

The association between caregiver burden and behavioral and psychiatric disorders in dementia patients

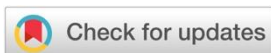
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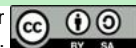
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ABSTRACT

Millions of people worldwide have dementia, a progressive loss of cognitive abilities that interferes with day-to-day functioning. Long-term caregiving frequently results in chronic stress and lower care quality, even though caregivers are crucial in addressing daily living and health care needs. Therefore, it is essential to assist caregiver and alleviate their load. This study aimed to quantify caregiver burden and examine its association with behavioral and psychiatric symptoms in dementia. A cross-sectional study was conducted with 94 patient–caregiver pairs from two dementia units. Behavioral and psychiatric symptoms were assessed using the Neuropsychiatric Inventory Questionnaire (NPI-Q), and caregiver burden was measured with the Zarit Burden Interview (ZBI-22). Results showed that 60.6% of caregivers reported burden. Subsequent analysis indicated a statistically significant association ($p < 0.05$) between caregiving burden and several neuropsychiatric symptoms in care recipients, specifically hallucinations (OR = 3.85; 95% CI: 1.45-10.20), delusions (OR = 3.85; 95% CI: 1.45-10.20), motor disturbances (OR = 3.45; 95% CI: 1.38-8.61), irritability (OR = 3.99; 95% CI: 1.62- 9.78), and disinhibition (OR = 3.34; 95% CI: 1.26-8.87). Burden was also higher among caregivers of patients in middle or late stages of dementia ($p < 0.001$), those providing care for longer durations ($p < 0.05$), and those assisting with activities of daily living ($p < 0.05$). In conclusion, caregiver burden is common and strongly related to patients' behavioral and psychiatric symptoms. The study emphasizes the importance of developing interventions that target these symptoms and providing greater support for caregivers to reduce stress and improve overall care quality. Future research should focus on treatments for specific neuropsychiatric symptoms and on supporting caregivers to reduce their burden.

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INTRODUCTION

Dementia represents a significant and growing global public health challenge, with its prevalence increasing dramatically with advancing age (Nichols et al., 2022). Epidemiological data consistently show that the likelihood of developing dementia nearly doubles every five years after the age of 65, affecting a substantial proportion of the oldest-old population (Cao et al., 2024; Fundarò & Maffoni, 2026). This progressive neurodegenerative condition profoundly impairs cognitive functions, but its impact extends far beyond the individual, placing immense and sustained demands on families and healthcare systems worldwide (Albkerat et al., 2025).

As the disease advances, most persons with dementia (PWD) become increasingly dependent on others for activities of daily living, often relying on informal, unpaid care from family members over many years (Prendergast et al., 2023; Duodu et al., 2024).

This long-term, intensive care responsibility frequently leads to what is known as "caregiver burden," a multidimensional construct encompassing the significant physical, emotional, social, financial, and spiritual strain perceived by those providing care (Kamalzadeh et al., 2022). Caregiver burden is not merely a personal hardship; it is a critical public health concern linked to adverse outcomes for both the caregiver, such as depression and poor physical health, and the care recipient, including a higher risk of institutionalization (Brini et al., 2022; Cham et al., 2022). The chronic stress associated with this role can erode the caregiver's well-being and capacity to provide adequate support, creating a cycle of escalating challenges for the entire family unit (Duplantier & Williamson, 2022). A cross-sectional survey study in Taiwan on 261 pairs of patient and caregiver found that mental and behavioral disorders had an effect of 52.34% on caregivers' depression and 37.72% on anxiety (Chen et al., 2023).

A key driver of this burden is the presence of Behavioral and Psychological Symptoms of Dementia (BPSD). These non-cognitive symptoms, which include agitation, aggression, depression, anxiety, apathy, delusions, and hallucinations, are highly prevalent across all types and stages of dementia (Laganà et al., 2022). BPSD are often more distressing for caregivers than the cognitive deficits themselves, as they can be unpredictable, difficult to manage, and socially disruptive (Gallop et al., 2026; Vuic et al., 2022). A robust body of international research has firmly established a strong association between BPSD and heightened levels of caregiver burden, with specific symptoms like agitation and aggression being particularly potent predictors of caregiver distress (Cohen et al., 2024).

While this association is well-documented in high-income countries, there remains a critical evidence gap in many low- and middle-income nations, including Vietnam. Vietnam is experiencing a rapid demographic transition, leading to a swiftly aging population and a consequent rise in dementia cases (Vo et al., 2024; Maheshwari & Maheshwari, 2024). However, research on dementia care in this context is still nascent, with few studies having systematically investigated the nuanced relationship between the diverse spectrum of BPSD and caregiver burden (Shinagawa et al., 2025). The unique cultural, social, and economic factors in Vietnam may shape how these symptoms manifest and how they are perceived and managed by families, necessitating locally relevant research (Nguyen et al., 2022).

This study aims to address this gap by focusing on a Vietnamese hospital-based sample. Its primary objectives are twofold: (1) to determine the prevalence and severity of caregiver burden among those caring for PWD in this setting, and (2) to examine the specific associations between caregiver burden and a wide range of individual BPSD, while also considering the potential influence of dementia type and stage. By providing this granular, context-specific evidence, the findings can inform the development of targeted interventions and support services to alleviate the burden on Vietnamese dementia caregivers and improve the quality of care for PWD (Nguyen et al., 2025).

METHOD

Research Design

This study employed a cross-sectional design to investigate the association between caregiver burden and behavioral and psychiatric symptoms in dementia patients. Data collection was conducted over five months, from March to July 2024. The research setting comprised two

hospitals in Ho Chi Minh City, Vietnam, which provide specialized daycare services for individuals with dementia. This design was selected to efficiently capture a snapshot of the prevalence of caregiver burden and its relationship with neuropsychiatric symptoms at a single point in time within this specific clinical population.

Participants

A total of 97 patient-caregiver dyads were recruited through convenience sampling from the two participating hospitals. To be eligible, patients had to be aged 60 years or older and have a confirmed clinical diagnosis of any dementia. Caregivers were required to be at least 18 years old, have been providing care to the patient for at least 1 month, and be fluent in Vietnamese. Caregivers with a diagnosed mental illness or those who were unable to complete the study questionnaires independently were excluded from participation to ensure data quality and validity.

Data Collection

Data were gathered through structured interviews and self-administered questionnaires. Information collected included comprehensive demographic and clinical characteristics for both patients (e.g., age, gender, education, marital status, dementia type, and stage) and caregivers (e.g., age, gender, education, comorbidities, relationship to the patient, daily support needs, and caregiving duration). Behavioral and psychological symptoms of dementia (BPSD) were assessed using the Neuropsychiatric Inventory Questionnaire (NPI-Q), where caregivers reported the presence or absence of 12 distinct symptoms; only this binary presence/absence data was used for analysis to mitigate potential cultural response bias. Caregiver burden was measured using the validated Vietnamese 22-item Zarit Burden Interview (ZBI), with a total score ranging from 0 to 88, which was subsequently dichotomized into "no burden" (0–20) and "burden" (21–88) for analytical purposes.

Data Analysis

All statistical analyses were performed using SPSS software (version 20). Descriptive statistics were used to summarize the sample's demographic and clinical characteristics. To explore bivariate associations between caregiver burden (the dependent variable) and independent variables, chi-square tests were used for categorical predictors (including age group, education level, and dementia stage). In contrast, independent-samples t-tests were used for continuous variables (such as total caregiving duration and daily care hours). A p-value of ≤ 0.05 was considered statistically significant for all tests.

Ethical Clearance

The study protocol was rigorously reviewed and approved by the Institutional Review Boards of three institutions: the University of Medicine and Pharmacy at Ho Chi Minh City (Approval No. 111/HĐĐĐHUYD), Thong Nhat Hospital (Approval No. 22/2024/BVTN-HĐYĐ), and Military Hospital 175 (Approval No. 1329/GCN-HĐĐĐĐ). In line with Vietnam's substantial cultural value of filial piety, which frames caregiving as a moral duty, the research team placed a high priority on ethical conduct. Written informed consent was obtained from all participants after they were fully informed about the study's purpose, procedures, potential risks, and their right to withdraw at any time without consequence.

RESULT

Due to time and resource constraints, the study collected data from 97 caregiver–dementia patient dyads. After excluding 3 cases with incomplete data, the final sample comprised 94 dyads, yielding a 97% response rate.

Characteristics of Participants

Table 1 presents the sociodemographic and clinical characteristics of these dyads. Caregivers were predominantly female (61.7%) with a mean age of 51.44 years (range: 19–80 years). Most caregivers (71.3%) reported no underlying health conditions. Regarding education, 31.9% had a secondary education or less, 34% had some high school education, and 34% had a college degree or higher. A significant majority of caregivers (73.4%) were married. The primary relationship to the patient was a family member, such as a spouse or child, for 81.9% of caregivers. Furthermore, 67 caregivers (71.3%) provided support for the patient's activities of daily living. The average duration of patient care was 8.64 months, ranging from 1 to 36 months. Caregivers provided an average of 8.82 hours of daily care, ranging from 4 to 18 hours. Among the 94 caregivers, 57.4% expressed a desire for additional information regarding dementia and patient care strategies. The primary source of this information was the media (46.8%), including the internet, books, and newspapers.

Among the 94 patients with dementia, 59.6% were female. The average age was 76.21 years, ranging from 60 to 100 years. Most patients were currently married (64.9%), and 57.4% had a secondary school education or lower. The study found that individuals with Alzheimer's disease (AD) made up most cases (59.6%), with most in the intermediate stage (43.6%).

Table 1. Characteristics of participant: caregivers (n = 94) and patients with dementia (n = 94)

Characteristics of caregivers	n (%)	Characteristics of patients with dementia	n (%)
Gender		Gender	
Female	58 (61.7%)	Female	56 (59.6%)
Male	36 (38.3%)	Male	38 (40.4%)
Age (years)		Age (years)	
Mean age ± SD	51.44 ± 12.70	Mean age ± SD	76.21 ± 4.47
Range of age	19 - 80	Range of age	60 - 100
Group of age		Group of age	
≤ 50	50 (53.2%)	60 - 69 years	17 (18.1%)
51 - 59 years	18 (19.1%)	70 - 79 years	42 (44.7%)
≥ 60 years	26 (27.7%)	≥ 80 years	35 (37.2%)
Education level		Education level	
College/university or higher	32 (34.0%)	College/university or higher	21 (22.3%)
High school	32 (34.0%)	High school	19 (20.2%)
Middle school and below	30 (31.9%)	Middle school and below	54 (57.4%)
Marriage		Marriage	
Single/ Widow/ Divorce	25 (25.6%)	Single/ Widow/ Divorce	33 (35.1%)
Married	69 (73.4%)	Married	61 (64.9%)
Underlying conditions		Cause of Dementia	
Yes	27 (28.7%)	Alzheimer Disease	56 (59.6%)
No	67 (71.3%)	Not Alzheimer Disease	38 (40.4%)
Relationship with PWD		Stage of Dementia	
Spouse/ Children	77 (81.9%)	Early	30 (31.9%)
Close family	10 (10.6%)	Middle	41 (43.6%)
Other	7 (7.4%)	Late	23 (24.5%)

Characteristics of caregivers	n (%)	Characteristics of patients with dementia	n (%)
Support PWD in activities of daily living (ADL)			
Yes	67 (71.3%)		
No	27 (28.7%)		
The need to learn about dementia			
Yes	54 (57.4%)		
No	40 (42.6%)		
Total caring time (months)			
Mean ± SD	8.64 ± 9.32		
Hours of care per day			
Mean ± SD	8.82 ± 4.47		

*PWD: Person with Dementia

Caregivers with burden

Figure 1 shows that of the 94 participating caregivers, 57 (60.6%) reported experiencing a caring burden. A more granular analysis revealed that 41.5% of caregivers experienced mild burden, 17% moderate, and 2.1% severe.

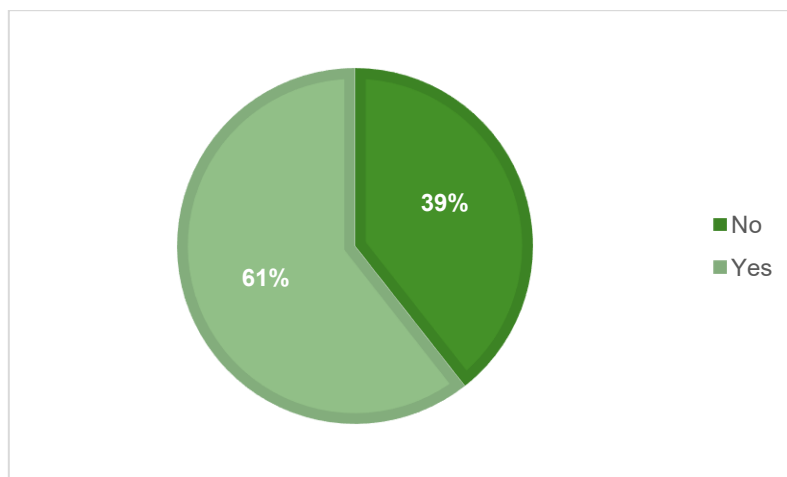


Figure 1. Percentage of caregivers with burden

Factors associated with caregiver burden

Table 2 presents key factors associated with caregiver burden. Caregivers who assisted with Activities of Daily Living (ADLs) experienced significantly greater burden, with an odds ratio of 5.05 compared to those who did not provide ADL support ($p < 0.05$). Furthermore, burdened caregivers reported a significantly longer duration of care (10.56 ± 9.523 months) than non-burdened caregivers (5.68 ± 8.273 months), with the difference statistically significant ($p < 0.05$).

The stage of the patient's dementia also significantly impacted the caregiver burden ($p < 0.001$). Specifically, caregivers for patients in the middle stage of dementia reported a 6.4-fold higher burden than those caring for patients in the early stage. Similarly, caregivers for patients in the late stage of dementia experienced an 8.4-fold higher burden compared to caregivers of early-stage patients.

Table 2. Factors associated with caregiver burden (n = 94)

Symptoms	Caregivers with burden	Caregivers without burden	OR (CI 95%)
	n (%)	n (%)	
Patients with dementia characteristics			
Gender ^a			
Male	22 (57.9%)	16 (42.1%)	1.212
Female	35 (62.5%)	21 (37.5%)	(0.523; 2.811)
Age group ^b			
≤ 69 years	9 (52.9%)	8 (47.1%)	Ref
From 70 to 79 years	31 (73.8%)	11 (26.2%)	2.505 (0.774; 8.110)
≥ 80 years	17 (48.6%)	18 (51.4%)	0.840 (0.263; 2.679)
Cause of Dementia ^a			
Alzheimer Disease	35 (62.5%)	21 (47.6%)	0.825
Not Alzheimer Disease	22 (57.9%)	16 (42.1%)	(0.356; 1.913)
Stage of Dementia ^b			
Early	9 (30.0%)	21 (70.0%)	Ref
Middle	30 (73.2%)	11 (26.8%)	6.364 (2.243; 18.051)
Late	18 (78.3%)	5 (21.7%)	8.400 (2.379; 29.659)
Caregiver characteristics			
Support in activities of daily living (ADLs) ^a			
Yes	48 (71.3%)	19 (28.4%)	5.053
No	9 (33.3%)	18 (66.7%)	(1.934; 13.202)
Total caring time (months) ^c			
Mean ± SD	10.56 ± 9.523	5.68 ± 8.273	- 2,556 (-8.682; -1.089)

a: Chi-square, b: Binary Logistic, c: T-test, p < 0.05, p < 0.001

The study identified nighttime behavioral disturbances as the most prevalent neuropsychiatric symptom, affecting 76.6% of patients. This was followed by depression (58.5%), apathy (47.9%), irritability (46.8%), motor disturbances (41.5%), anxiety (39.4%), agitation (39.4%), delusions (36.2%), hallucinations (36.2%), disinhibition (34%), changes in appetite/eating behavior (33.0%), and euphoria (7.4%).

Table 3 illustrates the significant impact of specific patient neuropsychiatric symptoms on caregiver burden (p<0.05). Caregivers assisting individuals with delusions, hallucinations, irritability, motor disturbances, and disinhibition reported a significantly higher burden of care. Specifically, the odds of experiencing burden were 3.9 times higher for caregivers of patients with delusions, 3.9 times higher for those with hallucinations, 4.0 times higher for those with irritability, 3.5 times higher for those with motor disturbances, and 3.3 times higher for those with disinhibition.

Table 3. Correlation between caregiver burden and psychiatric and behavioral symptoms in PWD (n=94)

Symptoms	Caregivers with burden n (%)	Caregivers without burden n (%)	OR (CI 95%)
Delusion ^a			
Yes	27 (28.7%)	7 (7.4%)	3.857 (1.457; 10.208)
No	30 (31.9%)	30 (31.9%)	
Hallucinations ^a			
Yes	27 (28.7%)	7 (7.4%)	3.857 (1.457; 10.208)
No	30 (31.9%)	30 (31.9%)	
Agitation/Aggression ^a			
Yes	26 (27.7%)	11 (11.7%)	1.982 (0.825; 4.764)
No	31 (33.0%)	26 (27.7%)	
Depression/Dysphoria ^a			
Yes	33 (35.1%)	22 (23.4%)	0.938 (0.404; 2.174)
No	24 (25.5%)	15 (16.0%)	
Anxiety ^a			
Yes	25 (26.6%)	12 (12.8%)	1.628 (0.686; 3.864)
No	32 (34.0%)	25 (26.6%)	
Elation/Euphoria ^a			
Yes	3 (3.2%)	4 (4.3%)	0.458 (0.096; 2.177)
No	54 (57.4%)	33 (35.1%)	
Apathy/Indifference ^a			
Yes	30 (31.9%)	15 (16.0%)	1.630 (0.705; 3.765)
No	27 (28.7%)	22 (23.4%)	
Disinhibition ^a			
Yes	25 (26.6%)	7 (7.4%)	3.348 (1.263; 8.876)
No	32 (34.0%)	30 (31.9%)	
Irritability/Lability ^a			
Yes	34 (36.2%)	10 (10.6%)	3.991 (1.626; 9.789)
No	23 (24.5%)	27 (28.7%)	
Motor Disturbance ^a			
Yes	30 (31.9%)	9 (9.6%)	3.457 (1.387; 8.617)
No	27 (28.7%)	28 (29.8%)	
Nighttime Behaviors ^a			
Yes	45 (47.9%)	27 (28.7%)	1.389 (0.529; 3.647)
No	12 (12.8%)	10 (10.6%)	
Appetite/Eating Behavior ^a			
Yes	18 (19.1%)	13 (13.8%)	0.852 (0.355; 2.046)
No	39 (41.5%)	24 (25.5%)	

a: Chi square, p < 0.05, p < 0.001

DISCUSSION

Caregiver burden remains a critical issue in dementia care, as it directly affects both patients' quality of life and caregivers' well-being (Zhylybekova et al., 2023). Our study, which included 94 caregiver-patient dyads, revealed that more than half of caregivers experienced burden (60.6%) (Figure 1), which is consistent with findings from a study of Marinho et al. (2022) in Brazil. Most caregivers (41.5%) experienced mild burden, which may be explained by the fact that approximately 81.9% were the patient's spouse or child. In Vietnam, as in many Asian cultures, caring for older family members is often viewed as a natural and morally expected

obligation. As a result, caregivers may report a lower perceived burden, even when the actual caregiving workload is considerable (Martinez & Gonzalez, 2022).

Our findings indicate a statistically significant association between caregiver burden and dementia stage. Specifically, caregivers for patients in the middle stage of dementia reported 6.4 times higher burden compared to those caring for early-stage patients. This heightened burden in the middle stage can be explained by patients' increasing difficulties with daily living activities, severe disorientation, and exacerbation of neuropsychiatric symptoms, which necessitate increased caregiver time for supervision and direct care. Furthermore, caregivers of late-stage patients experienced an 8.4 times higher burden than those of early-stage patients. This substantial increase was likely due to the patient's complete dependence on caregivers for all Activities of Daily Living (ADLs), including feeding, ambulation, and bathing, requiring continuous, 24/7 care and monitoring (Ueshima et al., 2020). This pattern was also observed in our study: caregivers providing support for Activities of Daily Living (ADLs) experienced 5.05 times higher odds of burden compared to those not involved in ADL support, aligning with previous studies (Kim et al., 2021), and caregivers who had provided care for a longer duration (10.56 ± 9.523 months) reported higher levels of burden than unburdened caregivers (5.68 ± 8.273 months), which is consistent with findings from a previous study (Sezgin et al., 2022).

Our study reveals that specific neuropsychiatric symptoms in PWD are associated with a higher caregiver burden. Caregivers managing patients with delusions, hallucinations, irritability, motor disturbances, and disinhibition reported 3.3 to 4.0 times higher odds of burden, compared to caregivers of patients without these symptoms. However, our research identified a statistically significant difference in the burden experienced by caregivers of patients with hallucinatory symptoms compared to those without. This difference highlighted a distinction from Nguyen's study, which may be explained by the higher prevalence of hallucinations in our sample (36.2%). Additionally, our study included a larger sample ($n = 94$), which may have enabled more accurate estimation of symptom prevalence. Furthermore, the higher prevalence of hallucinations observed in our study may be explained by the inclusion of multiple types of dementia, rather than only focusing on Alzheimer's disease. This broader sampling likely increased the proportion of participants with clinical features commonly associated with other dementia subtypes, particularly dementia with Lewy bodies (DLB), in which visual hallucinations (50-69.6%) are frequently observed, significantly more frequently than in Alzheimer's disease (Cressot et al., 2024). The study found no statistically significant differences in caregiver burden across symptoms such as aggression, depression, anxiety, euphoria, apathy, nighttime behaviors, and eating behavior.

The correlation between caregiver burden and the presence of neuropsychiatric symptoms may be attributed to the increased need for continuous supervision and care that these symptoms often entail. Hallucinations and delusions may trigger confusion, fear, or aggression, demanding constant reassurance and close supervision to prevent self-harm or accidents (González-Rodríguez et al., 2022). Irritability and disinhibition often result in interpersonal tension, frequent conflicts, and emotional exhaustion, as caregivers must manage unpredictable behaviors with patience and restraint (Lefèvre-Utile et al., 2022). Motor disturbances further increase the need for physical assistance and continuous monitoring to ensure safety during daily activities. These challenges collectively lead to sleep disruption, constant vigilance, and heightened concern for patient safety, ultimately contributing to a significantly greater overall burden of care (Harwood et al., 2023). These findings underscore the need for targeted behavioral management and

caregiver support interventions to mitigate stress and improve care outcomes (Cheng et al., 2022).

This study has several limitations. First, the use of a convenience sample and the relatively small sample size, determined by time and feasibility constraints, may limit the generalizability of the findings. The small sample size might also reflect caregivers' misunderstandings that dementia is a natural part of aging, which could delay diagnosis and involvement. Furthermore, the cross-sectional design restricts causal interpretations. Future research should include larger and more diverse samples, adopt longitudinal designs, and explore factors such as cultural beliefs and social or religious support. A comprehensive approach combining clinical, educational, and psychosocial strategies is essential to better understand and reduce caregiver burden.

CONCLUSION

In conclusion, caregiver burden is highly prevalent and is strongly associated with behavioral and psychiatric disorders in patients with dementia, such as delusions, hallucinations, disinhibition, irritability, and motor disturbances. Additionally, the study found statistically significant associations between caregiver burden and dementia stage, total caring time, and the provision of activities of daily living. Based on these results, several measures are proposed to alleviate caregiver burden and enhance their quality of life. Structured, stage-specific training modules should be provided to help caregivers manage delusions, hallucinations, agitation, and irritability, while improving communication and safety skills. These trainings can be offered through hospitals, community centers, or online platforms. In addition, hospital-facilitated support groups and access to validated online resources should be established to offer professional guidance, peer interaction, and evidence-based coping strategies. Such measures enhance caregiver competence, reduce stress, and build emotional resilience.

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CONFLICT OF INTEREST

The authors declare no competing interests.

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