The Relationship Between Caregiver Burden for Elderly Patients and Caregiver Muscle Strength, Nutrition, and Sleep Status

Nisa Özen Aydın[1], Özge Pasin[2], İrem Tanrıverdi[3], Pınar Soysal[4]

[1]Bezmialem Vakif University School of Medicine, Istanbul, Turkey
[2]Department of Geriatrics, Bezmialem Vakif University School of Medicine, Istanbul, Turkey
[3]Bioistatistic Department, Saglik Bilimleri University, Hamidiye Faculty of Medicine, Istanbul, Turkey

INTRODUCTION

The older adults population, defined as individuals aged 65 and over, is growing rapidly worldwide. This demographic shift is leading to an increased burden on caregivers, who are essential in assisting older adults patients. In our study, we aim to determine the burden of caregivers providing care for older adults patients.

METHOD

Our study was conducted from March 2023 at Bezmialem Vakıf University Faculty of Medicine Hospital, focusing on caregivers of hospitalized patients aged 65 and over. After collecting personal information, we used the Caregiver Burden Scale for caregiver burden, the Mini Nutritional Assessment Test and Healthy Eating Attitude Scale for nutritional status, and the Epworth Sleepiness Scale and Insomnia Severity Index for sleep status. For muscle strength, a handgrip dynamometer was applied to the arm three times, and the maximum result was evaluated.

RESULT

Table 1. Characteristics of the caregivers and patients

Variables	
CAREGIVERS	
Caregivers age, year	53 [47.25-60]
Caregiving duration, week	30 [16.5-104]
Caregiver gender (Female)	79 (79%)
Employment status of caregiver	
Unemployed	30 (30 %)
Employed	44 (44 %)
Retired	26(26 %)
Marital status of caregiver	
Married	64 (64%)
Single	36 (36%)
Caregiver education, n (%)	
Elementary/Middle School	29 (29%)
High School	24 (24%)
Tertiary Education	47 (47%)
Chronic disease of caregivers	
No	53 (53%)
Yes	47 (47%)
Relationship to patient	
Child (daughter/son)	66 (66%)
Grandchild/Nephew/Niece/Sibling	13 (13%)
Spouse	13 (13%)
MCBI Score	27.40 ± 14.20
MNA Score	12 [9-13]
HEAS Score	66.11 ±9.44
ESS Score	5.04 [2-7]
ISI Score	7.50 [1-13]
Muscle strength	27 [22.67-32.75]
Patients age, years	78.5 ± 8.05
Patients gender (female)	61 (61%)
Chronic illness of patients	
No	21 (21%)
Yes	79 (79%)
Duration of illness, week	46 [12-123.5]
Disease	
Cancer	21 (21%)
Lung diseases	12 (12%)
Cardiovascular diseases	19 (19%)
Others	48 (48%)

Normally distributed continuous variables were presented as mean ± SD, non-normally distributed continuous variables were presented as median [Q1-Q3], Categorical variables were presented as counts (percentages).
MCBI: Multidimensional Caregiver Burden Inventory, MNA: Mini Nutritional Assessment, HEAS: Healthy Eating Attitude Scale, ESS: Epworth Sleepiness Scale, ISI: Insomnia Severity Index

The study has enrolled 100 volunteer caregivers, comprising 79 females and 21 males, with a mean age of 50.5 years (Table 1). According to the Mini Nutritional Assessment Test, the prevalence of undernutrition among participants is 48%. The Epworth Sleepiness Scale indicates a daytime excessive sleepiness prevalence of 12%, while the Insomnia Severity Index reveals a moderate insomnia rate of 10%.

Additionally, the handgrip test shows muscle weakness rates of 5% in females and 4% in males.
When comparing total scores among participants, after adjustment for all confounders, a negative correlation was still observed between Caregiver Burden Scale and the Mini Nutritional Assessment Test, and a positive correlation was found between Caregiver Burden Scale and the Insomnia Severity Index ($p < 0.05$) (Table 2).

Table 2. Linear regression analysis for MCBI score

	Unstandardized B coefficient	Std. Error	Sig.	95.0% Confidence Interval for B	
Patient' age	0.287	0.168	0.092	-0.048	0.621
Caregiving duration	0.004	0.002	**0.036**	0.000	0.008
MNA Score	-1.118	0.524	**0.036**	-2.159	-0.076
ISI Score	0.732	0.220	**0.001**	0.296	1.168
Muscle strength	-0.206	0.159	0.197	-0.521	0.109

MCBI: Multidimensional Caregiver Burden Inventory, MNA: Mini Nutritional Assessment, ISI: Insomnia Severity Index

CONCLUSION

In conclusion, caregiving responsibilities often fall on women, particularly those caring for children. A relationship has been observed between caregiver burden and factors such as caregiving duration, patient age, caregiver insomnia, and the severity of nutritional decline. Therefore, providing support for caregivers in long-term care situations may help alleviate their burden. As caregiver burden increases, insomnia and nutritional deterioration tend to worsen, and the reverse is also true. If caregiver burden can be reduced, issues like insomnia and malnutrition may be improved. Likewise, addressing sleep and nutrition problems in caregivers suffering from insomnia or malnutrition may also help reduce their overall burden.