different illnesses or conditions. As Utz and Warner (2022) state, "research needs to focus on understanding the similarities and differences of diverse caregivers", as interventions, support programs, and policies might need to consider the diverse experiences and circumstances experienced by caregivers. The aim of this study was to analyze differences between groups of caregivers of relatives with different chronic health conditions (dementia, cancer, and serious acute illnesses) in mental health indicators (stress, loneliness, guilt, anxiety and depressive symptomatology). Although previous studies have found differences between caregivers of people with different illnesses in distress (e.g., Clipp & George, 1993; Harding et al., 2015; Muraki et al., 2008; Papastavrou et al., 2012), considering the cross-sectional design of the study and the convenience nature of the sample, we do not have specific hypothesis regarding expected differences between groups in distress indicators. The nature of the present study is, therefore, descriptive.

Table 1. Sociodemographic Characteristics of the Sample and Differences between Groups

	Dementia (<i>n</i> = 104)	Cancer (<i>n</i> = 52)	Acute illness (<i>n</i> = 26)	
Age	64.29 (13.62)	40.39 (13.12)	49.54 (16.84)	$F(2, 179) = 61.15^{**}$
Gender (<i>n</i> , %)				
Female	67	34	15	Chi-square = 6.25, <i>p</i> = .181
Male	37	18	10	
Kinship (<i>n</i> , %)				
Spouse	58	4	8	Chi-square = 48.22**
Son	39	28	16	
Other	7	20	2	
Lives with the care-recipient				Chi-square = 34.96**
Yes	85	18	14	
No	19	34	12	
Time caring (months)	44.89 (28.44)	21.35 (25.68)	19.42 (36.76)	$F(2, 179) = 15.53^{**}$
Daily hours caring	13.61 (8.73)	4.23 (5.14)	5.04 (4.90)	$F(2, 179) = 33.85^{**}$

***p* < .01.

Method

Participants and Procedure

Participants in this study were family caregivers of individuals with physical health problems who required assistance from others to carry out daily life activities. Participants had to meet the following inclusion criteria: be over 18 years old, care for a relative suffering from dementia, cancer, or serious acute health problems (e.g., stroke, coronary bypass, or amputation), provide an average of at least one hour of care per day, and have been providing care for three months or more. A total of 182 family caregivers participated: caregivers of people with dementia ($n = 104$), cancer ($n = 52$), and acute health problems (e.g., stroke; $n = 26$). Table 1 presents the main sociodemographic characteristics of the sample.

Participants were recruited through various procedures, including outreach in the Fundación Jiménez Díaz, healthcare centers and social service facilities from Madrid (Spain). They were invited to participate in the study, and if they agreed they signed an informed consent form. After that, the evaluation protocol was administered in a face-to-face interview format. All the interviews were conducted in offices at the collaborating centers between March 2022 and March 2024. The assessments were done by trained nurses and psychologists in the collaborator centers, with only the interviewer and the caregiver present in the room. The variables that were assessed in the study were collected in the following order: sociodemographic variables, anxiety symptoms, depressive symptoms, loneliness, guilt, behavioral and psychological symptoms, and functional status. The project was approved by the Ethics Committee of the Fundación Jiménez Díaz (reference number: PIC140-21).

Measures

Sociodemographic Variables

Information was collected on age, sex, relationship to the care recipient, daily time dedicated to caregiving, and length of time in the caregiving role.

Care recipient's baseline functional status. This was assessed using the Barthel Index (Mahoney & Barthel, 1965). The Barthel Index is a 10-item scale that evaluates independence in activities of daily living (ADL) (e.g., "Can the person go up and down stairs?"). Scores range from 0 (dependent) to 100 (independent). Internal consistency for this scale with the data from the present study, measured by Cronbach's alpha, was .91.

Behavioral and Psychological Symptoms

These were assessed with the Revised Memory and Behavior Problems Checklist (RMBPC; Teri et al., 1992). The RMBPC consists of 24 items (e.g., "In the past week, how often did the person ask the same question over and over?") and two subscales. One evaluates the frequency of problem behaviors, and the other assesses the extent to which these behaviors are perceived as stressful by the primary caregiver. The frequency subscale is rated on a five-point Likert scale ranging from 0 (*never*) to 4 (*every day*). The reaction subscale ranges from 0 (*not at all stressful*) to 4 (*extremely stressful*). Internal consistency (Cronbach's alpha) for this scale with the data from the present study was .91 for the total score, .78 for the frequency subscale, and .91 for the reaction subscale.

Loneliness

Loneliness was assessed using the De Jong Gierveld's Loneliness Scale (De Jong Gierveld & Kamphuis, 1985). The scale includes

11 items (e.g., "I have many people I can fully trust") with three response categories (1 = no, 2 = more or less, 3 = yes). Internal consistency (Cronbach's alpha) for this scale with the data from the present study was .86.

Guilt

This variable was assessed using the Caregiver Guilt Questionnaire (CGQ; Losada et al., 2010). The CGQ consists of 22 statements addressing caregivers' feelings of guilt regarding their negative emotions about caregiving, fear of failing in their caregiving role, facing challenges in the caregiving process, self-care, taking part in activities unrelated to caregiving, acknowledging negative feelings toward the care recipient, or leaving the care recipient in the hands of others while engaging in work or leisure activities. Internal consistency (Cronbach's alpha) for this scale with the data from the present study was .95.

Anxiety Symptoms

These were assessed using the Tension-Anxiety subscale of the Profile of Mood States (POMS; McNair et al., 1971). This subscale consists of 9 items about the level of tension and anxiety experienced during the previous week. Items are rated on a Likert scale ranging from 0 (*not at all*) to 4 (*very much*). Internal consistency (Cronbach's alpha) for this scale with the data from the present study was .91.

Depressive Symptoms

Depressive symptoms were assessed using the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977). The CES-D includes 20 items that assess the frequency of depressive symptoms during the previous week (e.g., "I felt lonely"). Items are rated on a Likert scale ranging from 0 (*rarely or never*) to 3 (*most or all of the time*). Internal consistency (Cronbach's alpha) for this scale with the data from the present study was .89.

Data Analysis

First, descriptive (percentages for categorical variables, and means, standard deviations, and ranges for quantitative variables) and correlational analyses of the assessed variables were conducted. To calculate the severity categories of symptoms (clinically relevant symptomatology), previously established cut-off scores were used for the anxiety scale (score equal or higher than 13; Losada et al., 2015), depression scale (score equal or higher than 16; Kohout et al., 1993), and guilt scale (score equal or higher than 22; Roach et al., 2013). For frequency and reaction to behavioral and psychological symptoms, as well as loneliness, three categories were established according to tertiles. Frequency of BPSD: scores lower than 19.99, between 20 and 35, higher than 35. Reaction to BPSD: scores lower than 4.46; between 4.47 and 19.9; higher than 19.9. Loneliness: scores lower than 2; between 2 and 5.9; higher than 6.

Mean differences in the scale scores were examined as a function of caregiver group (dementia, cancer/hematological, and acute illness) conducting a series of ANCOVA models with heteroskedasticity-consistent HC3 robust standard errors, which provide reliable inference under heteroskedastic conditions, adjusting for covariates (sociodemographic variables that showed differences between caregiving groups). All pairwise comparisons were conducted using Bonferroni-adjusted post-hoc tests to control the family-wise error rate when evaluating group differences. Effect sizes were computed using partial eta-squared (η^2_p) values with 95% confidence intervals, with values near .01, .06 and .14 suggesting small, medium and large

Table 2. Adjusted Means and Standard Errors in the Assessed Variables and Differences between Groups

	Dementia (n = 104)	Cancer (n = 52)	Acute illness (n = 26)		η^2 (95% CI)
Frequency stressors	31.42 (2.00)	16.56 (2.57)	27.84 (3.34)	$F(2, 172) = 5.93^{**}$	.19 (.11, 1.0)
Reaction stressors	12.70 (2.33)	14.83 (2.99)	29.67 (3.88)	$F(2, 172) = 5.33^{**}$	.10 (.03, 1.0)
Loneliness	4.97 (0.67)	5.41 (0.86)	5.72 (1.12)	$F(2, 173) = 0.16, p = .85$	.03 (0, 1.0)
Guilt	14.18 (2.10)	31.32 (2.71)	39.25 (3.51)	$F(2, 173) = 14.18^{**}$	.29 (.20, 1.0)
Anxiety	12.13 (1.05)	13.33 (1.36)	17.31 (1.76)	$F(2, 173) = 3.59^*$	.04 (0, 1.0)
Depression	13.76 (1.49)	18.08 (1.93)	21.84 (2.50)	$F(2, 173) = 4.55^*$	.03 (0, 1.0)

Note. η^2 = eta squared; CI = confidence interval.

* $p < .05$, ** $p < .01$.

effect sizes, respectively (Cohen, 1988). Finally, contingency tables were conducted to analyze group differences in relation to clinically relevant symptomatology. No a priori sample size calculation analyses were performed, as all eligible individuals during the sampling period were evaluated. However, a post-hoc power analysis using G*Power version 3.1.9.7 suggested that the available sample size was enough to achieve a power ($1-\beta$) of 0.99 to detect a medium effect size ($F^2 = 0.50$) with 3 groups and 5 covariates. All analysis were done using SPSS v29 (IBM Corp., 2022) and R (version 4.5.1.; R Foundation for Statistical Computing, Vienna, Austria). Robust ANCOVA models were estimated using the car (Fox & Weisberg, 2019), lme4 (Zeileis & Hothorn, 2002), and sandwich (Zeileis et al., 2020) packages, with estimated marginal means and Bonferroni-adjusted post-hoc comparisons obtained via emmeans (Lenth & Piaskowski, 2026), and effect sizes computed using effectsize (Ben-Shachar et al., 2020).

Results

Differences between Groups in Sociodemographic Variables

As shown in Table 1, caregivers of people with dementia were significantly older than those in the other two groups. However, the correlation analysis between sociodemographic variables and the assessed variables suggest that age was only related to higher level of loneliness ($r = .35, p < .01$) and anxiety ($r = .39, p < .01$) in cancer caregivers. Being female was associated with higher anxiety ($r = .38, p < .01$) and depressive symptoms ($r = .29, p < .01$) in dementia caregivers, and with higher anxiety ($r = .28, p < .05$) in cancer caregivers. The group of dementia caregivers included a higher proportion of spouses compared to the other groups, and more caregivers of people with dementia lived with the care-recipient. Being a spouse was associated with lower reaction to behavioral problems ($r = -.20, p < .05$) and lower guilt ($r = -.23, p < .05$) and anxiety ($r = -.21, p < .01$) in dementia caregivers, and with lower guilt in cancer caregivers ($r = -.31, p < .01$). Living with the care-recipient was associated with more loneliness in cancer caregivers ($r = .28, p < .05$). In the cancer group, there were more relatives who were neither children nor spouses compared to the other two groups. Finally, dementia caregivers had been in the caregiving role for a significantly longer period of time and reported spending significantly more hours per day on caregiving than the other groups. Reporting more daily hours caring was associated with higher frequency of behavioral problems ($r = .32, p < .05$), loneliness ($r = .29, p < .05$), anxiety ($r = .41, p < .01$) and depression ($r = .37, p < .01$) in cancer caregivers, and with lower guilt ($r = -.40, p < .05$) in caregivers of people with acute illnesses.

Differences in Means between Caregiver Groups on the Assessed Variables

Caregivers of people with cancer reported significantly fewer behavioral and psychological symptoms in their relatives (Table 2)

compared to caregivers of people with dementia (estimate = -14.85, $SE = 3.61, p = .00$) and acute illness (estimate = -11.27, $SE = 3.89, p = .01$). No differences were observed between caregivers of people with dementia and caregivers of people with acute illness (estimate = 3.58, $SE = 3.84, p = 1.00$). Caregivers of people with acute illness reported significantly more distress associated with behavioral and psychological symptoms than the other two groups (dementia: estimate = -16.98, $SE = 4.47, p = .00$; cancer: estimate = -14.84, $SE = 4.53, p = .00$), with no differences between dementia and cancer caregivers (estimate = -2.14, $SE = 4.20, p = 1.00$). The obtained effect sizes for differences in frequency and distress related to behavioral and psychological symptoms were moderate.

Caregivers of relatives with dementia reported significantly lower levels of guilt than those caring for people with cancer (estimate = -17.14, $SE = 3.79, p = .00$) and those caring for people with acute illness (estimate = -25.07, $SE = 4.04, p = .00$), with large effect sizes. No differences were found between caregivers of people with cancer and caregivers of people with acute illness (estimate = -7.93, $SE = 4.09, p = .16$).

Regarding anxiety symptoms, caregivers of people with acute illness reported significantly higher anxiety than the group of caregivers of people with dementia (estimate = 5.18, $SE = 2.03, p = .03$), with no differences between dementia and cancer caregivers (estimate = -1.20, $SE = 1.91, p = 1.00$) and cancer caregivers and caregivers of people with acute illness (estimate = -3.99, $SE = 2.05, p = .16$). Similar results were found for depressive symptoms. Caregivers of people with dementia reported lower depressive symptomatology than caregivers of people with acute illness (estimate = -8.08, $SE = 2.87, p = .02$). No differences were observed between dementia and cancer caregivers (estimate = -4.32, $SE = 2.70, p = .34$) and cancer and acute illness caregivers (estimate = -3.76, $SE = 2.91, p = .59$). The obtained effect sizes for anxiety and depression differences were small.

According to the ANCOVA results, there were no significant between group differences in loneliness (dementia vs. cancer caregivers: estimate = -0.44, $SE = 1.21, p = 1.00$; dementia vs. acute illness: estimate = -0.75, $SE = 1.29, p = 1.00$; and cancer vs. acute illness: estimate = -0.31, $SE = 1.30, p = 1.00$).

Group Differences in Clinically Relevant Symptomatology

With respect to the frequency of BPSD (see Table 3), significant differences were observed in the distribution of caregivers considering their clinically significant scores and caregiving group ($\chi^2 = 49.29, p < .01$). A greater number of dementia caregivers were observed in the medium ($n = 46$) and high ($n = 44$) categories compared to the other groups, and fewer in the low category ($n = 14$) than expected (32.6). In the cancer caregiver group, significantly more caregivers were in the low category ($n = 35$ vs. 16.3 expected), and fewer in the medium ($n = 6$) and high ($n = 11$) categories than expected. The distribution of caregivers of relatives with acute illness was more balanced across the three severity levels (low: n

Table 3. Sample distribution based on clinically relevant scores

		Frequency			Reaction			Loneliness			Guilt		Anxiety		Depression	
		Low	Mean	High	Low	Mean	High	Low	Mean	High	Low	High	No	Yes	No	Yes
Dementia	Observed	14	46	44	26	46	32	22	41	41	75	29	49	55	57	47
	Expected	32.6	36.6	34.9	34.3	32.6	37.1	29.1	40.6	34.3	55.4	48.6	49.1	54.9	52	52
	Typified	-6	3.0	2.9	-2.6	4.3	-1.6	-2.4	0.1	2.1	5.9	-5.9	0.0	0.0	1.5	-1.5
Cancer	Observed	35	6	11	28	9	15	22	17	13	18	34	32	20	28	24
	Expected	16.3	18.3	17.4	17.1	16.3	18.6	14.6	20.3	17.1	27.7	24.3	24.6	27.4	26	26
	Typified	6.6	-4.2	-2.2	3.8	-2.6	-1.2	2.7	-1.1	-1.4	-3.2	3.2	2.4	-2.4	0.7	0.7
Acute	Observed	8	12	6	6	2	18	7	13	6	4	22	5	21	6	20
	Expected	8.1	9.1	9.7	8.6	8.1	9.3	7.3	10.1	8.6	13.9	12.1	12.3	13.7	13	13
	Typified	-0.1	1.3	-1.2	-1.2	-2.8	3.9	-1	1.2	-1.2	-4.2	4.2	-3.1	3.1	-3.0	3.0

= 8, medium: $n = 12$, high: $n = 6$), closely matching the expected distribution, as shown in Table 3.

Regarding reaction or distress associated with BPSD, significant findings were also observed ($\chi^2 = 32.66$, $p < .01$). More caregivers of relatives with acute illness were in the high distress group ($n = 18$, standardized residual = 3.9), while dementia caregivers were concentrated in the medium group ($n = 46$, standardized residual = 4.3) and fewer in the low group ($n = 26$). In contrast, cancer caregivers were mostly distributed in the low distress group ($n = 28$), exceeding expected values (17.4).

For loneliness, significantly more dementia caregivers scored in the clinically relevant high category ($n = 41$, standardized residual = 2.1), and fewer in the low category ($n = 22$) than expected (29.1). No significant group differences were observed in the intermediate category. The chi-square test indicated significant differences, $\chi^2 = 9.98$, $p = .041$.

Regarding guilt, significantly more cancer ($n = 34$; standardized residual = 3.2) and acute illness caregivers ($n = 22$; standardized residual = 4.2) were found in the high guilt group compared to dementia caregivers ($n = 29$; standardized residual = -5.9). Conversely, dementia caregivers were overrepresented in the low guilt group ($n = 75$ vs. 55.4 expected). The difference was significant ($\chi^2 = 37.10$, $p < .001$).

The distribution for anxiety showed that more caregivers of relatives with acute illness presented clinically significant anxiety ($n = 20$, standardized residual = 3.0) compared to the other groups, whereas more cancer caregivers were in the non-anxious group ($n = 32$, standardized residual = 2.4). The difference between groups was significant, $\chi^2 = 12.45$, $p = .002$.

Finally, the distribution for depression revealed, similar to anxiety, that more caregivers of relatives with acute illness scored in the clinically significant range ($n = 20$, standardized residual = 3.0) compared to dementia ($n = 47$) and cancer ($n = 24$) caregivers. This difference was also significant ($\chi^2 = 8.81$, $p = .01$).

Discussion

The aim of the present study was to examine differences in mental health variables (loneliness, guilt, and anxiety and depressive symptoms) among groups of caregivers of individuals with different pathologies (dementia, cancer, and acute health problems). First, it is important to note that all three evaluated groups show profiles of high psychological vulnerability, with mean scores above or very close to the cut-off points of the scales used, suggesting clinically significant levels of distress in terms of anxiety and depressive symptoms, as well as feelings of loneliness and guilt.

The results support previous studies suggesting the existence of differences between caregiver groups. Regarding sociodemographic variables, our findings are consistent with studies reporting that caregivers of people with dementia are older, more often spouses,

live together with the care-recipient, have been caregiving for a longer period, and dedicate more daily hours to care (e.g., Clipp & George, 1993; Ory et al., 1999).

The results also align with previous studies addressing loneliness. Clipp and George (1993) reported that dementia caregivers were less satisfied with their social activities and felt lonelier than cancer caregivers. Our findings reinforce these observations, showing differences in the proportion of caregivers with clinically significant levels, with more dementia caregivers reporting high levels of loneliness compared to the other two groups. This observed difference may be related to the high time demands and prolonged duration of care, which may limit opportunities for maintaining meaningful social relationships (Sabatini et al., 2024). In fact, a recent longitudinal study by Åkerman et al. (2026) showed that being a long-term caregiver was one of the main variables associated with an increase through time in loneliness feelings. In the case of dementia caregivers, the correlations analysis suggested that female caregivers reported higher distress (anxiety and depressive symptomatology), and spouses reported lower reaction to behavioral problems, guilt and anxiety, compared to other kinship groups.

Regarding caregivers of individuals with acute-onset illnesses, our results are consistent with previous studies indicating higher levels of burden compared to dementia caregivers and, especially, cancer caregivers (Harding et al., 2015). These findings suggest that caregivers of acute-onset patients represent the most vulnerable profile, displaying elevated levels of stress, burden associated with BPSD (frequency and reaction, with moderate effect sizes), and clinically significant levels of anxiety and depressive symptomatology. The findings also highlight the high levels of guilt observed in caregivers of cancer or acute-onset patients, exceeding those of dementia caregivers, with high effect sizes. Therefore, these findings contrast with Muraki et al. (2008), who reported greater burden in caregivers of dementia patients compared to stroke caregivers. While the small subsample size of the caregivers of relatives with acute-onset illness limits definitive conclusions, these data suggest that the sudden onset of dependency and lack of preparation in the family environment may be associated with substantial emotional destabilization. As suggested by recent research by Le et al. (2025) with caregivers of stroke patients, significant limitations in the ability to perform activities in the care-recipient expose caregivers to important challenges and difficulties for meeting the relative's needs, increasing their guilt feelings. The effect of care-recipient dependency on caregivers' burden or psychological state seems to be indirect, through caregiver guilt (Le et al., 2025). Sociodemographic and cultural characteristics may also influence these results. The acute-onset caregiver group is predominantly composed of adult children, unlike dementia caregivers, who are more often spouses. Therefore, stress and psychological distress may be influenced by multiple roles and the need to balance familial and work responsibilities (Medeiros et al., 2022). This issue might contribute to understanding the obtained negative association between number of daily hours caring

and guilt in caregivers of people with acute-onset illnesses, as they might feel less conflict with the personal value of devoting time to care. Considering the obtained high levels of distress in this group, initial interventions should aim to provide immediate resources to buffer the sudden impact of acute-onset illnesses, including direct care resources for the patient and psychological support for the caregiver.

Caregivers of patients with cancer reported lower frequency of behavioral and psychological symptoms in their care recipients compared to the other two groups. This is in line with Papastavrou et al. (2012), who observed greater burden in caregivers of relatives with dementia. However, both Papastavrou et al. (2012) and Spatuzzi et al. (2022) found greater emotional burden in dementia caregivers compared to cancer caregivers. The present study does not suggest differences between dementia and cancer caregivers in terms of anxiety and depression. Nevertheless, our data indicate that caregivers of acute-onset patients more frequently exhibit clinically significant reactions to BPSD than cancer caregivers, whereas cancer caregivers display significantly higher levels of guilt than dementia caregivers. In terms of cancer caregivers who might show a special vulnerability to psychological distress, the correlations analysis suggested that being older, female, caring for a non-spouse relative, living with the care-recipient, and devoting many daily hours to care were linked with higher distress in cancer caregivers.

In summary, the results of this study suggest that, although all three groups are clearly psychologically vulnerable, caregivers of relatives with acute-onset illnesses exhibit the highest levels of distress, including greater BPSD-related burden, as well as higher guilt, anxiety, and depression compared to the other groups. Cancer caregivers showed higher levels of guilt than dementia caregivers, whereas dementia caregivers displayed higher loneliness and greater BPSD-related burden compared to cancer caregivers. The present study is particularly original in its analysis of levels of loneliness and guilt across different groups of caregivers. Both loneliness and guilt are indicators of negative emotions that place caregivers in a situation of significant psychological vulnerability. Thus, loneliness was defined by Cacioppo et al. (2010) as “a debilitating psychological condition characterized by a deep sense of emptiness, worthlessness, lack of control, and personal threat” (p. 463). Guilt, in turn, has been defined as “the dysphoric feeling associated with the recognition that one has violated a personally relevant moral or social standard” (Kugler & Jones, 1992; p. 318). In the present study, as shown in Table 3, the percentages of high loneliness for dementia, cancer and acute illness caregivers were 39.42%, 25%, and 23.08%, respectively. These are similar to those shown in the literature (for example, the meta-analysis by Liao et al., 2024 reported a pooled prevalence of loneliness for dementia caregivers of 50.8%). The obtained percentage of caregivers with high levels of guilt was 27.89%, 65.39%, and 84.62% for caregivers of people with dementia, cancer and acute illnesses, respectively. Considering these high prevalences, it is not surprising to also find a large number of caregivers that report high levels of depressive and anxiety symptomatology, as loneliness and guilt have been found to be important predictors of caregivers' distress (e.g., Losada-Baltar et al., 2025). The observation of elevated levels of loneliness and guilt in a non-negligible proportion of caregivers across the three health conditions highlights the need not only to address the sources of stress faced by caregivers but also to respond to the psychological vulnerability generated by these emotions in those who experience them. According to the results, more acute conditions are associated with reports of higher levels of guilt, while more chronic conditions are associated with reports of greater loneliness.

The existence of differences between groups suggests that studies comparing dementia caregivers with a mixed group of caregivers of various illnesses may obscure the diversity within each group. Similarly, as noted in the caregiver intervention literature (e.g., Cheng

et al., 2020), it may be inappropriate to offer a generic intervention for all caregivers; interventions should be tailored to the specific characteristics of each caregiver group and the individual needs of each caregiver, considering the potential caregiving transitions and specific challenges of each stage. Although previous studies have reported high guilt levels in dementia caregivers (Prunty & Foli, 2019), the present results underscore the need to assess guilt and provide support to caregivers of cancer and acute-onset patients. The use of intervention programs that have been effective in clinically reducing high levels of guilt in dementia caregivers (Gallego-Alberto et al., 2021) may also help reduce guilt in caregivers of cancer or acute-onset patients. In this sense, validating the complex and demanding role that caregivers face, acknowledging that being a perfect caregiver is not possible, is an important first step to decrease caregivers' felt pressure to meet the demands imposed by society on their role. Training caregivers in acceptance (of negative emotions associated with caregiving) and self-compassion strategies may be relevant strategies for reducing high levels of guilt (Gallego-Alberto et al., 2021). Regarding loneliness, even though the number of studies testing the efficacy of interventions targeting loneliness in caregivers is sparse and with small effect sizes (Velloze et al., 2022), reducing caregivers maladaptive cognitions related to reluctance to seek help and engage in selfcare activities, while also providing early support (e.g., respite services), might reduce their chances of losing contact with other people (friends, family, or work colleagues) and boost engagement in meaningful activities, key variables that explain loneliness feelings in caregivers (e.g., Kovaleva et al., 2018).

This study has limitations that require the results and conclusions to be interpreted cautiously. Data in this study are cross-sectional, so no causal relationships between the variables can be inferred. Future studies are needed with longitudinal designs and larger samples that may allow testing for specific trajectories and comparison between types of caregivers. Participants volunteered for the study, so it is possible that caregivers with different vulnerability profiles did not participate, for example due to lack of time or high stress levels preventing involvement. The results of this study should be taken with caution as the sample size of some of the groups, mostly the acute illness group, is small. Also, a major limitation of the study has to do with the clinical heterogeneity of the acute illness group, something that limits interpretability and generalizability of the findings. The findings should be considered preliminary, with a need for future studies with larger sample sizes of the illnesses included under the acute illness label. Although differences between groups were observed, it cannot be concluded that the identified profiles are clearly definitive for each group. For example, although more cancer and acute-onset caregivers exhibit elevated guilt compared to the dementia group, a substantial number (29 out of 104, 27.89%) of dementia caregivers also reported high guilt levels. Therefore, the results may indicate a general pattern of emotional impact for each caregiver group, but this should not obscure the high variability of emotional distress profiles both within and between groups. Additionally, variables that could further define these profiles were not assessed, and differences may exist within the groups themselves. Kimura et al. (2021) reported differences between caregivers of young-onset and late-onset dementia patients. Caregivers of young-onset dementia reported greater psychological distress and unmet needs, which were linked to a higher requirement for psychosocial support and limitations in social functioning. The fact that dementia caregivers have been caregiving for significantly longer than other groups may mask higher emotional distress in the early stages of caregiving, with a duration comparable to that observed in cancer or acute-onset caregivers. The complexity added by comorbidity has also been reported. For example, Price et al. (2024) note that coexisting cancer and dementia can create unique caregiving challenges, increasing the likelihood that caregivers experience greater emotional burden from caring alone and require

specialized support. The obtained findings of a higher frequency of behavioral and psychological symptoms in people with dementia and acute illness compared with cancer caregivers are not surprising, as the scale that was used in this study for measuring behavioral and psychological symptoms (RMBC; Teri et al., 1992) was developed for measuring these symptoms in people with dementia. Although behavioral and psychological symptoms are observed in people with dementia, they can also be seen, to a lesser extent, in people without dementia (Savva et al., 2009). In fact, the items of the scale do not make specific reference to dementia. We selected this scale as we were not only interested in the frequency of behaviors, but also in the reaction or distress that they cause in caregivers. In fact, as described in the results, no difference between cancer and dementia caregivers was observed for reaction to behavioral and psychological symptoms. In spite of this, future studies should consider using alternative measures of potential stressors faced by caregivers providing care to relatives with different illnesses. In addition, future studies conducted with larger samples may make it possible to assess the extent to which specific dimensions of the variables evaluated (such as social or emotional loneliness, or different aspects of guilt; e.g., guilt about doing wrong by the care recipient or guilt about neglecting other relatives) allow for a more detailed analysis of differences in distress among the caregiver groups assessed. Finally, all variables were assessed through self-reporting, which could be subject to potential biases such as shared method variance, social desirability bias, and recall bias. These factors can affect the accuracy of the collected data and should be considered when interpreting the findings.

Despite these limitations, this is the first study to analyze loneliness and guilt profiles across different caregiver groups. As a concluding remark, this study highlights the substantial impact of caring for a relative with serious health problems on caregiver mental health. The data suggest that all evaluated groups experience significant emotional distress, with caregivers of acute-onset patients showing the highest psychological burden. Clinically significant guilt is highly prevalent across groups, particularly among caregivers of acute-onset illness (84.6%) and cancer (65%) patients. Given this high prevalence and the scarcity of studies addressing this emotion in these populations, further research is needed to explore the causes of this painful emotion in caregivers. The sudden onset and broad impact on caregivers' lives may contribute to these high distress levels, while prolonged caregiving, as observed in dementia caregivers, appears to be associated with elevated loneliness. An interdisciplinary collaboration may allow for an individualized approach to understand and treat caregivers' needs.

Highlights

- All the caregiving groups show profiles of high psychological vulnerability, with mean scores above or very close to the cut-off points for anxiety and depressive symptoms, as well as feelings of loneliness and guilt.
- Caregivers of relatives with acute-onset illnesses exhibit the highest levels of distress, including greater BPSD-related burden, as well as higher guilt, anxiety, and depression compared to cancer and dementia caregivers.
- Cancer caregivers showed higher levels of guilt than dementia caregivers, whereas dementia caregivers displayed higher loneliness and greater BPSD-related burden compared to cancer caregivers.

Conflict of Interest

The authors of this article declare no conflict of interest.

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Data Availability Statement

The study materials, analytic methods, and data are available from the corresponding author upon reasonable request.

Authors' Contribution

Maria Bejar-Santana, Lucía Jiménez-Gonzalo, and Andrés Losada-Baltar served as lead for conceptualization, investigation, data curation and writing of the original draft. María Márquez-González and Andrés Losada-Baltar contributed equally to funding acquisition and methodology. María Márquez-González, Claudia Benito-Rincón, and Luis Manuel Pérez-Cardona supported the writing of the original draft.

References

- Åkerman, S., Nyqvist, F., Nygård, M., Snellman, F., & Olofsson, B. (2026). Risk factors for loneliness among older informal caregivers in regions of Finland and Sweden: A longitudinal study. *Scandinavian Journal of Public Health*, 54(2), 105–112. <https://doi.org/10.1177/14034948241308029>
- Ben-Shachar, M. S., Lüdtke, D., & Makowski, D. (2020). Effectsize: Estimation of effect size indices and standardized parameters. *Journal of Open Source Software*, 5(56), Article 2815. <https://doi.org/10.21105/joss.02815>
- Cacioppo, J. T., Hawkley, L. C., & Thisted, R. A. (2010). Perceived social isolation makes me sad: 5-year cross-lagged analyses of loneliness and depressive symptomatology in the Chicago Health, Aging, and Social Relations Study. *Psychology and aging*, 25(2), 453–463. <https://doi.org/10.1037/a0017216>
- Cheng, S.-T., Li, K.-K., Losada, A., Zhang, F., Au, A., Thompson, L. W., & Gallagher-Thompson, D. (2020). The effectiveness of nonpharmacological interventions for informal dementia caregivers: An updated systematic review and meta-analysis. *Psychology and Aging*, 35(1), 55–77. <https://doi.org/10.1037/pag0000401>
- Clipp, E. C., & George, L. K. (1993). Dementia and cancer: A comparison of spouse caregivers. *The Gerontologist*, 33(4), 534–541. <https://doi.org/10.1093/geront/33.4.534>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Lawrence Erlbaum.
- de Jong-Gierveld, J., & Kamphuis, F. (1985). The development of a Rasch-type loneliness scale. *Applied Psychological Measurement*, 9(3), 289–299. <https://doi.org/10.1177/014662168500900307>
- Draper, B. M., Poulos, C. J., Cole, A. M., Poulos, R. G., & Ehrlich, F. (1992). A comparison of caregivers for elderly stroke and dementia victims. *Journal of the American Geriatrics Society*, 40(9), 896–901. <https://doi.org/10.1111/j.1532-5415.1992.tb01986.x>
- Fox, J., & Weisberg, S. (2019). *An R companion to applied regression* (3rd ed.). Sage.
- Gallego-Alberto, L., Márquez-González, M., Romero-Moreno, R., Cabrera, I., & Losada, A. (2021). Pilot study of a psychotherapeutic intervention for reducing guilt feelings in highly distressed dementia family caregivers (Innovative practice). *Dementia*, 20(2), 759–769. <https://doi.org/10.1177/1471301219886761>
- Geng, H. M., Chuang, D. M., Yang, F., Yang, Y., Liu, W. M., Liu, L. H., & Tian, H. M. (2018). Prevalence and determinants of depression in caregivers of cancer patients: A systematic review and meta-analysis. *Medicine*, 97(39), Article e11863. <https://doi.org/10.1097/MD.00000000000011863>
- Gilhooley, K. J., Gilhooley, M. L. M., Sullivan, M. P., McIntyre, A., Wilson, L., Harding, E., Woodbridge, R., & Crutch, S. (2016). A meta-review of stress, coping and interventions in dementia and dementia caregiving. *BMC Geriatrics*, 16(1), Article 106. <https://doi.org/10.1186/s12877-016-0280-8>
- Hajek, A., Kretzler, B., & König, H. H. (2021). Informal caregiving, loneliness and social isolation: A systematic review. *International Journal of Environmental Research and Public Health*, 18(22), Article 12101. <https://doi.org/10.3390/ijerph182212101>
- Haley, W. E., LaMonde, L. A., Han, B., Narramore, S., & Schonwetter, R. (2001). Family caregiving in hospice: Effects on psychological and

- health functioning among spousal caregivers of hospice patients with lung cancer or dementia. *Hospice Journal*, 15(4), 1-18. https://doi.org/10.1300/J011v15n04_01
- Harding, R., Gao, W., Jackson, D., Pearson, C., Murray, J., & Higginson, I. J. (2015). Comparative analysis of informal caregiver burden in advanced cancer, dementia, and acquired brain injury. *Journal of Pain and Symptom Management*, 50(4), 445-452. <https://doi.org/10.1016/j.jpainsymman.2015.04.005>
- IBM Corp. (2022). *IBM SPSS Statistics for Windows*. IBM Corp.
- Kim, Y., & Schulz, R. (2008). Family caregivers' strains: Comparative analysis of cancer caregiving with dementia, diabetes, and frail elderly caregiving. *Journal of Aging and Health*, 20(5), 483-503. <https://doi.org/10.1177/0898264308317533>
- Kimura, N. R. S., Simões, J. P., Santos, R. L., Baptista, M. A. T., Portugal, G., Johannessen, A., Barca, M. L., Engedal, K., Laks, J., Rodrigues, V. M., & Dourado, M. C. N. (2021). Young- and late-onset dementia: A comparative study of quality of life, burden, and depressive symptoms in caregivers. *Journal of Geriatric Psychiatry and Neurology*, 34(5), 434-444. <https://doi.org/10.1177/0891988720933355>
- Kohout, F. J., Berkman, L. F., Evans, D. A., & Cornoni-Huntley, J. (1993). Two shorter forms of the CES-D (Center for Epidemiological Studies Depression) depression symptoms index. *Journal of Aging and Health*, 5(2), 179-193. <https://doi.org/10.1177/089826439300500202>
- Kojima, Y., Yamada, S., Kamijima, K., Kogushi, K., & Ikeda, S. (2024). Burden in caregivers of patients with schizophrenia, depression, dementia, and stroke in Japan: Comparative analysis of quality of life, work productivity, and qualitative caregiving burden. *BMC Psychiatry*, 24(1), Article 591. <https://doi.org/10.1186/s12888-024-06000-x>
- Kovaleva, M., Spangler, S., Clevenger, C., & Hepburn, K. (2018). Chronic stress, social isolation, and perceived loneliness in dementia caregivers. *Journal of Psychosocial Nursing and Mental Health Services*, 56(10), 36-43. <https://doi.org/10.3928/02793695-20180329-04>
- Kugler, K., & Jones, W. H. (1992). On conceptualizing and assessing guilt. *Journal of personality and Social Psychology*, 62(2), 318-327. <https://doi.org/10.1037/0022-3514.62.2.318>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
- Le, Z., Yaofeng, Z., Shuo, L., Lisha, T., Wenyu, H., Huihong, Z., Min, T., Ru, T., & Ping, L. (2025). The mediating role of caregiver guilt in the relationship between stroke patients' functional status and caregiver burden: A correlational study. *International Journal of Nursing Studies Advances*, 9, Article 100437. <https://doi.org/10.1016/j.ijnsa.2025.100437>
- Lenth, R., & Piskowski, J. (2026). *Emmeans: Estimated marginal means, aka least-squares means*. <https://doi.org/10.32614/CRAN.package.emmeans>
- Liao, X., Wang, Z., Zeng, Q., & Zeng, Y. (2024). Loneliness and social isolation among informal carers of individuals with dementia: A systematic review and meta-analysis. *International Journal of Geriatric Psychiatry*, 39(5), Article e6101. <https://doi.org/10.1002/gps.6101>
- Losada-Baltar, A., Márquez-González, M., Mausbach, B. T., Jiménez-Gonzalo, L., Fernandes-Pires, J. A., Olazarán, J., García-García, L., Gallejo-Alberto, L., & Cabrera, I. (2025). Longitudinal support to the sociocultural stress and coping model: A 4-year follow-up of family caregivers of people with dementia. *International Psychogeriatrics*, 37(4), Article 100079. <https://doi.org/10.1016/j.jinpsyc.2025.100079>
- Losada, A., Márquez-González, M., Peñacoba, C., & Romero-Moreno, R. (2010). Development and validation of the Caregiver Guilt Questionnaire. *International Psychogeriatrics*, 22(4), 650-660. <https://doi.org/10.1017/S1041610210000074>
- Losada, A., Márquez-González, M., Romero-Moreno, R., Mausbach, B. T., López, J., Fernández-Fernández, V., & Nogales-González, C. (2015). Cognitive-behavioral therapy (CBT) versus acceptance and commitment therapy (ACT) for dementia family caregivers with significant depressive symptoms: Results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology*, 83(4), 760-772. <https://doi.org/10.1037/ccp0000028>
- Mahoney, F. I., & Barthel, D. W. (1965). Functional evaluation: The Barthel index. *Maryland State Medical Journal*, 14, 61-65. <https://doi.org/10.1037/t02366-000>
- Mayor, M. S., Ribeiro, O., & Paúl, C. (2009). Satisfaction in dementia and stroke caregivers: A comparative study. *Revista Latino-americana de Enfermagem*, 17(5), 620-624. <https://doi.org/10.1590/s0104-11692009000500004>
- McNair, D. M., Lorr, M., & Droppleman, L. F. (1971). *Manual for the profile of mood states*. Educational and Industrial Testing Service.
- Medeiros, T. J., Barbosa, G. C., Alves, L. C. D. S., & Gratao, A. C. M. (2022). Work-family balance among caregivers of elderly people: A systematic review. *Cadernos Brasileiros de Terapia Ocupacional*, 30, Article e3154. <https://doi.org/10.1590/2526-8910.ctoAR241831542>
- Muraki, I., Yamagishi, K., Ito, Y., Fujieda, T., Ishikawa, Y., Miyagawa, Y., Okada, K., Sato, S., Kitamura, A., Shimamoto, T., Tanigawa, T., & Iso, H. (2008). Caregiver burden for impaired elderly Japanese with prevalent stroke and dementia under long-term care insurance system. *Cerebrovascular Diseases*, 25(3), 234-240. <https://doi.org/10.1159/000113861>
- Ory, M. G., Hoffman, R. R., 3rd, Yee, J. L., Tennstedt, S., & Schulz, R. (1999). Prevalence and impact of caregiving: A detailed comparison between dementia and nondementia caregivers. *The Gerontologist*, 39(2), 177-185. <https://doi.org/10.1093/geront/39.2.177>
- Papastavrou, E., Charalambous, A., Tsangari, H., & Karayiannis, G. (2012). The burdensome and depressive experience of caring: What cancer, schizophrenia, and Alzheimer's disease caregivers have in common. *Cancer Nursing*, 35(3), 187-194. <https://doi.org/10.1097/NCC.0b013e31822cb4a0>
- Pinquart, M., & Sörensen, S. (2003). Differences between caregivers and noncaregivers in psychological health and physical health: A meta-analysis. *Psychology and Aging*, 18(2), 250-267. <https://doi.org/10.1037/0882-7974.18.2.250>
- Price, M. L., Surr, C. A., Gough, B., & Ashley, L. (2024). Understanding the experiences and psychosocial support needs of caregivers of people with comorbid dementia and cancer. *Psychology & Health*, 39(10), 1428-1450. <https://doi.org/10.1080/08870446.2022.2157030>
- Prunty, M. M., & Foli, K. J. (2019). Guilt experienced by caregivers to individuals with dementia: A concept analysis. *International Journal of Older People Nursing*, 14(2), Article e12227. <https://doi.org/10.1111/opn.12227>
- Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1(3), 385-401. <https://doi.org/10.1177/014662167700100306>
- Roach, L., Laidlaw, K., Gillanders, D., & Quinn, K. (2013). Validation of the Caregiver Guilt Questionnaire (CGQ) in a sample of British dementia caregivers. *International Psychogeriatrics*, 25(12), 1-10. <https://doi.org/10.1017/S1041610213001506>
- Sabatini, S., Martyr, A., Hunt, A., Gamble, L. D., Matthews, F. E., Thom, J. M., Jones, R. W., Allan, L., Knapp, M., Quinn, C., Victor, C., Pentecost, C., Rusted, J. M., Morris, R. G., & Clare, L. (2024). Health conditions in spousal caregivers of people with dementia and their relationships with stress, caregiving experiences, and social networks: Longitudinal findings from the IDEAL programme. *BMC Geriatrics*, 24(1), Article 171. <https://doi.org/10.1186/s12877-024-04707-w>
- Savva, G. M., Zaccari, J., Matthews, F. E., Davidson, J. E., McKeith, I., & Brayne, C. (2009). Prevalence, correlates and course of behavioural and psychological symptoms of dementia in the population. *The British Journal of Psychiatry*, 194(3), 212-219. <https://doi.org/10.1192/bjp.bp.108.049619>
- Secinti, E., Wu, W., Kent, E. E., Demark-Wahnefried, W., Lewson, A. B., & Mosher, C. E. (2022). Examining health behaviors of chronic disease caregivers in the U.S. *American journal of preventive medicine*, 62(3), e145-e158. <https://doi.org/10.1016/j.amepre.2021.07.004>
- Spatuzzi, R., Vespa, A., Fabbietti, P., Ricciuti, M., Rosati, G., Guariniello, L., ... & Giulietti, M. V. (2022). Elderly helping other elderly: A comparative study of family caregiver burden between patients with dementia or cancer at the end of life. *Journal of Social Work in End-of-Life & Palliative Care*, 18(1), 96-108. <https://doi.org/10.1080/15524256.2022.2042459>
- Tang, W., Friedman, D. B., Kannaley, K., Davis, R. E., Wilcox, S., Levkoff, S. E., Hunter, R. H., Gibson, A., Logsdon, R. G., Irmiter, C., & Belza, B. (2019). Experiences of caregivers by care recipient's health condition: A study of caregivers for Alzheimer's disease and related dementias versus other chronic conditions. *Geriatric Nursing*, 40(2), 181-184. <https://doi.org/10.1016/j.gerinurse.2018.09.012>
- Teri, L., Truax, P., Logsdon, R., Uomoto, J., Zarit, S., & Vitaliano, P. P. (1992). Assessment of behavioral problems in dementia: The revised memory and behavior problems checklist. *Psychology and Aging*, 7(4), 622-631. <https://doi.org/10.1037//0882-7974.7.4.622>
- Thommessen, B., Aarsland, D., Braekhus, A., Oksengaard, A. R., Engedal, K., & Laake, K. (2002). The psychosocial burden on spouses of the elderly with stroke, dementia and Parkinson's disease. *International Journal of Geriatric Psychiatry*, 17(1), 78-84. <https://doi.org/10.1002/gps.524>
- Utz, R. L., & Warner, E. L. (2022). Caregiver burden among diverse caregivers. *Cancer*, 128(10), 1904-1906. <https://doi.org/10.1002/cncr.34171>
- Velloze, I. G., Jester, D. J., Jeste, D. V., & Mausbach, B. T. (2022). Interventions to reduce loneliness in caregivers: An integrative review of the literature. *Psychiatry Research*, 311, Article 114508. <https://doi.org/10.1016/j.psychres.2022.114508>
- Zeileis, A., & Hothorn, T. (2002). Diagnostic checking in regression relationships. *R News*, 2(3), 7-10.
- Zeileis, A., Köll, S., & Graham, N. (2020). Various versatile variances: An object-oriented implementation of clustered covariances in R. *Journal of Statistical Software*, 95(1), 1-36. <https://doi.org/10.18637/jss.v095.i01>