

# The Effect of Education and Telephone Follow-up on the Burden of Family Caregivers of Patients With Cancer

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## Abstract

**Introduction:** Family caregivers of patients with cancer face a care burden due to the responsibilities and problems of providing care to the patients. Applying appropriate strategies to reduce the burden is essential.

**Objective:** The study aimed to determine the effect of education and telephone follow-up on family caregivers' burden on patients with cancer.

**Methods:** In this quasi-experimental study, 69 family caregivers of patients with cancer referred to only one chemotherapy center of a hospital in Lorestan province in Iran were recruited by convenience sampling method. They were randomly assigned to intervention ( $n = 33$ ) and control ( $n = 36$ ) groups. For the intervention group, two face-to-face training sessions and six telephone counseling sessions were held related to the care of the patients and self-care. The control group received only routine care. The family caregiver burden was measured by Novak and Gast Caregiver Burden Inventory (1989) completed before, immediately, and 6 weeks after the study. Data were analyzed by SPSS21 using independent  $t$ -tests, paired  $t$ -tests, and repeated measures.

**Results:** Both groups were homogeneous regarding demographic characteristics and the baseline care burden. The caregiver burden decreased significantly in the intervention group, so its score was  $77.33 \pm 8.49$ ,  $58.93 \pm 8.03$ , and  $52.78 \pm 6.86$  before the study, immediately after and 6 weeks later, respectively ( $p < .001$ ). In the control group, there were no significant changes.

**Conclusion:** Education and telephone counseling reduced the burden on family caregivers. Therefore, this type of support is beneficial for providing holistic care and preserving the health of family caregivers.

## Keywords

burden, cancer, family caregivers, counseling, telephone follow-up

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## Introduction/Background

Care burden of cancer coincidentally with getting the population elder increases rapidly across the world (Pilleron et al., 2019). According to the estimation reported by the World Cancer Observatory in 2020, in Iran, there have been 131,191 new cancer cases in both sexes (70,704 Men and 60,487 Women), and 79,136 people died due to cancer (Ferlay et al., 2020). The incidence is predicted to reach 24 million by 2035 (Pilleron et al., 2019). More than 7 million people die of cancer yearly, accounting for 13% of all deaths (Amori et al., 2017). Diagnosis of cancer is usually a crucial crisis that involves not only the patients but also the families. The family members are engaged in the care

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process (Glajchen, 2004). Family caregivers (FCs) often experience mental and emotional problems associated with the diversity and intensity of their caring roles (Vahia, 2013). The lack of educational support for FCs causes devastating effects on their physical and mental health (Yun et al., 2010). Among all patient education methods, telenursing is a popular way to support patients and their FCs. This method is cost-benefit due to preventing readmission and improving the quality of care (Liptrott et al., 2018). Furthermore, counseling and telephone follow-up as a kind of telenursing may prevent and mitigate the care burden of the FCs and improve their caring performances (Chiang et al., 2012).

## Review of Literature

These days, the care of patients with chronic diseases such as cancer is transferred to home and assigned to the FCs. Some reasons for this transformation are the high costs of hospital stay, the willingness of physicians to shorten the hospital stays, and the willingness of patients and families to continue care at home (Abbaszadeh & Borhani, 2019). The patients depend on the FCs to perform daily activities, take medication, go to medical care centers, and manage the side effects (Hsu et al., 2017). These responsibilities burden FCs (Ghorbani et al., 2020).

Care burden causes devastating effects on the FC's life in various dimensions (Bauer et al., 2018), including developmental, physical, social, and emotional aspects (Yesufu-Udechuku et al., 2015). In a study by Feo et al. (2017), high care burdens lead to anxiety, depression, and psychological problems in caregivers (Feo et al., 2017). Moreover, Chindaprasirt et al. (2014) revealed that providing care to the elderly by FCs affects them in terms of physical, emotional, spiritual, and social pressure, which causes a burden on them (Chindaprasirt et al., 2014). FCs experience social stress due to interfering with their roles as caregivers with their duties at work which causes absence from the workplace. Also, the loss of income and savings due to expensive medicines and the provision of medical equipment for the patient puts a financial burden on the caregiver (Rha et al., 2015). The physical burden due to sleep disorders, changes in appetite, severe fatigue, and alterations in general body condition is common in FCs (Chindaprasirt et al., 2014). According to the studies, various factors such as socioeconomic status of the family, number of caregivers, types of disease, duration of disease, amount of daycare, the severity of clinical symptoms, and stage of cancer influence the severity of care burden in FCs (Choi-Kwon et al., 2005; Kahriman & Zaybak, 2015; Wang et al., 2016, 2017). The other factors that may influence the care burden are loss of ability to work, reduction in family financial capacity, and lack of support and training (Wilks et al., 2017). Considering the importance of FCs' health needs, training and supporting them reduce depression, anxiety, and stress of FCs which

can guarantee a higher quality of care (Goudarzian et al., 2018; Moghbel Esfahani & Haghayegh, 2019).

Following technology advancements, training methods have also been developed. Remote follow-up and consultation are possible using the telephone, Internet, and videos (Liptrott et al., 2018). Telephone consultation facilitates patient access, reduces costs, and removes time and place barriers (Ghorbani et al., 2020). According to the studies, telephone training reduced the care burden of FCs but increased their performances (Chiang et al., 2012). Moreover, telephone follow-up could reduce the care burden (Nejad et al., 2016). A combination of counseling and telephone follow-up interventions reduced the care burden of FCs and met their needs, too (Ghorbani et al., 2020). Heckel et al. (2018), in a study, found that the telephone call program reduced the unmet needs of caregivers. However, the caregiver burden was not reduced (Heckel et al., 2018). Based on the studies mentioned above, the findings related to the effect of telephone counseling and follow-up on FCs' burden could have been more consistent. Therefore, the present study aimed to determine the effect of education and telephone follow-ups on the burden of FCs of patients with cancer.

## Methods

### Design

This quasi-experimental study was performed in the only chemotherapy center of a hospital in Iran, covering a province with a population of about two million, from February 2020 to February 2021.

### Sample

Due to the lack of similar studies and based on the researchers' expectation of the effect size of the intervention, at the confidence interval = 95%, the power of test = 80%, the average effect size = 0.35 (taking into account the standard deviation = 13 and the minimum significant difference = 10, from the researcher's point of view) and the expected correlation in repeating the measurements = 0.7, the minimum sample size was determined to be 27 participants for each group (intervention group and control group). Since the possible dropout of patients with cancer is more than usual, 40 participants were considered for each group. Finally, the total sample size for the study was 80 participants. The sample size was calculated using the software of Gpower 3.1.2 due to the complexity of the formula and the difficulty of calculation manually. To find the participants, between February and July 2020, the medical records of patients referred to the ward during the last 1 to 6 months were reviewed, and their telephone numbers were extracted. The contact numbers of 105 FCs were extracted, but 25 out of them were not eligible. Finally, 80 FCs were enrolled. The

sampling method was blocked randomization with a block size of four and stratified by sex. Eligible FCs, in terms of inclusion criteria, were selected and divided into intervention and control groups (40 people in each group) using a stratified random allocation method. Thus, first, their sex (for the similarity of the two groups in terms of sex) was considered as a stratum. Then, within the stratum, using a randomized block method of 4, the samples were randomly assigned to the study groups. The model included confounding variables, such as age and educational level, as covariate variables.

### Inclusion/Exclusion Criteria

Inclusion criteria for FCs were the tendency to participate in the study, access to a telephone, age of 18 or higher, ability to read and write, primary responsibility for patient care, lack of employment in health care, no experience of sad events in the past 6 months, not participating in similar studies coincidentally and earning a score of 48 or higher from the care burden questionnaire. Inclusion criteria for patients were to be affected by cancer for at least 2 months, undergoing chemotherapy or other cancer-related treatments, not being in the final stages of life, age 15–75 years, and not having a mental disorder such as schizophrenia, bipolar disorder, depression, etc. The participants were excluded if they did not want to continue participating in the study, did not attend a face-to-face training session, did not answer phone calls

more than twice, passed away their patients, or entered into an acute phase of the disease. In the intervention group, five FCs were excluded due to the death of their patients and two others due to non-response to telephone calls more than twice. In the control group, four FCs were excluded due to the death of their patients. The sample size reached 69 FCs (33 in the intervention group and 36 in the control group) (Figure 1).

After explaining the research objectives and method to the participants and ensuring anonymity and confidentiality, they signed written informed consent to participate.

### Instruments for Data Collection

Data were collected using the questionnaire of demographic characteristics (age, sex, marital status, education, occupation, income) and the Caregiver Burden Inventory (CBI) developed by Novak and Gost (1989).

CBI has 24 items divided into five subscales, including time dependence (items 1–5), developmental burden (items 6–10), physical burden (items 11–14), social burden (items 15–19), and emotional burden (items 20–24). Each item is scored on a five-point Likert scale (completely incorrect = 1 to completely correct = 5). The total score range of CBI is 24–120. Scores of 24–47, 48–71, 72–95, and 96–120 indicate mild, moderate, severe, and very severe caregiver burden. It was completed before, immediately, and 6 weeks after the study. This scale has been evaluated in Iranian

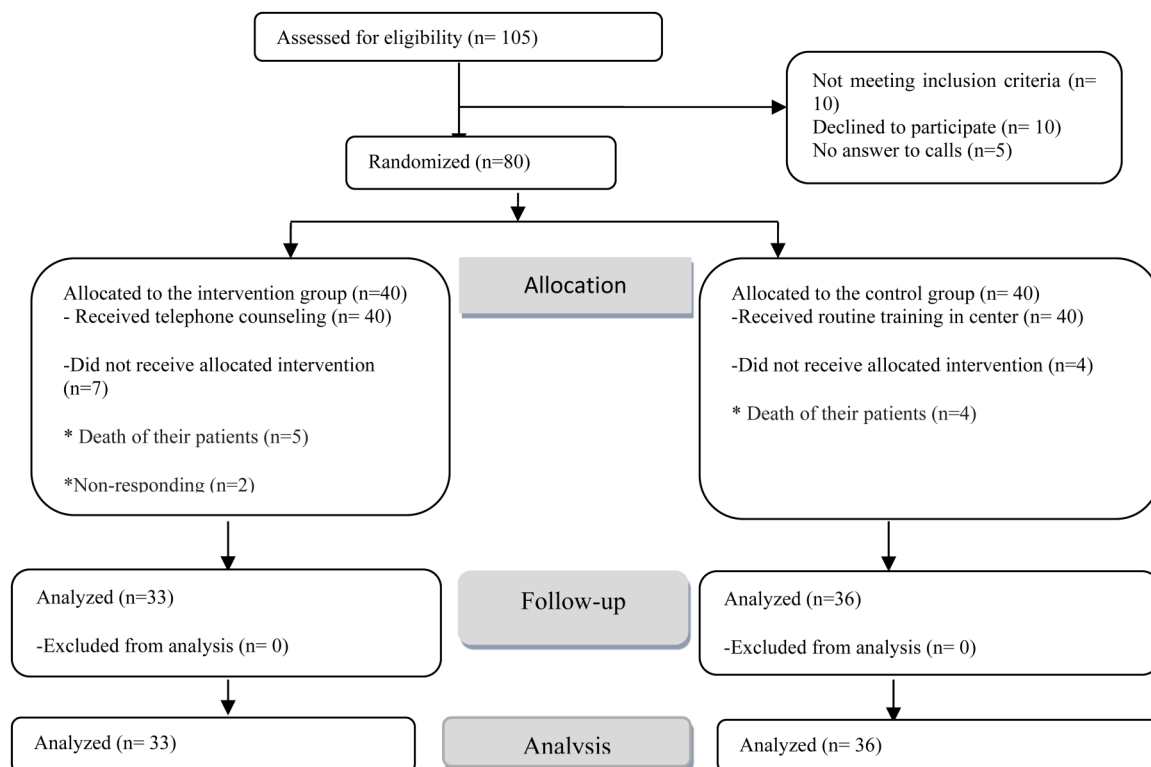


Figure 1. Flow diagram of the study.

society, and its reliability has been confirmed by calculating Cronbach's alpha coefficient of 0.76 to 0.82 for subscales and 0.90 for the whole scale (Abbasi et al., 2020). CBI was first translated into Persian by Abbasi et al. The validity and reliability of this scale were confirmed via content validity and internal consistency (Cronbach's alpha = 0.90) (Ashghali Farahani et al., 2016).

## Study Intervention

### Intervention Group

The purpose of education and telephone counseling was to empower FCs to provide care for the patients and preserve themselves from strain. Firstly, the relevant educational content was provided in a booklet using reliable sources (Farrokhnia et al., 2011; Haddadi et al., 2019; Lyman et al., 2018; Pinto et al., 2016; Razmara & Khayamzadeh, 2019). Then, to confirm the validity of the content booklet, faculty members with work experiences in chemotherapy wards (one hematologist and three nursing faculties) were asked to review the booklet. The experts' corrective opinions were applied, and the contradictions were discussed to reach an agreement. The overall content of the booklet consisted of two parts. The first part was about managing the side effects of chemotherapy facing the FCs with lots

of strain. This section was considered for in-person training sessions because these are needed immediately. The second part developed for telephone follow-ups was to empower FCs. A brief of the content subjects is presented in Table 1.

### In-Person Training Sessions

The first two sessions were held in person (45–60 min) to enable FCs to manage the effects of chemotherapy on the patients. FCs were trained in three groups of 13–14 people when they brought their patients to receive chemotherapy treatments. The sessions were held in the hospital's training hall observing health protocols due to the prevalence of the COVID-19 pandemic. The first researcher, trained a nurse with work experience of about 14 years in different wards, including emergency, medical, surgical, pediatric, and neonatal intensive care units, carried out this stage. The subjects of the sessions were associated with managing chemotherapy's side effects, including nausea and vomiting, anorexia, diarrhea, constipation, oral problems, hair loss, infection and bleeding prevention, fatigue, skin care, sleep disorders, stress and anxiety, and pain management. In the end, the booklet was given to them. Details of the subjects of in-person sessions are reported in Table 1.

**Table 1.** The Subjects of Telephone Follow-Ups' Sessions.

No. session	Subject of session	Content of session with more details	Time (min)
1	Coping strategies	- Training about stress and ways to deal with it - Reviewing and clearing up any ambiguity of previous training - Answering and giving solutions to the participants about their problems in patient care focusing on training materials presented in the in-person sessions	(15–20)
2	Effective communication	- Teaching about the correct and effective communication - Reviewing and clearing up any ambiguity of previous training - Answering and giving solutions to the participants about their problems in patient care focusing on training materials presented in the in-person sessions	(15–20)
3	Problem-solving techniques	- Teaching about problem-solving methods - Reviewing and clearing up any ambiguity of previous training - Answering and giving solutions to the participants about their problems in patient care focusing on training materials presented in the in-person sessions	(15–20)
4	Time management	- Teaching about time management - Reviewing and clearing up any ambiguity of previous training - Answering and giving solutions to the participants about their problems in patient care focusing on training materials presented in the in-person sessions	(15–20)
5	Physical self-care strategies and healthy lifestyles	- Teaching about scheduling appropriate plans for nutrition, exercise and sleep, and rest - Reviewing and clearing up any ambiguity of previous training - Answering and giving solutions to the participants about their problems in patient care focusing on training materials presented in the in-person sessions	(15–20)
6	Existing support services	- Training on sources of support and how to receive them - Reviewing and clearing up any ambiguity of previous training - Answering and giving solutions to the participants about their problems in patient care focusing on training materials presented in the in-person sessions	(15–20)

### Telephone Follow-ups

One week after the in-person sessions, telephone counseling and follow-up were conducted for 6 weeks, and one telephone counseling session was held every week. Each teleconsultation lasted 15–20 min and was conducted at the participants' preferred time, between 8 AM to 8 PM. This stage was managed by the same researcher who held the in-person sessions. Participants could call the researcher out of the time if it were needed. Topics covered included coping strategies, effective communication, problem-solving techniques, time management, physical care strategies, healthy lifestyles, and existing support services. Details of all sessions are illustrated in Table 1.

### Control Group

The control group received just routine training. In the hospital unit where the research was done, some informal oral education provided as routine training for the patients by the nurses. Moreover, there were some pamphlets whose contents were related to managing chemotherapy complications. In units, some patients need to be literated or knowledgeable about using these written educational materials.

### Ethical Consideration

This study was conducted on the Helsinki Declaration principles and was approved by the Ethics Committee of Lorestan University of Medical Sciences (NO. IR.LUMS.REC.1398.261). Consideration of informed consent, data confidentiality, participants' anonymity, and participants' authority to refuse to continue participation were observed precisely. In order to comply with ethical principles, the booklet was provided to control group at the end.

### Statistical Analysis

Demographic data of the FCs and their patients were analyzed using descriptive statistics (Mean  $\pm$  SD and percentage). The homogeneity of the intervention and control groups regarding demographic characteristics was assessed using the Chi-square and Fisher's exact tests. Since the data in the two groups were normally based on graphical methods and the Kolmogorov-Smirnov test, the independent *t*-test was used to compare two groups in the baseline caregiver burden (total and each subscale). Repeated measure analysis of variance was used to compare caregiver burden changes (total and each subscale) in two groups over time. Also, generalized estimation equations (GEE) models were used to investigate the intervention's effect and adjust the effect of other variables on caregiver burden. The results were reported at a significant level of 0.05.

## Results

### Sample Characteristics

Sixty-nine FCs participated in the study. Of all participants, 55.2% were women, 49.3% were housewives, 76.5% were married, 38.2% with diploma education, and 88.1% had moderate economic status (Table 2).

Regarding the patients, 52.1% were female, 56.6% were married, 56.7% were illiterate, 74.6% were undergoing chemotherapy, and 47.9% had a low need for care during the day, 93.9% of patients had cancer in grades 2 and 3. Two groups were identical in demographic and disease characteristics except for the performed and current treatments.

### Changes in the Mean Total Caregiver Burden and its Subscales in the Two Groups of Intervention and Control

The independent *t*-test revealed that the total score and scores of subscales of caregiver burden in the two groups of

**Table 2.** Demographic Characteristics of Family Caregivers in Two Groups of Intervention and Control.

Demographic characteristics		Intervention group	Control group	X <sup>2</sup>	p-value
Gender	Male	14 (42.4)	17 (47.2)	0.16	.810
	Female	19 (57.6)	19 (52.8)		
Marital status	Single	10 (30.3)	6 (16.7)	1.79	.255
	Married	23 (69.7)	30 (83.3)		
Educational level	Primary school	4 (12.1)	7 (19.44)	5.86	.119
	Secondary school	3 (9.1)	8 (22.22)		
	High school	17 (51.5)	9 (25.0)		
	Academic degree	9 (27.3)	12 (33.33)		
Job	Employed	11 (33.3)	15 (41.7)	0.597	.742
	Unemployed	5 (15.2)	4 (11.1)		
	Housewife	17 (51.5)	17 (47.2)		
Income level	Low	6 (18.2)	2 (5.6)	2.67	.140
	Moderate	27 (81.8)	34 (94.4)		
Age of caregivers (year)		10.3 40.25 $\pm$	35.3 $\pm$ 6.95	t = 2.31	.24

Data are presented as No. (%).

intervention and control were not significantly different at baseline.

Based on repeated measures analysis of variance, in the intervention group, there was a significant decrease in the total score ( $p < .00$ ,  $F = 406.79$ ) and scores of the five dimensions of caregiver burden (time [ $p < .001$ ,  $F = 68.48$ ], developmental [ $p < .001$ ,  $F = 79.52$ ], physical [ $p < .001$ ,  $F = 177.4$ ], social [ $p < .001$ ,  $F = 120.7$ ], and emotional [ $p < .001$ ,  $F = 88.47$ ]) from before to immediately after and 6 weeks after the intervention. In the control group, the caregiver burden in total and all five dimensions increased from before the study to immediately after. However, it decreased slightly from immediately after the study to 6 weeks later. What is certain is that the total score and scores of all subscales of caregiver burden stayed mostly the same from before the study until 6 weeks after the study in the control group (Table 3).

The results of the GEE model with linear link function showed that by adjusting the effect of caregivers' age and sex and the severity of cancer and the treatments in patients, per time unit, the average of the total score of caregiver burden of the intervention group decreased 5.08 units [CI 95% (-5.55, -4.61)] compared to the control group, which was statistically different ( $p < .001$ ) (Table 4).

## Discussion

This study aimed to determine the effect of education and telephone follow-up counseling on the care burden of FCs of patients with cancer. The study's main findings showed that the mean of the total score and the scores of the five subscales of caregiver burden (time, developmental, physical, social, and emotional) in the intervention group compared to the control group decreased significantly after the intervention. In a study by Nejad et al. (2016) in Iran on pairs of patients with breast cancer who underwent chemotherapy and their informal caregivers, findings revealed that the patient-caregiver education consisting of two in-person training sessions and four telephone follow-ups was influential in reducing caregiver strain and their unmet needs (Nejad et al., 2016). Ghorbani et al. (2020) in Iran also found that a face-to-face training session and four telephone counseling reduced the caregiver strain of FCs providing care for patients with cancer referring to urban health centers (Ghorbani et al., 2020). The study by El-Jawahri et al. (2020) on FCs of patients with cancer and hematopoietic stem cell transplantation showed that educating FCs in-person, by telephone, or by videoconferencing declined care burden, increased quality of life, and reduced anxiety and depression (El-Jawahri et al., 2020). Heckel et al. (2018) studied cancer patients'/

**Table 3.** Changes in the Total Score and the Score of the Five Subscales of Caregivers Burden of the Two Groups at Different Times (Before the Study, Immediately After the Study, and 6 Weeks After the Study).

Burden & its subscales	Group	Before the study	immediately after the study	Six weeks after the study	$p$ within the group	$p$ between group
Time	Intervention	4.34 ± 16.51	3.57 ± 12.57	3.02 ± 10.84	$p < .001$ $F = 84.6$	$p < .001$ $F = 68.48$
	Control	4.34 ± 17.38	3.87 ± 18.58	3.6 ± 17.55	$p = 0.49$ $F = 8.04$	
Developmental	Intervention	2.13 ± 18.36	1.51 ± 15.21	1.57 ± 13.39	$p < .001$ $F = 109.41$	$p < .001$ $F = 79.52$
	Control	3.22 ± 19.22	3.13 ± 19.47	2.9 ± 19.27	$p = 0.49$ $F = 0.63$	
Physical	Intervention	1.76 ± 13.93	1.82 ± 10.18	1.57 ± 9.06	$p < .001$ $F = 214.26$	$p < .001$ $F = 177.4$
	Control	2.48 ± 13.75	2.30 ± 13.91	2.32 ± 13.72	$p = 0.286$ $F = 1.27$	
Social	Intervention	2.13 ± 15.54	2.56 ± 11.69	1.83 ± 10.93	$p < .001$ $F = 126.23$	$p < .001$ $F = 120.7$
	Control	2.17 ± 15.19	2.12 ± 15.25	2.33 ± 15.13	$p = 0.5$ $F = 0.565$	
Emotional	Intervention	1.79 ± 12.96	1.85 ± 9.27	1.87 ± 8.54	$p < .001$ $F = 131.31$	$p < .001$ $F = 88.47$
	Control	2.27 ± 13.3	2.19 ± 12.94	2.67 ± 13.13	$p = 0.14$ $F = 2.04$	
Total	Intervention	8.49 ± 77.33	8.03 ± 58.93	6.86 ± 52.78	$p < .001$ $F = 482.4$	$p < .001$ $F = 406.79$
	Control	11.22 ± 78.86	10.56 ± 80.16	10.41 ± 78.83	$p < .001$ $F = 6.02$	

Used test: repeated measure analysis of variance.  
Added numbers: Mean ± Standard deviation.

**Table 4.** Modeling the Effect of Intervention on the Total Score of Caregiving Burden by Adjusting Other Variables Using the Generalized Estimation Equations Model.

Variable level		Coefficient <i>B</i>	Std. error	%95 CI for $\beta$	<i>p</i> -value
Group	Intervention	-7.58	2.47	(-2.37, -12.44)	0.002
	Control	Ref	-	-	
Time		0.11	0.11	(31.1, -0.0)	.311
Time $\times$ Group	Intervention	-5.08	0.24	(4.61-, 5.55-)	<.001
	Control	Ref	-	-	
Caregivers' gender	Female	2.75	2.17	(7.02.1.52, -)	.207
	Male	Ref	-	-	
Caregiver' age -		0.003	0.13	(0/27. 0.27, .-)	.98
Stage of cancer	1	-4.84	3.52	(2.05 11.74, -)	.168
	2	-2.47	2.11	(1.66.6.61, -)	.241
	3	Ref	-	-	-
Treatments performed	Chemotherapy and surgery	-1.96	2.51	(2.96 6.89, -)	.434
	Combination	Ref	-	-	
Current treatments	Chemotherapy	3.66	2.84	(9.24 1.9, -)	.197
	Radiotherapy and combination	Ref	-	-	

caregivers' dyads in Melbourne and Adelaide, Australia, by applying three outcalls 1 month and 3 months later at the start program. In contrast with our study, the intervention did not decline the caregiver burden but was influential in reducing their unmet needs and increasing their confidence in managing their health (Heckel et al., 2018). Considering the devastating effects of the caregiver burden on FCs' life and the health and care quality of the patients (Bauer et al., 2018), applying multimodal educational and supportive programs is useful to prevent and reduce the care burden as a detrimental phenomenon (Yesufu-Udechuku et al., 2015).

The use of telephone counseling and follow-up and similar interventions in caregivers of patients with other diseases has positively affected caregiver-related outcomes. It alleviates depression, anxiety, and care burden in FCs while increasing their quality of life (El-Jawahri et al., 2020). In a study by Chiang et al. (2012) in northern Taiwan on 60 caregivers of patients with heart failure, the findings showed that counseling and telephone follow-up significantly reduced the care burden of FCs (Chiang et al., 2012). Piamjariyakul et al. (2013) in Midwestern also found that telephone counseling and discharge planning for caregivers of patients with heart failure alleviated the care burden for 1 month after discharge (Piamjariyakul et al., 2013). In Sadeghmoghadam et al. (2020) study in Iran, telephone education declined the care strain of caregivers of patients with Alzheimer's (Sadeghmoghadam et al., 2020). The study was conducted at a Veterans Affairs (VA) hospital, an outpatient geriatric psychiatry unit serving elderly veterans with dementia or other psychiatric conditions or both with comorbid medical illnesses located in southern California; it showed applying spiritually-based teleconference, and 36-week telephone follow-up minimized caregivers' burden, stress, and depression (Bormann et al., 2009). A 2-month web-based education for caregivers of patients with dementia in Iran diminished caregiver burden. Different

educational and informational support types by telephone could reduce adverse outcomes of caring such as care burden, depression, stress, etc.

Due to the importance of caring for FCs, other studies have used other methods and interventions to modify the caregivers' burden of FCs of patients with cancer or other chronic diseases. A study by Belgacem et al. (2013) in six oncology wards in French hospitals implemented an in-person educational program, reduced caregivers' burden, and promoted the quality of life of patients and caregivers (Belgacem et al., 2013). In a study by Biabani et al. (2020) in Iran, four group education sessions for mothers provided care for children with thalassemia reduced their burden. They improved their adaptive behaviors (Biabani et al., 2020). In another study in Iran, four 30-min telephone counseling sessions reduced the caregiver burden of patients undergoing coronary artery bypass graft surgery (Gohari et al., 2022).

Indeed, each type of educational program may improve the engagement of patients, FCs, and professional caregivers in a triangular relationship which prevents caregivers' burden and improves the care quality and the quality of life of patients and caregivers (Belgacem et al., 2013; Biabani et al., 2020).

## Strengths and Limitations

In this study, we applied a kind of distance education by phone to support FCs who are commonly ignored in providing care for patients with cancer. The citable limitation of the study is that the study was done in a single center. Therefore, the generalization of the finding might be restricted.

## Implications for Practice

In this study, the intervention of education and telephone follow-up with the FCs of patients with cancer significantly reduced the care burden of the participants in the intervention

group compared to the control group. This finding indicates the positive effect of education and telephone counseling on alleviating the burden of FCs of patients with cancer. In nursing care, a holistic view is emphasized; in such nursing, the care of family and FCs of patients with chronic diseases, including cancer, is particularly important. One of the crucial measures in providing care for FCs is preventing and mitigating care burdens in them. In this regard, providing the information needed by family, caregivers through traditional and modern educational methods is a suitable approach. Distance education in various forms (e.g., by phone) is popular, because there is no need for learners in a special place concurrent with educators. Therefore, nurses should be familiar with these in-service training methods and encouraged to apply them to provide education and counsel the patients and their families. Furthermore, care centers such as hospitals must have facilities to provide such training. This way of providing counseling and training prevents the crowding of patients, and caregivers in hospitals. In addition, by having access to educational content and access to health care providers, the patients and their FCs feel comfort and ease in meeting their information needs and become empowered to provide favorite care for the patients.

## Conclusion

Based on the study's findings, education, and telephone follow-ups reduced the caregivers' burden on the FCs of patients with cancer totally, and all sub-scales consist of time, developmental, physical, social, and emotional. Therefore, this intervention can be effective as complementary and other supportive methods and empowers FCs. Moreover, this method is cheap, simple, uncomplicated, and applicable for all caregivers, which causes eminent benefits to patients and FCs.

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## Author Contributions

The contribution of the authors including Mahin Abdigaravand (MA), Fateme Goudarzi (FG), Shirin Hasanvand (SH), Mehdi Birjandi (MB), Nasrin Galehdar (NG), Zohreh Hojati (ZH) is detailed as follows: conception of the research idea and study design were done by MA, FG, SH, and MB. MA, FG, and ZH acquired the data. Analysis and interpretation of data were accomplished by all the authors. FG, MA, and SH drafted the manuscript but all the authors revised and approved the final version of the manuscript.

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Ethical Statement

This study was conducted on the Helsinki Declaration principles and was approved by the Ethics Committee of LUMS (IR.LUMS.REC.1398.261). Consideration of informed consent, data confidentiality, participants' anonymity, and participants' authority to refuse to continue of participation were observed precisely. In order to comply with ethical principles, the booklet was provided to control group at the end.

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