

Factors Influencing Perceived Stress Among Informal Caregivers of Older Adults in Kerman in 2023

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Abstract

Background: The responsibility for caring for older adults typically falls on family members (informal caregivers), and caregiver stress can significantly impact various aspects of an older adult's life. This study aimed to identify factors associated with perceived stress among informal caregivers of older adults in Kerman, Iran in 2023.

Methods: This cross-sectional (descriptive-analytical) study was conducted in 2023 on 253 informal caregivers selected through multistage sampling from 10 comprehensive healthcare centers in Kerman. Data were collected using a demographic information questionnaire and Cohen's Perceived Stress Scale (PSS) for caregivers of older adults. Given the normal distribution of the data, univariate and multivariate linear regression models were employed for data analysis with SPSS-22 software.

Results: The majority of informal caregivers were women (62.1%) and were aged 17–40 (42.3%) and 41–64 (42.3%) years. Data analysis showed a significant relationship between perceived stress among informal caregivers and variables such as age, income, addiction, mental illness, place of residence, occupation, number of children, and insurance coverage (P value < 0.05).

Conclusion: The mean perceived stress score for informal caregivers of older adults in Kerman in 2023 was moderate (28.96 ± 6.98 , based on Cohen's scale with a score range of 0–56). Evidence suggests that stress is a risk factor for misbehaviors and may contribute to or exacerbate maladaptive responses, such as elder abuse. Thus, adopting strategies and interventions to reduce stress among these individuals is essential for all relevant organizations.

Keywords: Perceived stress, Caregivers, Informal caregivers, Family caregivers, Older adults

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Introduction

With advancements in healthcare and reductions in mortality rates, many countries are now facing the phenomenon of population aging (1). Similarly, Iran's population has transitioned from a predominantly young population to an aging one. Projections suggest that by 2041, the number of Iranians aged 60 and above will increase to 12 million, accounting for approximately 12% of the total population (2). The growing rate of aging in Iran has surpassed that of many other nations, and by 2051, the country's population pyramid is expected to become cylindrical, signaling a "silver tsunami" (3). This trend varies across different regions of Iran, creating diverse needs for this demographic group (4). Older adults experience physical, psychological, and social changes that can impact their quality of life. Addressing these needs, particularly in terms of caregiving, is crucial for improving their well-being (5). In Iran, due to the challenges of elder

care, developing caregiving service packages—especially for formal and informal home care—is of significant importance (6).

Informal caregiving refers to care provided by family members, friends, or acquaintances of older adults without financial compensation. A large portion of older adults receive care from informal caregivers, typically family members, spouses, friends, or neighbors (7). However, the caregiving role often disrupts the caregiver's life, leading to changes such as time constraints, diminished emotional connections, social isolation, a sense of losing control over personal life, and physical and emotional burdens, including anxiety, stress, and depression (8). Stress is the body's response to any demand, change, or perceived threat, triggered by a stressor—a situation or event that elicits this response. Prolonged stress can have negative effects, such as fostering feelings of being threatened, and may result in psychological complications, including



depression, obsessive-compulsive behaviors, personality disorders, inefficacy, anxiety, resentment, and irritability (9). Caregiving for older adults introduces various stressors for caregivers, which may directly or indirectly affect older adults as well (10). Furthermore, the greater the physical and emotional dependency of older adults, the more stress the caregiver experiences, increasing the risk of depression and potentially leading to abusive behaviors (11). Caregiver stress is also a significant risk factor for elder abuse (11). The psychological, physical, and social stress associated with long-term caregiving can lead to the caregiving burden, which in turn causes issues such as burnout, anxiety, and depression among caregivers. Caregiving burden is defined as the physical, psychological, and social reactions of caregivers stemming from an imbalance between caregiving demands and other responsibilities. This imbalance relates to the caregiver's social roles, personal circumstances, physical and emotional health, and financial resources (12, 13). Studies have also indicated a positive correlation between anxiety, depression, and caregiving burden (14). A study by Navidian et al (15) on family caregivers of psychiatric patients revealed that 26.4% of caregivers experienced mild psychological distress, 60.8% moderate distress, and 12.8% severe distress. Moreover, Goodarzi et al found that anxiety levels among caregivers in developed countries ranged between 11% and 45%. Given the association between family functioning and caregiver anxiety, assessing family dynamics can be an important metric for family therapy and education aimed at enhancing caregiver health (16). Hosseini et al demonstrated the effectiveness of the mindfulness-based intervention in reducing stress among caregivers of older adults with Alzheimer's disease, recommending its application to other caregivers (17). Bastani et al reported that female caregivers of older adults with Alzheimer's disease—who often serve as primary informal caregivers—experience high levels of stress, impacting both their health and the well-being of those they care for. Interventions to improve their circumstances were strongly recommended (18). A study by Luchesi et al highlighted the high levels of perceived stress among caregivers of older adults and emphasized the importance of developing stress-reduction interventions for this group. Besides, the findings highlighted the need for strategies to prevent cognitive decline and reduce caregiving burden. Although several studies have examined the factors contributing to perceived stress among older adults, research on these factors in their caregivers remains scarce, necessitating further investigation (19). Accordingly, the present study aimed to identify the factors influencing perceived stress among informal caregivers of older adults in Kerman, Iran, in 2023.

Methods

The sample size in this cross-sectional descriptive-analytical study was calculated as 347 individuals, based on a correlation coefficient of 0.15 from previous studies (20), a significance level of 0.05, and a test power of 0.8, using the following formula:

$$n = \left(\frac{Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}}{\frac{1}{2} \ln \left(\frac{1+r}{1-r} \right)} \right)^2 + 3$$

Considering a 20% dropout rate, the final sample size was determined to be 400 persons. The participants in this study were selected through multi-stage sampling. Initially, all 10 comprehensive healthcare centers in Kerman were selected. The list of older adults registered at each center was retrieved from the SIB system (a national integrated health system developed by the Iranian Ministry of Health for recording, maintaining, and updating the electronic health records of over 95% of households in the country). From each center, 40 older adults were randomly selected, and their contact numbers, as recorded in the SIB system, were used to contact either the older adults or their family members. The interviewer introduced herself and then asked the family members or older adults to identify the primary caregiver. This person was then recognized as the main caregiver. After explaining the objectives of the study and ensuring the confidentiality of the information, the caregivers were invited to visit their respective healthcare centers. If the caregiver was unwilling to visit the center, the interviewer visited their home to complete the questionnaire. All participants provided verbal informed consent before participating in the study. Data were collected in July and August 2023. The inclusion criteria for the participants were Iranian nationality, willingness to participate in the study, and literacy. The exclusion criterion was the unwillingness to participate in the study.

The data in this study were collected using a demographic information questionnaire and Cohen's Perceived Stress Scale (PSS). The demographic information questionnaire recorded variables such as age, gender (male, female), education level (illiterate, basic literacy, middle school, high school, higher education, or equivalent), living arrangements (living alone, with children, with spouse, with children and spouse, others), occupation (unemployed, self-employed, homemaker, employee, retired, other), marital status (single, married, separated, widowed), health status (presence of illness, no illness), mental health status (presence of mental illness, no mental illness), type of care (independent care, collaborative care), income (up to 5 million tomans, 5 to 10 million tomans, and over 10 million tomans), number of children (no children, one child, more than one child), insurance coverage (yes, no), addiction (yes, no), type of housing (apartment, house), and housing

ownership (owner, tenant). The PSS, containing 14 items developed by Cohen, was used to measure the perceived stress of the caregivers. The Cronbach's alpha for this scale was 0.85 (21), and its validity and reliability were confirmed in Iranian studies (22). This scale measures general perceived stress over the past month, including 14 statements, with seven positive and seven negative items. Scores range from 0 to 4 on a Likert scale (never, almost never, sometimes, often, and very often), and the total score ranges from 0 to 56 (21).

Data were coded and categorized, then entered into SPSS-22 software for analysis. Frequency and percentage were calculated to describe the qualitative variables, while mean, median, standard deviation, and interquartile range were used to describe the quantitative variables. The Shapiro-Wilk test and skewness and kurtosis indices were also used to assess the normality of the data distribution. Given the normality of the data, the univariate linear regression model (for assessing demographic variables such as gender, living arrangements, age, occupation, mental health status, income, number of children, insurance coverage, addiction, marital status, education level, health status, type of care, type of housing, and housing ownership) and the multivariate linear regression model (for assessing age, mental health status, income, addiction, and housing ownership) were applied. The backward elimination method was used to identify significant variables and select the best model.

This protocol used in this study was approved with the code of ethics IR.KMU.REC.1402.343 by the Ethics Committee of Kerman University of Medical Sciences.

Results

The caregivers who failed to complete all items in the questionnaire were excluded from the study and, thus the data from 253 participants were used for statistical analysis.

The majority of informal caregivers were women (62.1%) and fell into the age groups of 17–40 (42.3%) and 41–64 (42.3%) years, with the youngest being 17 and the oldest 88 years old. Most of the caregivers had an income below 5 million tomans per month (34.4%), a university degree or equivalent religious education (46.2%), and were homemakers (28.9%). The majority of participants were married (56.91%), childless (42.7%), and had at least one type of insurance (e.g., health, supplementary, life, or accident insurance) (82.6%). Moreover, most caregivers provided care collaboratively (62.8%), lived with individuals other than their spouse or children (36.8%), and reported no significant physical illness (73.5%) or mental disorder (76.3%). Most caregivers were free from addiction to substances such as narcotics, tobacco, alcohol, or psychoactive drugs (69.2%), lived in detached houses or villas (70.4%), and owned their houses (55.3%). The participants' demographic characteristics are detailed

in Table 1.

The mean perceived stress score among informal caregivers in Kerman in 2023 was 28.96 ± 6.98 , which is considered moderate (based on Cohen's PSS, with a score range from 0 to 56). The perceived stress variable demonstrated a normal distribution with a p -value of 0.15, a mean of 28.96, a standard deviation of 6.98, a median of 29.00, an interquartile range (IQR) of 6, a minimum value of 6, and a maximum value of 50. According to the univariate regression model, caregivers who lived alone ($P=0.018$) or with their children and spouse ($P=0.017$) experienced less perceived stress compared to those living with others (i.e., individuals other than their spouse or children). Unemployed caregivers experienced 6.613 units higher perceived stress than those with other occupations ($P=0.002$), and caregivers without children had 2.048 units higher perceived stress compared to those with more than one child ($P=0.031$). Moreover, caregivers without any type of insurance coverage experienced 2.547 units higher perceived stress than those with insurance ($P=0.028$).

The data from the multivariate regression model indicated for every one-year increase in caregiver age, perceived stress decreased by an average of 0.053 units ($P=0.048$). Caregivers with an income below 10 million tomans experienced higher levels of perceived stress compared to those with an income above 10 million tomans ($P=0.001$), while caregivers without addiction experienced 3.150 units lower perceived stress than those with addiction ($P<0.001$). Finally, caregivers with mental illnesses experienced 2.186 units higher perceived stress compared to those without any mental illnesses ($P=0.028$) (Table 2).

Discussion

The data from this study confirmed a significant relationship between perceived stress among informal caregivers of older adults and demographic variables such as living arrangements, age, occupation, mental health, income, number of children, insurance, and addiction. The mean perceived stress score among informal caregivers in Kerman in 2023 was 28.96 ± 6.98 , which is considered moderate (based on Cohen's PSS, with a score range from 0 to 56). Limited studies have addressed the perceived stress among caregivers. The mean stress score of this study was in line with the values reported by Zahed (23) and Bastani (24). As some evidence suggests, stress is a risk factor for improper behaviors and violence and plays a critical role in the development or exacerbation of many disorders and conflicts. If prolonged, stress can lead to psychological consequences such as depression, obsessive-compulsive disorder, personality disorders, feelings of inefficiency, anxiety, resentment, and irritability (9). The greater the stress experienced by caregivers, the higher the likelihood of depression and,

Table 1. The participants' demographic characteristics

Variable	Categories	Frequency (%) / Mean $\pm$ SD
Caregiver Age (year)	-	46.42 $\pm$ 15.4
Caregiver Gender	Male	96 (37.9)
	Female	157 (62.1)
Caregiver Education	Illiterate	4 (1.6)
	Literate (reading and writing)	19 (7.5)
	Middle School	41 (16.2)
	High School	72 (28.5)
	University or Equivalent	117 (46.2)
Living Arrangement	Alone	7 (2.8)
	With spouse	56 (22.1)
	With child/children	14 (5.5)
	With spouse and child/children	83 (32.8)
	Others (living with individuals other than spouse/children)	93 (36.8)
Caregiver Occupation	Unemployed	17 (6.7)
	Self-employed	67 (26.5)
	Homemaker	73 (28.9)
	Employee	55 (21.7)
	Retired	20 (7.9)
	Others	21 (8.3)
Marital Status	Single	74 (29.2)
	Married	144 (56.9)
	Divorced	25 (9.9)
	Widowed	10 (4.0)
Physical Health	Presence of illness	67 (26.5)
	Absence of illness	186 (73.5)
Mental Health	Presence of illness	60 (23.7)
	Absence of illness	193 (76.3)
Type of Care Provided	Independent care	94 (37.2)
	Collaborative care	159 (62.8)
Income	Up to 5 million tomans	87 (34.4)
	5–10 million tomans	81 (32.0)
	Above 10 million tomans	85 (33.6)
Number of Children	No children	108 (42.7)
	One child	38 (15.0)
	More than one child	107 (42.3)
Insurance Coverage	Uninsured	44 (17.4)
	Insured	209 (82.6)
Addiction	No addiction	175 (69.2)
	Addiction present	78 (30.8)
Type of Housing	Apartment	75 (29.6)
	House	178 (70.4)
Housing Ownership	Owner	140 (55.3)
	Tenant	113 (44.7)

consequently, the likelihood of abusive behaviors (11). Caregiver stress is one of the primary risk factors for abuse in older adults (11), contributing to a decrease in quality of life and an increase in the physical and psychological harm experienced by them. Studies have estimated the rate of elder abuse in the home to be between 67% and 73.3% (25), and the World Health Organization (WHO) reported elder abuse at home to vary from 4% to 6% in 2002 (26), with a reported increase in 2018 (27).

The findings from the present study revealed that younger caregivers experienced higher perceived stress, as reported by Andreou (28). Younger caregivers, due to their age requirements, may often tend to seek work, income, and leisure, and when they assume caregiving responsibilities—whether by choice or compulsion—they experience higher levels of stress due to the time-consuming and stressful nature of caregiving (29). Moreover, the findings showed that perceived stress was higher among unemployed caregivers. Accordingly, Cohen reported that unemployed individuals experienced higher levels of psychological stress (30). Thus, housewives and unemployed individuals, who spend most of their time at home caring for older adults, are more vulnerable to stress and pressure compared to employed caregivers.

The present study found that perceived stress was higher among caregivers earning less than 10 million tomans, compared to those earning more than 10 million tomans, as confirmed by Hosseini (18). According to Wadsworth, economic stress not only disrupts family relationships and processes but also limits the ability to cope with stress, leading to psychological difficulties among family members (31).

Perceived stress was higher among caregivers without children compared to those with multiple children. However, contrary to the findings of this study, the study by Mansouri did not find a significant relationship between perceived stress and the number of children (29). In older ages, children serve as a major source of social support for parents, positively impacting their mental health and reducing anxiety and depression (32).

The findings also indicated that perceived stress was lower among caregivers who lived alone or with their children and spouse, compared to caregivers who lived with others (non-immediate family). This may be related to the number of participants in these caregiver groups.

In addition, perceived stress was higher among caregivers without insurance compared to those with insurance, as insurance acts as a coping mechanism for risk and uncertainty (33). Accordingly, individuals without insurance likely face higher out-of-pocket costs when dealing with illness, accidents, or other situations, resulting in higher perceived stress both during and after such events.

Perceived stress was higher among caregivers with addiction compared to those without addiction. It seems

Table 2. The relationship between demographic variables and perceived stress among informal caregivers of older adults

Variable	Categories	Univariate Linear Regression			Multivariate Linear Regression		
		β	(95% CI)	P value	β	(95% CI)	P value
Age (years)			-0.11, 0.00		-0.057	-0.11, 0.00	0.047
Gender	Male	0.074	-1.71, 1.85	0.935	-	-	-
	Female	-	-	-	-	-	-
Education Level							
Education	Illiterate	0.154	-6.87, 7.18	0.966	-	-	-
	Literate (reading/writing)	1.154	-2.26, 4.57	0.507	-	-	-
	Middle School	0.886	-1.62, 3.39	0.488	-	-	-
	High School	-0.402	-2.47, 1.66	0.703	-	-	-
	University or Equivalent	-	-	-	-	-	-
Living Arrangement	Alone	-6.422	-11.75, -1.09	0.018	-	-	-
	With children	-0.994	-4.89, -2.90	0.616	-	-	-
	With spouse	1.172	-3.47, 1.12	0.316	-	-	-
	With children and spouse	-2.508	-4.56, -0.45	0.017	-	-	-
	Others	-	-	-	-	-	-
Employment	Unemployed	6.613	2.38, 10.84	0.002	-	-	-
	Self-employed	2.262	0.98, 5.50	0.171	-	-	-
	Homemaker	-0.802	-4.01, 2.40	0.623	-	-	-
	Employee	-2.748	-6.07, 0.57	0.105	-	-	-
	Retired	1.357	-5.40, 2.69	0.510	-	-	-
	Others	-	-	-	-	-	-
Marital Status	Single	-0.122	-4.73, 4.48	0.959	-	-	-
	Married	-2.174	-6.64, 2.30	0.340	-	-	-
	Divorced	-2.660	-7.78, 2.46	0.307	-	-	-
	Widowed	-	-	-	-	-	-
Physical Health	Presence of Illness	0.556	-1.40, 2.51	0.577	-	-	-
	Absence of Illness	-	-	-	-	-	-
Mental Health	Presence of Illness	3.324	-1.33, 5.31	0.001	2.186	0.23, 4.13	0.028
	Absence of Illness	-	-	-	-	-	-
Type of Care	Independent Care	0.497	-1.29, 2.28	0.585	-	-	-
	Collaborative Care	-	-	-	-	-	-
Income	Up to 5 million tomans	3.353	1.30, 5.39	0.001	3.492	1.47, 5.50	0.001
	5–10 million tomans	3.600	1.51, 5.68	0.001	3.534	1.50, 5.56	0.001
	Above 10 million tomans	-	-	-	-	-	-
Number of Children	No Children	2.048	0.18, 3.91	0.031	-	-	-
	One Child	1.721	-0.86, 4.30	0.190	-	-	-
	More than One Child	-	-	-	-	-	-
Insurance	No Insurance	2.547	0.28, 4.81	0.028	-	-	-
	Insured	-	-	-	-	-	-
Addiction	No Addiction	-2.943	-4.78, -1.10	0.002	-3.150	-4.90, -1.39	0.001
	Addiction Present	-	-	-	-	-	-
Type of Housing	Apartment	0.695	-1.20, 2.59	0.471	-	-	-
	House	-	-	-	-	-	-
Housing Ownership	Owner	-1.680	-3.40, 0.05	0.057	-	-	-
	Tenant	-	-	-	-	-	-

that addiction sometimes creates or exacerbates stress in individuals, and various factors, including social, economic, and psychological stressors, contribute to the development and onset of addiction. The inability to cope with stressors is a key factor in the development and use of substances (34).

Furthermore, perceived stress was higher among caregivers with mental illnesses compared to those without mental illnesses. Luchesi also reported that the caregivers with poor cognitive status experienced higher levels of perceived stress (19), as demonstrated in the present study. Accordingly, individuals with poorer cognitive status and psychological distress are more likely to experience stress compared to those with better cognitive function.

This study was conducted with some limitations: 1. Participants were selected only from urban, informal caregivers, excluding formal caregivers, caregivers in nursing homes, or rural caregivers. Thus, the findings from this study cannot be generalized to the entire population. 2. Data were collected through self-report instruments. 3. As a cross-sectional study, it is not possible to accurately determine causal relationships. 4. Sample size reduction due to inaccurate responses led to an inaccurate estimation of perceived stress. Following these limitations, future studies should focus on formal caregivers and caregivers in nursing homes or rural areas. To determine causality between demographic variables and perceived stress, a case-control study design would be ideal. Finally, all questionnaires should be completed by the interviewer to ensure accuracy.

Conclusion

The findings from this study indicated a moderate level of perceived stress among informal caregivers of older adults in Kerman in 2023. Hence, it is essential to focus on caregivers as much as on older adults and to implement strategies and interventions to reduce stress, especially for informal caregivers. Moreover, considering the relationship between family functioning and caregiver stress, evaluating family dynamics can be a key aspect of family therapy and family education in enhancing caregiver health. The better the family's function and cohesion, the less the negative impact of illness on each family member, and the more supportive the family system will be for older adults.

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Competing Interests

The authors declared no conflicts of interest.

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