ATATÜRK ÜNİVERSİTESİ YAYINLARI
ATATURK UNIVERSITY PUBLICATIONS

Research Article *Araştırma Makalesi* DOI: 10.17049/jnursology.1457919

The Effect of Consultancy for Family Caregivers with Hip Fractures Caregiver Burden, Stress and Quality of Life

Kalça Kırığı Hastasına Bakım Veren Aile Üyelerine Uygulanan Danışmanlığın Bakım Yükü, Stres Düzeyi ve Yaşam Kalitesine Etkisi

Buket ÇELİK[1]
Özlem BİLİK[1]
[1]Dokuz Eylul University Faculty of Nursing, Department of Surgical Nursing, Izmir, Türkiye.

ABSTRACT

Objective: The study aimed to examine the effect of consultancy for family caregivers with hip fractures caregiving burden, stress and quality of life.

Methods: The study has quasi-experimental design. The family caregivers in the control group received routine care. Face-to-face and telephone counseling was offered to individuals in the intervention group. The data were collected by using a patient characteristics form, family caregiver characteristics form, Zarit Burden Interview, Caregiver Strain Index and Quality of Life Scale at baseline, discharge, post-op first month and, post-op third month.

Results: The mean scores on the caregiver burden, stress, on mental health, role mental, vitality, social functioning and general health subscales of the Quality of Life Scale of the intervention group in the first and third months after surgery were higher than the control group.

Conclusion: This study shows that counseling given by the nurse decrease caregiving burden and stress and improve the quality of life in family caregivers.

Keywords: Hip fracture, nursing, family caregiver, consultancy, caregiver burden, stress, quality of life.

ÖZ

Amaç: Bu çalışmanın amacı kalça kırığı olan aile üyesi bakım verenlere uygulanan danışmanlığın bakım verenlerin bakım yükü, stres düzeyi ve yaşam kalitesine etkisini incelemektir.

Yöntemler: Bu çalışma yarı deneysel araştırma dizaynındadır. Kontrol grubundaki bakım veren aile üyeleri rutin bakım almıştır. Girişim grubuna yüz yüze ve telefonla bireyselleştirilmiş danışmanlık yapılmıştır. Veriler; hasta tanıtım formu, bakım veren aile üyesi tanıtım formu, Zarit Bakım Yükü, Bakım Veren Stres İndeksi ve Yaşam Kalitesi ölçeği kullanılarak girişim öncesi, taburculukta, ameliyat sonrası birinci ayda ve üçüncü ayda toplanmıştır.

Bulgular: Girişim grubunun; bakım yükü, stres ve yaşam kalitesi mental sağlık, mental rol, enerji/canlılık, sosyal fonksiyon ve genel sağlık alt boyutları puan ortalamalarının birinci ve üçüncü ayda kontrol grubundan daha yüksek olduğu bulunmuştur.

Sonuç: Bu çalışma hemşire tarafından yapılan danışmanlığın bakım veren aile üyelerinin bakım yükünü ve stres düzeyini azalttığını ve yaşam kalitesini iyileştirdiğini göstermektedir.

Anahtar Kelimeler: Kalça kırığı, hemşirelik, bakım veren aile üyesi, danışmanlık, bakım yükü, stres, yaşam kalitesi

Geliş Tarihi/Received	31.07.2023
Revizyon Tarihi/Revised	12.11.2023
Kabul Tarihi/Accepted	16.02.2024
Yayın Tarihi/Publication Date	25.03.2024

Sorumlu Yazar/Corresponding author:
Buket ÇELİK
E-mail: celik.buket62@gmail.com

Cite this article: Çelik B, Bilik Ö. The effect of consultancy for family caregivers with hip fractures caregiver burden, stress and quality of life. *J Nursology*. 2024;27(1):58-68.

INTRODUCTION

Hip fracture is an important health problem in older people worldwide. For patients, the healing process of hip fracture can become more complex with the physiological losses of old age, in addition to the treatment and care needs.[1] Family caregivers experience caregiving-related stress due to the lack of information about treatment and healing, unpreparedness for caregiving roles and insufficient social and financial support.[2-5] One important effect of these problems is a low quality of life (QoL). In a study,[6] on the relation between caregiving and the QoL, caregivers were found to have decreased QoL in six months of surgery for hip fracture since their social relationships are disrupted and since they experience physical and mental problems.

Several studies have suggested that people and institutions specializing in caregiving should follow and provide support for caregivers .[4,6,7] Nurses offer consultancy to individuals to protect and promote their health, to increase the their QoL and to help them recognize and use their own potentials while coping with diseases-related problems.[7-11] It is important that family caregivers should have information about how they will perform caregiving, to what extent they will contribute to caregiving and how they will access appropriate resources before taking the responsibility for caregiving. In a systematic review, informing caregivers about patient care; it has been reported that it facilitates the caregiving process, reduces the caregiver's burden and stress, and increases the QoL in caregivers of orthopedic patients.[7] The counseling given by the nurse to patients undergoing total knee replacement is effective in improving the QoL and the selfcare agency of patients.[12] To our knowledge, there have not been any studies on consultancy offered by nurses to caregivers of patients having surgery for hip fracture.

AIM

This study aimed to investigate how providing consultation to caregivers of hip fracture patients impacts their burden of caregiving, stress levels, and QoL. It is predicted that consultancy for caregivers will facilitate their care management and its maintenance, increase the QoL and reduce their care burden and stress.

METHODS

Study Design

This study has a quasi-experimental design. Randomization was not performed since family caregivers in intervention and control groups could interact with each other. The control group received routinely offered education and the intervention group was given consultancy by using an educational booklet prepared by the researchers. The counseling process was conducted both face to face and by the phone. The counseling process was carried out face to face from the patient's admission to the clinic until discharge, and by telephone at home after discharge. A systematic review focusing on caregivers for orthopedic patients reveals that the collection of data initiates from the time of hospital admission and continues through various time intervals, extending up to two years post-surgery.[7] Studies involving individuals taking care of patients with hip fractures suggest that; since hip fracture is a sudden traumatic event, caregivers have difficulties in the process and management of home care, especially in the first months after discharge, due to caregiving-related stress due to the absence of adequate information about treatment and healing, unpreparedness for caregiving roles.[5-7] Therefore, in this study, data collection time started with the patient's admission to the clinic and ended at the 3rd month after surgery. Data were first collected from the control group and then from the intervention group. Data were collected at face to-face interviews in the clinics and by phone for monitoring at home in the 1th to 3th months after surgery.

Participants

This study was carried out at a university hospital situated in the city of İzmir, located in the western region of Turkey. Inclusion criteria for participants in the study included caregivers who willingly volunteered, often being family members and literate, having the ability to speak and understand Turkish, offering care to a family member with hip fracture both in the hospital and at home, age of 18 years or older and not having the diagnosis of a psychiatric disease. Exclusion criteria for family caregivers were prior experience with caregiving for a family member with hip fracture and inability to contact caregivers for some reasons at the time the study was conducted (e.g. expressing an intention to withdraw from the study and alteration in phone number etc.).

Inclusion criteria for patients offered care were age of 60 years or older, having the ability to speak and understand Turkish, not having a hearing or speech problems and not being diagnosed with a neurological condition (Alzheimer's disease and dementia etc.) and a psychiatric condition. Exclusion criteria for patients given care were prior surgery for hip fracture, having a disability (e.g. stroke) and diagnosis of cancer.

The study's sample size was determined using G Power 3.1.9.4. To date, there is no available research on this matter with the same design as the present study. Therefore, power analysis of this study was based on the results of a quasi-experimental study by Ben-Morderchai et al.[13] using a similar research design to the present study to examine the effects of education offered by nurses on orthopedic patients. The study's effectiveness was derived from the effect size of 80% (d: 0.81, *P*= .012) and the size of each group was found to be 30 participants.[13] Taking account of a loss of 30%, 39 participants were included into each group. Since two patients in the intervention group died and two family caregivers in the intervention group wanted to withdraw from the study, four family caregivers were excluded from the study. A caregiver was excluded from the sample because one patient in the control group died. Thus, the study was completed on a total of 7, the intervention group comprised 35 participants, while the control group had 38 participants

At the study's completion, posthoc power analysis was performed by using G Power 3.1.9.4. Based on the results of the independent groups t-test utilized to determine the difference in caregiver burden between the intervention and control groups, (d:1.19, *P*=.01), the power of the study was evaluated by using the confidence interval of 95% and was found to be 96%.

Measures

Descriptive Characteristics of Patients Form: A descriptive characteristics of patients form was prepared by the researchers. The form is composed of seven questions about age, gender, marital status, education, income, presence of chronic diseases and health insurance of the patients. [1,4]

Descriptive Characteristics of Family Caregivers Form: A descriptive characteristics of family caregivers form was created by the researchers. The form has seven questions about age, gender, marital status, education, income, presence of chronic diseases and health insurance of family caregivers.[6]

The Zarit Burden Interview: The Zarit Burden Interview (ZBI) is a Likert scale developed by Zarit et al. in 1980 to evaluate caregiver burden.[14] The scale is composed of 22 questions about physical, psychological, social and financial characteristics of caregivers. The total score on the scale is obtained by adding points for all the items and ranges from zero to 88. Scores of zero-20 indicates little or no caregiver burden, scores of 21-40 indicate mild caregiver burden, scores of 41-60 indicate moderate caregiver burden and scores of 61-88 indicate severe caregiver burden.

The validity and reliability of the ZBI for the Turkish population were tested by İnci and Erdem (2008).[15] The reported Cronbach's alpha for the scale was 0.95. In the current study, Cronbach's alpha was determined to be 0.84 upon discharge, 0.91 in the first month after surgery and 0.92 in the third month after surgery.

The Caregiver Strain Index: The Caregiver Strain Index (CSI) was developed by Robinson in 1983 to determine family members who have worries about the issue of care.[16] Cronbach’s alpha on the CSI was reported to be 0.86. The index is composed of 13 items and there are two responses to each item: yes (one point) and no (zero point). The lowest and highest scores on the index can be zero and 13 respectively. Cronbach’s alpha was found 0.75 for the Turkish version of the index.[17] In the present study, Cronbach’s alpha for the index was found to be 0.73 on discharge, 0.81 in the first month after surgery and 0.75 in the third month after surgery.

The 36-Item Short Form Health Survey: The 36-item Short Form Health Survey (SF-36) is commonly used to assess health-related QoL. The score for each subscale ranges from zero to 100. Cronbach’s alpha was reported to range from 0.73 to 0.76 for the original survey[18] and from 0.75 to 0.76 for its Turkish version.[19] In the present study, Cronbach’s alpha for the survey was found to be 0.93 on discharge, 0.96 in the first month after surgery and 0.95 in the third month after surgery.

Procedure

The study had a single-blinded design to avoid biases that could arise intentionally or unintentionally and data were gathered without informing the participants about which group they were assigned into between March 2019 and July 2021. First, the data of the control group were taken. After the control group was completed, the data of the intervention group were taken.

Data prior to the intervention were obtained through the completion of Descriptive Characteristics of Patients and Caregivers forms, the ZBI, the CSI, and the SF-36 assessments before the surgery. Following the intervention, data were collected at discharge and during the first and third months post-surgery using the ZBI, the CSI, and the SF-36.

Procedure in the Control Group

The family caregivers assigned into the control group received routinely offered care. In the clinic where the study was carried out, patients and their families are not offered planned education by nurses during their hospital stay. The patients are only given a one-page brochure at discharge about post discharge homecare. The caregivers in the control group were not provided education by the researchers, but their questions (if any) were answered due to ethical principles. Besides, they were sent the education booklet when their follow-up was completed.

Procedure in the Intervention Group

After baseline data were gathered, the family caregivers assigned into the intervention group were provided with consultancy in three stages by the first author. In the framework of the consultancy, they were given education about pre and postoperative care, and homecare for hip fracture patients in the first, second and third stages respectively. An educational booklet was prepared by the researchers and given to patients by family caregivers before surgery and after surgery and home care (Figure 1).[20,21] Each education session was face to face interview and lasted for 25-30 minutes (Figure 2).

Consultancy Content

In this study, caregivers were trained within the scope of counseling and were followed up to 3 months after surgery. In addition, within the scope of the consultancy service, caregivers were notified that they could reach out to the researcher whenever necessary, by giving them the phone number of the researcher. Caregivers needed help solving new health problems that emerged during the counseling process. For example; some of the caregivers consulted the researcher because they started having sleep problems and lacked the knowledge to resolve it. Caregivers were referred to a psychiatrist by the researcher. Some caregivers called the researcher and received consultancy services on various issues that they had difficulties in managing the patient's care or could not resolve. For instance, some patients refused to mobilize at home due to pain and fear of falling after surgery. In this context, the consultant met individually with the patient and the caregiver. The patient received information regarding the significance and necessity of mobilization, and the problem was solved by encouraging the patient to mobilize. In addition to all these, information was given to caregivers who have chronic diseases and tend to postpone their own health and check-ups about the significance and necessity of going for check-ups. Caregivers were monitored regarding their check-ups.

Data analysis

Obtained data were analyzed with the Statistical Package for Social Sciences (23.0). Kolmogorov-Smirnov test was used to test normality of the data and the test result showed evenly distributed data. Sociodemographic data were analyzed with numbers, percentages, mean, standard deviation, χ^2-test, Fisher's exact test and the independent t-test. Comparative data analyzes were made with two-factor variance analysis for repeated measures, t-test and one-way variance analysis. The statistical significance was set at $p < .05$.

Ethical considerations

Ethical approval was obtained from Dokuz Eylul University (approval number: 2016/25-03) and written permission was taken from the hospital where the study was conducted (approval number: 2917-GOA). The family caregivers were given information about the aim of the study and their oral and written informed consent was obtained.

RESULTS

The intervention and control groups patients were found to be similar in terms of their sociodemographic features (*P*>.05) (Table 1).

Table 1. Comparison of Patients in the Intervention and Control Groups According to Descriptive and Clinical Characteristics

Characteristics	**Intervention Group (n:35)** **$\bar{X}$±SS (min-max)**	**Control Groups (n:38)** **$\bar{X}$±SS (min-max)**	**Test**	***P***
Age	68.50 ± 8.53 (60-90)	67.86 ± 7.64 (60-85)	t= 1.036	.734
	n (%)	**n (%)**	**X^2**	
Gender				
Female	27 (77.10)	31 (81.60)	0.220	.639
Male	8 (22.90)	7 (18.40)		
Marital status				
Married	23 (65.70)	28 (73.70)	0.550	.458
Single	12 (34.30)	10 (26.30)		
Education				
Primary education	27 (77.10)	31 (81.60)		
High school	5 (14.30)	4 (10.50)	0.899	.214
University or higher education levels	3 (8.60)	3 (7.90)		
Income				
Lower than expenses	11 (31.40)	17 (44.70)		
Equal to expenses	24 (68.60)	21 (55.30)	1.365	
Higher than expenses	0 (0)	0 (0)		

Table 1. Comparison of Patients in the Intervention and Control Groups According to Descriptive and Clinical Characteristics (Contunied)

Characteristics	Intervention Group (n:35) $\bar{X}$±SS (min-max)	Control Groups (n:38) $\bar{X}$±SS (min-max)	Test	*P*
Presence of a chronic disease				
Yes	30 (85.70)	32 (84.20)	0.520	.820
No	5 (14.30)	6 (15.80)		
Health Insurance				
Yes	32 (91.40)	33 (86.80)	0.531	.393
No	3 (8.60)	5 (13.20)		

X^2: Fisher’s exact test was used since the expected cell count is lower than 5.

Table 2. Comparison of Family Caregivers in the Intervention and Control Groups According to Descriptive and Clinical Characteristics

Characteristics	Intervention Group (n:35) $\bar{X}$±SS (min-max)	Control Group (n:38) $\bar{X}$±SS (min-max)	Test	*P*
Age	50.62 ± 10.94 (24-72)	47.36 ± 14.04 (21-76)	t= -1.099	.275
	n (%)	**n (%)**	**X^2**	
Gender				
Female	27 (77.10)	36 (94.70)	5.022	**.041***
Male	8 (22.90)	2 (5.30)		
Marital status				
Married	32 (91.40)	22 (57.90)	10.641	**.001***
Single	3 (8.60)	16 (42.10)		
Education				
Primary education	21 (60)	12 (31.60)		
High school	6 (17.10)	14 (36.80)	6.342	.042*
University or higher education levels	8 (22.90)	12 (31.60)		
Occupation				
Housewife	19 (54.30)	17 (44.70)	2.044	.360
Worker	6 (17.10)	12 (31.60)		
Retired	10 (28.60)	9 (23.70)		
Income				
Lower than expenses	11 (31.40)	17 (44.70)		
Equal to expenses	24 (68.60)	21 (55.30)	1.365	.243
Higher than expenses	0 (0)	0 (0)		
Presence of a chronic disease				
Yes	13 (37.10)	11 (28.90)		
No	22 (62.90)	27 (71.10)	0.555	.456
Degree of relation				
Spouse	6 (17.10)	7 (18.40)		
Daughter	16 (45.70)	23 (60.50)	4.328	.228
Daughter-in-law	4 (11.40)	5 (13.20)		
Son	7 (25.70)	3 (7.90)		
Receiving support for care				
Yes	28 (80)	24 (63.20)	2.522	.112
No	7 (20)	14 (36.80)		
Person providing support for care				
Spouse	8 (22.90)	4 (10.50)		
Sibling	17 (48.60)	20 (52.60)	6.798	.079
None	7 (20)	14 (36.80)		
Reason for caregiving				
Familial responsibility	22 (62.90)	25 (65.80)		
Absence of a person to look after the patient	13 (37.10)	13 (34.20)	1.364	.243
Difficulty in paying for healthcare costs				
Yes	3 (8.60)	5 (13.20)		
No	32 (91.40)	33 (86.80)	4.507	.123

X^2: Fisher’s exact test was used since the expected cell count is lower than 5,*$P < .05$

Table 3. Comparison of the Zarit Burden Interview and the Caregiver Strain Index Scores of the Family Caregivers in the Intervention and Control Groups

Time Group	Baseline $\bar{X}$±SD	On discharge $\bar{X}$±SD	1st month after surgery $\bar{X}$±SD	3rd month after surgery $\bar{X}$±SD		F	*P*	Eta square	Bonferroni correction test
				Zarit burden interview					
Intervention	8.74 ±1.88	18.34±8.02	14.20± 10.94	7.85 ± 5.67		32.000	<.001	.408	1< 2 1<3 2<4 3<4
Control	8.73 ± 1.94	23.42± 11.02	23.81 ± 14.20	21.26 ± 14.60		18.975	<.001	.337	
					Group	20.645	<.001	.225	
t	0.130	2.234	3.219	5.087	**Time**	29.966	<.001	.297	
P	.989	.029	.002	<.001	**Group by Time**	5.618	<.001	.108	
				Caregiver strain index					
Intervention	6.08 ± 1.91	5.85 ± 1.81	3.08± 2.35	2.08 ± 2.42		37.287	<.001	.523	1<3 1<4 2<3 2<4
Control	6.57 ± 2.51	6.21 ± 2.04	5.84 ± 2.89	5.47 ± 2.66		1.500	.231	.390	
					Group	27.739	<.001	.281	
t	.938	113	4.434	5.656	**Time**	22.993	<.001	.245	
P	.352	.439	<.001	<.001	**Group by Time**	9.174	<.001	.114	

F = repeated measures one-way variance analysis, t-test (independent groups t-test), p<.05 1: at baseline, 2: on discharge, 3:1st month 4: 3rd month

Table 4. Comparison of the SF-36 Quality of Life Scale Scores of the Patients in the Intervention and Control Group

Dependent Variable	Group	Baseline X̄±SD	On discharge X̄±SS	1st month X̄±SD	3rd month X̄±SD		F	*P*	Eta square	Bonferroni correction test
Physical Functioning	**Intervention**	90 ± 20.29	88.57 ± 21.30	92.85 ± 17.75	92.85 ± 17.15	**Group**	.567	.527	.075	
	Control	90.78 ± 19.64	88.15 ± 21.54	89.47 ± 20.65	90.65 ± 19.59	**Time**	.168	.899	.060	
	t	-0.169	-0.082	-0.747	-0.501	**Group by Time**	.192	.663	.005	
	P	.866	.935	.457	.618		.510	.629	.066	
							.200	.850	.001	
Physical Roles	**Intervention**	80 ± 35.25	77.14 ± 42.60	72.85 ± 37.06	84.28 ± 23.55	**Group**	.752	.460	.026	
	Control	77.63± 36.66	68.42 ± 47.10	69.73 ± 39.48	75 ± 25.33	**Time**	.577	.610	.011	
	t	-.281	-.827	-.347	-1.618	**Group by Time**	1.323	.254	.007	
	P	.780	.411	.729	.110		1.109	.339	.015	
							.207	.846	.003	
Mental Health	**Intervention**	68.11 ± 3.12	62.28 ± 20.83	65.82 ± 18.77	72.68 ± 13.90	**Group**	4.026	.020	.106	1<2
	Control	64.84 ± 2.95	59.15 ± 19.19	52.73 ± 21.38	59.15 ± 18.90	**Time**	3.004	.058	.075	2<4
	t	-.760	-.668	-2.770	-3.458	**Group by Time**	7.069	.010	.091	3<4
	P	.450	.507	.007	.001		4.003	.018	.053	
							2.585	.075	.035	
Mental Role	**Intervention**	56.42 ± 7.96	49.52 ± 50.07	61.42 ± 45.83	68.57 ± 54.41	**Group**	1.953	.150	.033	
	Control	40.78 ± 7,32	34.21 ± 48.07	38.21 ± 48.07	46.45 ± 48.88	**Time**	.998	.397	.026	
	t	-1.1482	-1.333	-3.379	-2.238	**Group by Time**	9.006	.004	.109	
	P	.152	.187	.001	.038		2.013	.137	.023	
							1.226	.301	.017	
Vitality	**Intervention**	64 ± 14.18	60.28 ± 15.52	64 ± 17.14	69.57 ± 13.79	**Group**	6.427	.004	.159	1<2
	Control	58.94 ± 17.52	51.57 ± 22.66	48.81 ± 20.21	54.47 ± 19.72	**Time**	5.244	.004	.124	2<4
	t	-1.347	-1.899	-3.446	-3.760	**Group by Time**	9.205	.003	.115	3<4
							6.991	.001	.090	
	P	.182	.062	.001	<.001					

Table 4. Comparison of the SF-36 Quality of Life Scale Scores of the Patients in the Intervention and Control Group (contunied)

Dependent Variable	Group	Baseline X̄±SD	On discharge X̄±SS	1st month X̄±SD	3rd month X̄±SD		F	P	Eta square	Bonferroni correction test
Social Functioning	**Intervention**	71.85 ±24.37	68.92 ± 21.72	76.78 ± 26.10	78.78 ± 23.17	**Group**	1.735	.174	.049	
	Control	70.06 ± 23.04	66.44 ± 25.18	61.84 ± 25.42	65.65 ± 22.91	**Time**	.648	.569	.025	
	t	-.323	-.449	-2.381	-2.432	**Group by Time**	4.517	.037	.060	
	P	.748	.655	.020	.018		.648	.569	.009	
							1.993	.123	.027	
Pain	**Intervention**	64.35 ± 3.52	57.07 ± 24.02	67 ± 28.90	75.21 ± 28.99	**Group**	3.369	.032	.090	1<2
	Control	66.18 ± 4.26	58.88 ± 28.20	62.10 ± 28.90	63.61 ± 31.70	**Time**	.762	.485	.020	2<4
	t	.327	.294	-.723	-1.626	**Group by Time**	.516	.475	.007	
	P	.744	.770	.472	.108		3.133	.037	.042	
							1.443	.237	.020	
General Health	**Intervention**	62.42 ± 15.50	56.57 ± 18.54	70.28 ± 16.84	74.85 ± 15.36	**Group**	13.402	<.001	.283	1<2
	Control	64.34 ± 16.93	59.47 ± 18.48	55.65 ± 23.28	58.81 ± 19.91	**Time**	3.174	.042	.079	1<3
	t	.502	.669	-3.052	-3.830	**Group by Time**	3.558	.063	.048	1<4
	P	.617	.506	.003	<.001		5.580	.001	.076	2<3
							11.774	<.001	.142	2<4
Summary Physical Health Score	**Intervention**	74.56 ± 18.75	69.50 ± 11.20	75.24 ± 14.06	81.25 ± 19.72	**Group**	1.912	.132	.053	
	Control	74.25 ± 19.13	68.25 ± 13.14	68.75 ± 13.21	71.50 ± 12.60	**Time**	.225	.827	.016	
	t	0.485	0.621	0.200	-1.689	**Group by Time**	.008	.931	<.001	
	P	0.629	0.537	0.842	0.096		.562	.599	.021	
							1.544.	.213	.008	
Summary Mental Health Score	**Intervention**	43.89 ± 10.63	40.98 ± 11.05	45.71 ± 8.06	46.61 ± 11.15	**Group**	3.153	.040	.085	
	Control	39.76 ± 10.98	36.60 ± 8.79	34.74 ± 9.03	38.49 ± 11.49	**Time**	2.087	.118	.53	2<3
	t	-1.881	-1.622	-5.454	-3.104	**Group by Time**	19.382	**<**.001	.214	2<4
							2.620	.060	.036	
							2.477	.071	.034	
	P	.64	.109	<.001	.003					

F = repeated measures one-way variance analysis, t-test (independent groups t-test), *P*<.05 1: at baseline, 2: on discharge, 3:1st month, 4: 3rd month

The family caregivers in the intervention group and those in the control group significantly differed in terms of gender, marital status and education (*P*<.05), but they were similar with respect to the rest of the descriptive characteristics (*P*>.05), (Table 2).

The mean scores of the intervention and control groups on the ZBI at baseline, on discharge and in the first and third months after surgery are presented in Table 3. While ZBI mean scores were low or absent in all measurements in the intervention group, care burden was found to be at a moderate level in the control group at discharge, 1 month and 3 months after surgery. There was a significant difference between the groups in terms of group (p<.001), time (*P*<.001) and group by time (*P*<.001) interactions. The intervention group had a significantly lower caregiver burden than the control group.

The mean scores of the intervention and control groups on the CSI at baseline, on discharge and in the first and third months after surgery are shown in Table 3. Although the intervention and control groups significantly differed regarding group (*P*<.001), time (*P*<.001) and group by time (*P*<.001) interactions, neither of the groups were found to have stress. Nevertheless, the intervention group received significantly lower stress scores than the control group.

The mean scores of the subscales of the SF-36 -mental health, mental role, vitality, social function, bodily pain, general health and summary mental health scores- at baseline, on discharge and in the first and third months after surgery were significantly different between the intervention and control groups (*P*<.05, Table 4). No significant difference was found in physical function, physical role and summary physical health scores between the groups (*P*>.05, Table 4).

The intervention group received higher mean scores on mental health, mental role, vitality, social function, bodily pain and general health subscales of the SF-36 on discharge and in the first and third months after the intervention (Table 4).

DISCUSSION

In this study, the effect of counseling given to the family caregiver by nurses to on their caregiving burden, stress levels, and QoL outcomes was evaluated. In this study, it was found that caregivers who received counseling had higher QoL and lower care burden and stress levels than those who did not receive counseling.

In the literature, there are several interventions to help family caregivers manage and maintain the caregiving process like home-based rehabilitation, family care model and consultancy. However, there is not an agreement on the superiority of these interventions to each other. It is also reported that interventions directed towards caregivers can vary with countries, regions and culture.[22,23] In the present study, the intervention group had a significantly lower caregiver burden than the control group. Likewise, in a randomized study, the patients given home-based therapy in the first year after hip fracture had better functional status than those without home-based therapy and their caregivers had significantly less caregiving burden.[24] Besides, Samsuddin et al. [25] demonstrated that education given to caregivers of patients with total knee replacement reduced caregiver burden.[25] Although different methods are used in studies performed to decrease caregiver burden, they are directed towards achieving the same goal. It has been stated in the literature that offering information to caregivers about homecare can help them manage difficulties likely to arise during homecare well, improve patient care and thus decrease caregiver burden.[26] It may be that education given in the framework of consultancy facilitated management and maintenance of homecare.

An important point about the present study is that the caregivers both in both groups had lower burden scores than those revealed in other studies. In this study, the intervention group had little or no caregiver burden on discharge and in the first and third months after surgery and the control group had mild caregiver burden in the first and third months after surgery. Parry et al.[5] reported that 27% of the caregivers of hip fracture patients had severe caregiver burden in the third month after surgery. Vega et al.[26] showed that 50% of the caregivers of the patients with surgery for hip fracture had severe caregiver burden in the first month after surgery and that 36% of the caregivers still had severe burden in the third month after surgery. Lower caregiver burden found both groups in the current study can be explained by the fact that over 60% of the caregivers considered caregiving as familial responsibility, which is very common in Turkish culture, and that they might have received support for caregiving from other members of the family.

In the present study, although the caregivers in the intervention and control group did not feel stressed, their mean stress scores were significantly different and the intervention group had a lower mean score on the CSI. Consistent with this finding, Nahm et al.[27] discovered that online education offered to caregivers of hip fracture patients improved their information about the caregiving process but did not have an effect on their stress levels, and the caregivers did not experience stress before and after the intervention. However, Longo et al.[7] reported that caregivers of hip fracture patients had high stress levels in the postoperative period but that their stress levels decreased with functional improvement of the patients. In a cohort study, caregivers of hip fracture patients were found to experience stress from admission of the patients to hospital until the sixth month after surgery.[28]

There are several reasons why the consultancy intervention offered in the present study was ineffective in stress levels of the caregivers. First, in Turkish culture, families take the responsibility of giving care to ill family members. Therefore, the caregivers might have perceived the caregiving process as a familial responsibility. Second, the caregivers in both groups were housewives. Therefore, they cannot have experienced work-related stress. Finally, almost all the patients in each groups had a health insurance. Therefore, the caregivers did not face financial difficulty.

In the present study, the intervention group was found to have higher scores on the SF-36 subscales of mental health, mental role, social function, vitality, general health and summary mental health than the control group. In a systematic review reported that education about patient care facilitated the caregiving process and enhanced the QoL in caregivers of orthopedic patients.[7] Tseng et al.[29] (2021) found that patients given family-centered care had better health status than those given standard care and that their family caregivers had a higher QoL. Schulz et al.[30] stated that consultancy and education offered to the caregivers improved their the QoL. In the present study, the higher QoL in the intervention group can be attributed to the improved adaptability of the caregivers to changing conditions and their new roles and their improved ability to manage and maintain the caregiving process thanks to the consultancy offered to them.

Another finding of the present study there was no difference in the physical function, pain, physical role and summary physical health score between the groups. Cross et al.[31] stated that educational interventions may not be effective on the QoL. Since the QoL scale has a multidimensional structure, educational interventions may not affect its each dimension.

Limitations

The study was performed in a single center. This limits the generalizability of its results. Also, the study did not have a randomized controlled design due to possible interactions between the family caregivers in the clinic. Besides, general and functional health status of the patients could not be evaluated. It can be recommended that further studies should also focus the relation between general and functional health status of caregivers and the effect of consultancy on caregiver burden, stress and QoL.

The present study revealed that consultancy for family caregivers of hip fracture patients was effective in reduced of caregiver burden and stress and improvement of the QoL.

With health and social life-related technological developments have become popular especially with new generations. Therefore, it can be suggested that further studies should be conducted to allow caregivers of hip fracture patients to easily access information through technological applications.

Etik Komite Onayı: Dokuz Eylül Üniversitesi Girişimsel Olmayan Araştırmalar Etik Kurulu (onay numarası: onay numarası: 2016/25-03) çalışma protokolünü onayladı.
Bilgilendirilmiş Onam: Ailenin bakım verenlerine çalışmanın amacı hakkında bilgi verildi ve sözlü ve yazılı onamları alındı.
Hakem Değerlendirmesi: Dış bağımsız.
Yazar Katkıları: Fikir – BC, OB; Tasarım - BC, OB; Denetim - BC, OB; Kaynaklar - BC, OB; Materyaller - BC, OB; Veri Toplanması ve/veya İşlemesi - BC; Analiz ve/veya Yorum - BC; Literatür Taraması - BC, OB; Makalenin Yazılması - BC, OB; Eleştirel İnceleme - BC, OB
Çıkar Çatışması: Yazar(lar) bu makalenin araştırılması, yazarlığı ve/veya yayınlanmasıyla ilgili olarak herhangi bir potansiyel çıkar çatışması beyan etmemiştir.
Finansal Destek: Yazar(lar) bu makalenin araştırılması, yazarlığı ve/veya yayınlanması için herhangi bir mali destek almamıştır.
Bu çalışma bir doktora tezidir.

Ethics Committee Approval: The Dokuz Eylul University Non-Invasive Research Ethical Committee (approval number: approval number: 2016/25-03) approved the study protocol.
Informed Consent: The family caregivers were given information about the aim of the study and their oral and written informed consent was obtained
Peer-review: Externally peer-reviewed.
Author Contributions: Concept – BC, OB; Design - BC, OB; Supervision - BC, OB; Resources - BC, OB; Materials - BC, OB; Data Collection and/or Processing - BC; Analysis and/or Interpretation - BC; Literature Search - BC, OB; Writing Manuscript - BC, OB; Critical Review - BC, OB
Conflict of Interest: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.
Financial Disclosure: The author(s) received no financial support for the research, authorship, and/or publication of this article.
This study a doctoral thesis.

REFERENCES

1. Kim SH, Yi SW, Yi JJ, Kim YM, Won YJ. Association between body mass index and the risk of hip fracture by sex and age: A prospective cohort study. *J Bone Miner Res.* 2018; 33(9): 1603-1611. https://doi.org/10.1002/jbmr.3464
2. Gleeson JP, Hsieh CM, Cryer-Coupet, Q. Social support, family competence, and informal kinship caregiver parenting stress: The mediating and moderating effects of family resources. *Children and Youth Services Review*. 2016;67:32-42.

3. Eleuteri S, Lima MEBD, Falaschi P, FFN Education Committee. The psychological health of patients and their caregivers. *Orthogeriatrics*. 2021: 223-237. https://doi.org/10.1007/978-3-030-48126-1_13#DOI
4. Asif M, Cadel L, Kuluski K, Everall AC, Guilcher S. Patient and caregiver experiences on care transitions for adults with a hip fracture: a scoping review. *Disabil Rehabil*. 2020; 42(24): 3549-3558. https://doi.org/10.1080/09638288.2019.1595181
5. Parry JA, Langford JR, Koval KJ. Caregivers of hip fracture patients: The forgotten victims? *Injury*. 2019; 50(12): 2259-2262. https://doi.org/10.1016/j.injury.2019.09.030
6. van de Ree CLP, Ploegsma K, Kanters TA, Roukema JA, De Jongh M, Gosens T. Care-related quality of life of informal caregivers of the elderly after a hip fracture. *J Patient Rep Outcomes*. 2017; 2(1): 23. https://doi.org/10.1186/s41687-018-0048-3
7. Longo UG, Matarese M, Arcangeli V, Alciati V, Candela V, Facchinetti G., et al. Family Caregiver Strain and Challenges When Caring for Orthopedic Patients: A Systematic Review. *J Clin Med*. 2020; 9(5): 1497. https://doi.org/10.3390/jcm9051497
8. Lewis SL, Heikemper MM, Dirksen SR, et al. *Medical-Surgical Nursing: Assessment and Management of Clinical Problems*. 7th Edition. 2007. Mosby Elsevier, St Louis
9. Doody O. The role and development of consultancy in nursing practice. *Br J Nurs*. 2014; 23(1): 32-39. https://doi.org/10.12968/bjon.2014.23.1.32
10. Kennedy F, McDonnell A, Gerrish K, Howarth A, Pollard C, Redman J. Evaluation of the impact of nurse consultant roles in the United Kingdom: a mixed method systematic literature review. *J Adv Nurs*. 2012; 68(4): 721-742. https://doi.org/10.1111/j.1365-
11. Yousefi H, Ziaee ES, Golshiri P. The Role of Nursing Consultant in Iran: A Qualitative Study. *Iran J Nurs Midwifery Res*. 2019; 24(5): 387-393. https://doi.org/10.4103/ijnmr.IJNMR_53_19
12. Kaya Ç, Bilik Ö. Effect of Counseling on Quality of Life and Self-Care Agency for Patients Who are Scheduled for Total Knee Replacement. *Clin Nurs Res*. 2022; 31(3): 519-529. doi:10.1177/10547738211058985
13. Ben-Morderchai B, Herman A, Kerzman H, Irony A. Structured discharge education improves early outcome in orthopedic patients. *Int J Orthop Trauma Nurs*. 2010; 14(2): 66-74. https://doi.org/10.1016/j.joon.2009.02.001
14. Zarit SH, Reever KE, Bach-Peterson J. Relatives of the impaired elderly: correlates of feelings of burden. *Gerontologist*. 1980; 20(6): 649-655. https://doi.org/10.1093/geront/20.6.649
15. İnci FH, Erdem M. Validity and reliability of the burden interview and its adaptation to Turkish. *Journal of Atatürk University School of Nursing*. 2008; 11(4): 86-95.
16. Robinson BC. Validation of a caregiver strain index. *J Gerontol*. 1983; 38(3): 344–348. https://doi.org/10.1093/geronj/38.3.344
17. Uğur Ö. Examination of the care burden of home caregivers of oncology patients [Doctoral Thesis]. Dokuz Eylul University Institute of Health Sciences, Internal Diseases Nursing. 2006.
18. Ware JE, Gandek B. Overview of the SF-36 Health Survey and the International Quality of Life Assessment (IQOLA) Project. *J Clin Epidemiol*. 1998; 51(11): 903–912. https://doi.org/10.1016/s0895-4356(98)00081-x
19. Kocyigit H. Reliability and validity of the Turkish version of short form-36 (SF-36): a study in a group of patients will rheumatic diseases. *Turkish Journal of Drugs Theratment*. 1999; 12: 102-106.
20. Cuesta LS, Tutton E, Langstaff D, Willett K. understanding informal carers' experiences of caring for older people with a hip fracture: a systematic review of qualitative studies. *Disabil Rehabil*. 2016; 40(7): 740-750.
21. Çelik B, Bilik Ö. The Discharge Needs of Family Caregivers of the Patients Following Hip Fracture Surgery. *Turkiye Klinikleri J Nurs Sci*. 2020; 12(2): 173-181.
22. Min JW, Barrio C. Cultural values and caregiver preference for Mexican-American and non-Latino White elders. *J Cross Cult Gerontol*. 2009; 24(3): 225–239. https://doi.org/10.1007/s10823-008-9088-0
23. Rocha SA, Avila MA, Bocchi SC. The influence of informal caregivers on the rehabilitation of the elderly in the postoperative period of proximal femoral fracture. *Rev Gaucha Enferm*. 2016; 37(1): e51069. https://doi.org/10.1590/1983-1447.2016.01.51069
24. Crotty M, Whitehead C, Miller M, et al. Patient and caregiver outcomes 12 months after home-based therapy for hip fracture: a randomized controlled trial. *Arch Phys Med Rehabil*. 2003; 84(8): 1237–1239. https://doi.org/10.1016/s0003-9993(03)00141-2
25. Samsuddin MF, Karim J, Salim AA. The outcomes of health education programme on stress level among the caregivers of post total knee replacement surgery. *Front Psychiatry*. 2021; *12*: 571027. https://doi.org/10.3389/fpsyt.2021.571027
26. Ariza-Vega P, Ortiz-Piña M, Kristensen MT, Castellote-Caballero Y, Jiménez-Moleón JJ. High perceived caregiver burden for relatives of patients following hip fracture surgery. *Disabil Rehabil*. 2019; 41(3): 311–318. https://doi.org/10.1080/09638288.2017.13906
27. Nahm ES, Resnick B, Orwig D, Magaziner J, Bellantoni M, Sterling R, et al. A theory-based online hip fracture resource center for caregivers: effects on dyads. *Nursing Research*. 2012; 61(6): 413–422. https://doi.org/10.1097/NNR.0b013e318270712a
28. Siddiqui MQ, Sim L, Koh J, Fook-Chong S, Tan C, Howe TS. Stress levels amongst caregivers of patients with osteoporotic hip fractures - a prospective cohort study. *Ann Acad Med*. Singapore. 2010; 39(1): 38–42.
29. Tseng MY, Yang CT, Liang J, Huang HL, Kuo LM, Wu CC, et al. A family care model for older persons with hip-fracture and cognitive impairment: A randomized controlled trial. *Int J Nurs Stud*. 2021; 120: 103995. https://doi.org/10.1016/j.ijnurstu.2021.103995
30. Schulz R, Eden J. National Academies of Sciences, Engineering, and Medicine. Older Adults Who Need Caregiving and the Family Caregivers Who Help Them. Committee on Family Caregiving for Older Adults; Board on Health Care Services; Health and Medicine Division; National Academies of Sciences, Engineering, and Medicine; Washington (DC): National Academies Press (US); 2016.
31. Cross AJ, Elliott RA, Petrie K, Kuruvilla L, George J. Interventions for improving medication-taking ability and adherence in older adults prescribed multiple medications. *Cochrane Database Syst Rev*. 2020; 5(5): CD012419. https://doi.org/10.1002/14651858.CD012419.pub2