

ORIGINAL RESEARCH ARTICLE

The impact of caregiving burden and perceived social support on psychosomatic symptoms among informal caregivers of patients with dementia

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Abstract

The informal care providers of individuals with dementia often encounter various challenges, including physical, emotional, and financial difficulties, due to the complex nature of the illness. Chronic stress frequently results in physical manifestations, such as psychosomatic symptoms. In light of the caregiving burden, researchers are increasingly focused on assisting caregivers in alleviating this burden. The current study aimed to understand the impact of caregiving burden and perceived social support on psychosomatic symptoms. Three instruments, along with a demographic sheet, were utilized to collect data. SPSS software was employed for descriptive statistical computation, correlational analysis, and regression analysis. The findings from the correlational analysis indicated that caregiving burden has a significant positive correlation with psychosomatic symptoms, whereas perceived social support shows a significant negative correlation with both caregiving burden and psychosomatic symptoms. Furthermore, caregiving burden is a significant positive predictor, while perceived social support is a significant negative predictor of psychosomatic symptoms. The overall model accounted for a substantial portion of the variance in psychosomatic symptom severity. These results provide direct evidence to guide the development of targeted support interventions aimed at alleviating caregiving burden and enhancing perceived social support.

Keywords: Caregiving burden; Perceived social support; Psychosomatic symptoms; Dementia care providers

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1. Introduction

There has been a shift in the aging population, leading to an increase in cases of neurodegenerative conditions like dementia. Dementia is a condition that progressively leads to impairment in cognitive functioning and impacts daily activities. Since the condition hampers day-to-day functioning, a caregiver is needed to provide constant essential care and support for affected individual.¹ An informal caregiver is a person who is often closely related to the individual with the illness and does not get paid for their services.²

A caregiver often faces the condition of caregiving burden, which refers to the negative impact on a caregiver's emotional, social, financial, physical, and spiritual functioning resulting from the responsibilities of caring for an ill family member. This situation can lead to chronic stress.³⁻⁴ Studies have suggested that among dementia caregivers, around 50% experience caregiving burden.^{1,5}

Dementia care providers are required to perform many tasks. Fertelli *et al.*⁶ highlighted that some of these include managing the progressive decline in cognitive function, addressing various neuropsychiatric symptoms, and assisting with activities of daily living, to name a few. Among these, behavioral and psychological symptoms such as paranoia, sleep disturbances, aggression, agitation, wandering, and mood changes are particularly challenging, as reported by Alzheimer's Association⁷ and Alzheimer's Disease International.⁸ The care provided for such unpredictable symptoms in dementia differs significantly from those seen in other chronic illnesses. The stress faced by these care providers can lead to physical manifestations, including somatic symptoms.⁹ According to Feizollahi *et al.*,¹⁰ psychosomatic symptoms are physical symptoms that are often medically unexplained but are closely related to psychological distress and emotional states.

1.1. Caregiving burden and psychosomatic symptoms

The demands of chronic stress can lead to manifestations in physical forms or psychosomatic symptoms.^{1,9,11} As per Fertelli *et al.*,⁶ caregiver burden is intricately linked to a range of psychological problems, including anxiety, depression, deterioration in family relationships, and a pervasive feeling of loss of control. These psychological problems, in turn, are strongly connected to the development of physical health issues. Very few studies have highlighted the link between caregiving burden and psychosomatic symptoms. A study by Beri⁹ found a significant positive impact of caregiving burden faced by informal dementia care providers on somatic symptoms and death obsessions. The most prominent symptoms reported by around 94% participants was headache followed by tiredness or low energy (90%). Other prominent symptoms which were faced by above 60% of the participants were nausea or indigestion, stomach pain, back pain, menstrual cramps, and sleep disturbances.^{7-9,12,13}

1.2. Caregiving burden and social support

Many researchers are attempting to understand the factors that may help mitigate the impact of such burdens. The importance may be given to perceived social support, which is recognized as an individual's subjective perception of the availability and quality of support from their social

network, encompassing emotional comfort, practical assistance, and a sense of belonging.^{1,14}

Many studies have demonstrated that perceived social support is associated with lower levels of subjective distress, thereby serving as an important factor in mitigating the impact of caregiving burden.^{1,6,14} Studies have found that caregiving burden was higher in cases of poor family functioning¹⁵ and low perceived social support.¹⁵⁻¹⁷ In their study on dementia care providers, Nemcikova *et al.*¹⁸ found that lower caregiving burden was related to higher perceived social support and a more positive caregiving experience.

1.3. Social support and psychosomatic symptoms

Social support is often linked with improved mental health outcomes, such as a reduction in depression and anxiety.¹⁴ The theory by Lazarus and Folkman is suggestive of how important the social support is considered a resource that helps an individual to handle stress.^{14,19} A study by Feizollahi *et al.*¹⁰ found that the perceived social support is significantly negatively correlated with psychosomatic symptoms and positively correlated with the self-compassion. Further, in their conditional process analysis, Grigaitytė and Söderberg²⁰ found that the perceived social support was associated with less somatic symptoms and that this association was stronger for girls than for boys.

It suggests that social support primarily benefits health by altering the caregiver's cognitive appraisal of stressors, making them seem more manageable and less threatening, thus reducing the physiological load that contributes to psychosomatic issues symptoms.

1.4. Research gap

Many researchers have identified that caregiving impacts individual in various ways, with physical symptoms being one of them. For example, a study by Beri⁹ highlighted that the caregiving burden and death obsessions have a significant positive relationship with psychosomatic symptoms. While researchers are actively exploring interventions to mitigate the adverse effects of caregiving burden, a critical gap remains in understanding the interplay of protective factors. Building on this gap, our study focuses on identifying whether perceived social support can impact psychosomatic symptoms. This study specifically aims to quantify the individual and combined influence of caregiving burden and perceived social support on the presence and severity of psychosomatic symptoms. This investigation is a crucial step beyond examining isolated relationships. This approach allows for a more holistic understanding of how these factors interact to influence caregiver health. From the review, the following research questions were derived:

- Q1: Is there a relationship between caregiving burden, perceived social support, and psychosomatic symptoms?
- Q2: To what extent do caregiving burden and perceived social support, individually and collectively, predict the occurrence of psychosomatic symptoms in informal caregivers of patients with dementia?

Based on these research questions, the following hypotheses were formulated:

- H_1 : There will be a significant correlation between caregiving burden, perceived social support, and psychosomatic symptoms.
- H_2 : Caregiving burden and perceived social support will significantly predict psychosomatic symptoms.

2. Method

2.1. Participants

The study participants consisted of informal caregivers of individuals diagnosed with dementia. A total sample size of 100 participants ($n = 100$) was recruited for the study. The determination of the sample size was guided by a G*Power analysis for a multiple linear regression with two predictors (caregiving burden and perceived social support). Assuming an alpha of 0.05, a power of 0.80, and a medium effect size ($f^2 = 0.15$), the analysis indicated a required sample size of approximately 67 participants. The study aimed for a robust sample size of around 70–100 participants and ultimately recruited 100 individuals. The demographic distribution of the participants is presented in Table 1.

2.2. Procedure

The purposive sampling procedure was utilized along with the snowballing approach to recruit participants. The questionnaire used in this study was developed on the basis of three different questionnaires, along with a demographic sheet. The form was distributed to people residing in Delhi-NCR through various community centers, hospitals, and forums through social media. The inclusion and exclusion criteria are outlined in Table 2. A strict criterion was applied to control the impact of confounding variables on the dependent variable and to improve the generalizability. The participants were provided with an overview of the purpose and nature of the study. They were informed verbally and in writing about voluntary participation and that they were allowed to withdraw from the study any time as they wish to. Confidentiality and anonymity were guaranteed, and they were assured that their responses would be used only for research purposes. After they provided their consent in writing, the questionnaire was filled by them. On completion, each participant was

Table 1. Descriptive statistics of caregiver demographics and caregiving characteristics ($n=100$)

Characteristics	Category	Frequency/Mean (SD)
Age	Mean (SD)	58.7 (11.2)
	Range	29–81
Gender	Female	73 (73%)
	Male	27 (27%)
Marital status	Married/Partnered	68 (68.0%)
	Single/Divorced/Widowed	32 (32.0%)
Socio-economic status	Upper class	12 (12.0%)
	Middle class	84 (84.0%)
	Lower class	4 (4.0%)
Educational level	High school or less	19 (19.0%)
	College/University	28 (28.0%)
	Bachelor's degree	36 (36.0%)
	Graduate degree	17 (17.0%)
Employment status	Full-time	29 (29.0%)
	Part-time	24 (24.0%)
	Retired	38 (38.0%)
	Unemployed	9 (9.0%)
Relationship to care recipient	Spouse/Partner	41 (41.0%)
	Adult child	46 (46.0%)
	Other relative	9 (9.0%)
	Friend/Other	4 (4.0%)
Duration of caregiving (months)	Mean (SD)	45.2 (28.5)
	Range	6–132
Hours of care provided per week	Mean (SD)	39.5 (21.8)
	Range	10–110

Table 2. The inclusion and exclusion criteria of this study

Inclusion criteria	Exclusion criteria
Aged 18 years or older	Paid or professional caregivers
Currently providing care for an individual with a formal diagnosis of dementia	Caregivers formally diagnosed with a severe mental illness (e.g., schizophrenia, bipolar disorder).
With a minimum caregiving period of 4 months	
Able to understand English language	
Must be residing in Delhi-NCR region	

provided with a debriefing pamphlet. The pamphlet consists of information about self-care strategies and a list of 24/7 helpline contact numbers for mental health support in the case of psychological distress. No monetary or other forms

of compensation were provided for participation. Their responses were then analyzed using Statistical Package for the Social Sciences, version 20 (IBM SPSS).

2.3. Instruments

Three well-established and public domain instruments were utilized in this study to measure the variables.

2.3.1. Zarit Burden Interview (ZBI)

The ZBI is a tool used to assess caregiving burden. It is a 22-item scale developed by Zarit, Reever, and Bach-Peterson (1980) to evaluate the subjective burden experienced by caregivers.^{4,21} A higher score indicates a greater burden. The Cronbach's alpha reported for the scale is 0.85.⁶ The Cronbach's alpha for the current study was 0.91.

2.3.2. Multidimensional Scale of Perceived Social Support (MSPSS)

The Multidimensional MSPSS was used to assess perceived social support. It is a 12-item scale developed by Zimet *et al.* (1988) that evaluates social support from three distinct sources: Family, friends, and significant others.²² A high score suggests greater availability of social support.^{6,14,17} The Cronbach's alpha reported for the scale is 0.92.²³ The Cronbach's alpha for the current study was 0.90.

2.3.3. Patient Health Questionnaire-15 (PHQ-15)

The PHQ-15 was used to assess psychosomatic symptoms. This 15-item scale, developed by Kroenke, Spitzer, and Williams (2002), evaluates the severity of common somatic symptoms that are often medically unexplainable.²⁴ The higher the score, the greater the reported symptoms. The Cronbach's alpha for the scale, as reported by previous research, is 0.81.²⁵ The Cronbach's alpha for the current study was 0.88.

2.4. Statistical analysis

Means, standard deviations, frequencies, and percentages were calculated to describe the demographic characteristics of the participants and the scores on all study variables. The Shapiro–Wilk test, along with skewness and kurtosis values, was examined to assess normality of the data distribution. Pearson's product-moment correlation coefficient (r) was computed to explore the bivariate linear relationships between caregiving burden, perceived social support, and psychosomatic symptom severity. A multiple linear regression analysis was performed to determine how much variance in psychosomatic symptom severity is predicted by caregiving burden and perceived social support.

3. Results

The data were analyzed using the Statistical Package for the Social Sciences, version 20 (IBM SPSS, 20). The data were checked for normality, and the skewness and kurtosis values for all key variables fell within the acceptable range of -1.5 to $+1.5$. The Shapiro–Wilk test was non-significant ($p > 0.05$) for psychosomatic symptoms ($p = 0.21$), caregiving burden ($p = 0.437$), and perceived social support ($p = 0.088$). The distribution of the psychosomatic symptoms as reported by the participants is given in Table 3.

3.1. Relationship between caregiving burden, perceived social support, and psychosomatic symptoms

The correlation between the variables was determined using Pearson's correlation analysis, as shown in Table 4. In Table 4, the mean score for caregiving burden (ZBI) was 38.6 (SD = 15.4). According to established ZBI scoring categories, a mean score of 38.6 falls within the “moderate” burden category (21–40 points). The mean score for perceived social support (MSPSS) was 54.1 (SD = 16.2). For psychosomatic symptoms (PHQ-15), the mean score was 12.3 (SD = 5.8). A PHQ-15 score of 10–14 indicates a “moderate” level of psychosomatic symptom severity. Caregiving burden has a significant negative correlation with perceived social support ($r = -0.421$, $p < 0.01$) and a significant positive correlation with psychosomatic symptoms ($r = 0.512$, $p < 0.01$). Moreover, perceived social support has a significant negative correlation with psychosomatic symptoms ($r = -0.368$, $p < 0.01$).

Table 3. Distribution of the psychosomatic symptoms assessed using PHQ-15

Symptoms (PHQ-15)	Percentage
Stomach pain	65
Back pain	70
Pain in your arms, legs, or joints	47
Headaches	62
Chest pain	20
Dizziness	30
Fainting spells	10
Feeling your heart pound or race (palpitations)	25
Shortness of breath	28
Problems with bowels (constipation, loose bowels)	35
Nausea, gas, or indigestion	68
Feeling tired, low energy	80
Trouble sleeping	75
Problems with your periods (for women)	22
Sexual problems	18

Table 4. Correlation between caregiving burden, perceived social support, and psychosomatic symptoms

Variables	Mean	Caregiving burden	Perceived social support	Psychosomatic symptoms
Caregiving burden (ZBI)	38.6 (15.4)	—		
Perceived social support (MSPSS)	54.1 (16.2)	−0.421**	—	
Psychosomatic symptoms (PHQ-15)	12.3 (5.8)	0.512**	−0.368 **	—

Note: **Correlation is significant at the 0.01 level (two-tailed).

Table 5. Model summary of multiple linear regression predicting psychosomatic symptoms

Model	R	R ²	Adjusted R ²	F	df1	df2	p
1	0.585	0.342	0.328	25.18	2	97	<0.001

3.2. Effect of caregiving burden and perceived social support on psychosomatic symptoms

The multiple regression analysis was conducted to test the second hypothesis, and the results are presented in Tables 5 and 6.

Table 5 demonstrates that the model was statistically significant, $F(2, 97) = 25.18, p < 0.001$. The model explained 34.2% of the variance in psychosomatic symptom severity ($R^2 = 0.342$), with an adjusted R^2 of 0.328. The R^2 value indicates a large effect size (Cohen's $f^2 = 0.52$), which indicates that caregiving burden and perceived social support collectively account for a substantial portion of the variability in psychosomatic symptoms.

Table 6 shows that both predictors made significant unique contributions to the model. Caregiving burden was a significant positive predictor of psychosomatic symptoms ($B = 0.145, \beta = 0.415, t = 4.685, p < 0.001$). This means that for every one-unit increase in caregiving burden, psychosomatic symptoms are predicted to increase by 0.145 units, holding perceived social support constant. Perceived social support was a significant negative predictor of psychosomatic symptoms ($B = -0.091, \beta = -0.255, t = -3.033, p < 0.001$). This indicates that for every one-unit increase in perceived social support, psychosomatic symptoms are predicted to decrease by 0.091 units, holding caregiving burden constant.

The model's explanatory power, indicated by the R^2 value, demonstrates that caregiving burden and perceived social support are strong predictors of psychosomatic symptoms.

4. Discussion

The aim of the study was to examine the effects of caregiving burden and perceived social support on psychosomatic symptoms. The descriptive analysis revealed that, on average, participants experienced a moderate level of

caregiving burden and psychosomatic symptom severity (Table 4), which is consistent with findings from other studies.^{21,26,27} This co-occurrence of moderate burden and moderate symptoms, even in the presence of a relatively moderate-to-high level of perceived social support, underscores the profound and chronic nature of the stress inherent in dementia caregiving. The most prominent psychosomatic symptoms reported by the participants are stomach pain, back pain, headaches, nausea or indigestion, tiredness, low energy, trouble sleeping. Earlier studies have found a similar pattern.⁶⁻⁹

The correlational analysis revealed that our first hypothesis is significant, as we found that caregiving burden has a significant positive correlation with psychosomatic symptoms. This means that when a growing burden of caregiving is perceived, there are chances of experiencing increased psychosomatic symptoms. The finding is consistent with existing literature.^{6,9,11-13,16-18} Furthermore, perceived social support and caregiving burden have a significant negative correlation with psychosomatic symptoms. This suggests that perceived social support is likely to reduce both the burden and the severity of psychosomatic symptoms. This finding is also consistent with the existing literature, where the research found that perceived social support is negatively associated with caregiving burden^{1,6,14,15,18} and psychosomatic symptoms.^{14,20}

The second hypothesis was to examine the effect of caregiving burden and perceived social support on psychosomatic symptoms. The linear regression analysis confirmed the independent predictive power of both caregiving burden and perceived social support on psychosomatic symptoms. The model was statistically significant and explained a substantial 34.2% of the variance in psychosomatic symptom severity.

Caregiving burden emerged as a significant positive predictor ($\beta = 0.415, p < 0.001$), reinforcing the direct pathway from subjective strain to physical manifestations of stress, as articulated by the Stress Process Model. This finding is consistent with the Stress Process Model, which posits that stressors, particularly subjective appraisals of strain, lead to adverse health outcomes.^{11,28,29} This model asserts that stressors, such as the objective demands of caregiving and the patient's behavioral problems, such as

Table 6. Multiple linear regression predicting psychosomatic symptoms: Coefficients

Model	Predictors	Unstandardized coefficient		Standardized coefficient	t	p
		B	Std. Error	β (Beta)		
1	(Constant)	9.851	1.832		5.377	<0.001
	Caregiving burden (ZBI)	0.145	0.031	0.415	4.685	<0.001
	Perceived social support	−0.091	0.030	−0.255	−3.033	<0.001

Note: Psychosomatic symptoms (PHQ-15) were set as the dependent variable.

agitation and aggression,^{1,11} lead to primary appraisals (e.g., role strain, subjective burden) and secondary appraisals (e.g., financial strain, social isolation).^{28,29} These appraisals, particularly subjective burden, then influence a range of caregiver outcomes, including their physical health (e.g., psychosomatic symptoms).^{9,11}

Simultaneously, perceived social support was identified as a significant negative predictor ($\beta = -0.255$, $p < 0.001$). This finding underscores the protective role of social support, suggesting that a strong perception of being supported actively reduces the severity of psychosomatic symptoms. The literature posits that perceived or received social support acts as a buffer against the negative effects of stress.¹⁴ This theory suggests that strong social networks provide emotional comfort, practical assistance, and a sense of belonging, which collectively mitigate the impact of caregiving burden on psychosomatic health.¹⁴

These findings are also consistent with existing literature, which suggests that caregiving burden negatively impacts psychosomatic symptoms.^{6,9,11-13,16-18} Further, perceived social support positively influences psychosomatic symptoms.^{14,20}

The simultaneous significance of both caregiving burden and perceived social support as independent predictors in the regression model is a crucial finding. It demonstrates that while the demands and subjective experience of caregiving significantly contribute to physical manifestations of stress, the availability and perception of social support offer a crucial counteracting force. This finding reinforces the importance of considering both the stressors (burden) and the resources (social support) available to caregivers when developing interventions.

4.1. Implications

The strong protective effect of perceived social support underscores the necessity of developing interventions that enhance caregivers' subjective sense of being supported. Strategies may include implementing psychoeducational programs to equip caregivers with stress management skills, facilitating peer support groups, promoting family communication and involvement, and encouraging caregivers to actively seek and use available social networks. Community-based programs and online forums

could serve as essential platforms for fostering connections and a sense of belonging among caregivers.

The strong effect of caregiving burden on psychosomatic symptoms indicates that the caregivers of dementia patients are the vulnerable "hidden" patients. Their physical distress is not only a personal issue but also a public health concern that can lead to increased healthcare utilization, decreased quality of life, and a reduced capacity to provide adequate care for the patient. From a public health perspective, these results underscore the need for a paradigm shift from a purely patient-centric model of care to a more holistic, family-centered approach. There should be an integration of routine screening for caregiver burden and well-being into primary healthcare and geriatric care protocols, which would allow for early identification of at-risk caregivers and timely referral to support services, potentially mitigating the development of severe physical and psychological morbidity.

4.2. Limitations and future suggestions

The findings of the study should be interpreted considering the following limitations. First, the cross-sectional design precludes the establishment of causality, and longitudinal studies are needed to explore the temporal dynamics and causal pathways among these variables. Second, the study used a non-random sampling technique to recruit participants, increasing the potential for selection bias; therefore, future researchers may utilize a random sampling method to ensure better generalizability. Third, the study employed self-report measures that could lead to potential bias, making a triangulation method a stronger approach. Fourth, the research was conducted on the caregivers residing in Delhi-NCR region. This specific sociocultural context, with its unique family structures, cultural norms regarding caregiving duties, and levels of social support, may influence the experiences of caregivers. Consequently, the findings may not be fully generalizable to caregivers in other parts of India, such as those in rural communities or different metropolitan areas with distinct cultural backgrounds. Future research should aim to include multicentric, cross-cultural samples to enhance the external validity. Finally, while the model explained a substantial portion of the variance, a significant proportion

remains unexplained. This suggests that other factors not included in this study, such as caregiver coping styles, personality traits, financial strain, or specific behavioral and psychological symptoms of the care recipient, may also influence psychosomatic symptoms.

5. Conclusion

The aim of the study was to examine the impact of caregiving burden and perceived social support on psychosomatic symptoms. Based on existing literature, two hypotheses were derived. The statistical analysis revealed that caregiving burden and psychosomatic symptoms have a significant negative correlation with perceived social support, while there is a significant positive relationship between caregiving burden and psychosomatic symptoms. Furthermore, the model was statistically significant and explained a substantial 34.2% of the variance in psychosomatic symptom severity. Caregiving burden is a significant positive predictor of psychosomatic symptoms, while perceived social support serves as a significant negative predictor of psychosomatic symptoms. By addressing both the burden and the protective resources available to caregivers, it is possible to considerably enhance their physical and psychological well-being.

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Conflict of interest

The author declares that they have no competing interests.

Author contributions

Conceptualization: Vanshika Beri

Formal analysis: Vanshika Beri

Investigation: All authors

Methodology: All authors

Writing–original draft: Vanshika Beri

Writing–review & editing: Vanshika Beri

Ethics approval and consent to participate

The study was conducted in accordance with the Declaration of Helsinki (1964) and its later amendments, and the protocol was approved by the Departmental Research Committee at Shree Guru Gobind Singh Tricentenary University, Gurugram, India. A written informed consent was obtained from each participant. In writing, they were clearly informed about the objective,

procedure, potential risk and benefit, and their right to withdraw from the study. Furthermore, they were informed that their responses will be used only for the research purpose, and a permission to publish the same was obtained. Confidentiality and anonymity were maintained throughout the research process.

Consent for publication

Written informed consent was obtained from all participants before the study, which included their permission for the publication of their anonymized data for research purposes.

Availability of data

The data can be obtained from the authors on reasonable request.

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