

# Comparing the effects of face-to-face and telenursing education on the quality of family caregivers caring in patients with cancer

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## ABSTRACT

**Background:** Taking care of patients with cancer is often done at home and by family caregivers. However, these groups do not receive the necessary education regarding care at home. **Objectives:** The present study aimed to compare the effects of face-to-face and telenursing training methods on the quality of services provided by the family caregiver for patients with cancer. **Materials and Methods:** A total of 103 family caregivers of patients with cancer were randomly divided into 3 groups: control ( $N = 35$ ), face to face ( $N = 34$ ), and telenursing ( $N = 34$ ). The control group only received the routine training, and the face-to-face and telenursing groups were trained for 12 weeks. Quality of care was measured using a questionnaire before and after intervention. Chi-square, Fisher's exact, and analysis of variance tests were used for data analysis. **Results:** After intervention, the average total quality score for the care of patients in face-to-face ( $166.13 \pm 13.91$ ) and telenursing ( $157.76 \pm 17.24$ ) groups was significantly higher than the control group ( $82.51 \pm 16.84$ ) ( $P < 0.001$ ). In addition, the average psychosocial care score for face-to-face group ( $49.06 \pm 6.05$ ) was significantly higher than telenursing group ( $43.83 \pm 6.15$ ) ( $P < 0.001$ ). **Conclusion:** The results of the study showed that the two methods of training were effective on the quality of care among family caregivers of patients with cancer to a similar extent.

**Keywords:** Education, family caregivers, quality of care, telenursing

## Introduction

The debilitating nature of cancer and the associated therapies such as chemotherapy and considering the increased survival in these patients, many patients with cancer ask for help through unofficial caregivers, family members, or friends.<sup>[1,2]</sup> Studies regarding caregivers of patients with dementia, patients with pressure ulcers, and other chronic diseases indicate a significant level of intervention from caregivers.<sup>[3-6]</sup> However, due to the unique nature of this disease and its treatments, family caregivers of patients with cancer are different from other family caregivers.<sup>[7]</sup>

Although more than 50% of these caregivers care for metastatic patients or patients with severe condition, they often have a low level of preparedness or skills for providing cancer-related care.<sup>[8,9]</sup> Thus, to attain these skills, family caregivers need training, support, and need to learn complex skills from the health-care system through which they can improve their quality of care and their ability to make decisions, as one of the important concerns of caregivers is regarding the quality of their care and the welfare needs of their patient.<sup>[8,10,11]</sup>

There are several ways to provide the caregivers with the necessary training such as face-to-face training and telenursing, which can affect the quality of care among family caregivers. Face-to-face training is one of the most common educational methods in the health-care system.<sup>[12]</sup> It is considered as the gold

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standard of patient education<sup>[13]</sup> and is also one of the most effective ways of influencing the learner.<sup>[14]</sup>

Another teaching method for promotion of global health care is the use of telecommunication technology (telenursing), which provides nursing services through the use of communication technologies such as telephones, computers, remote monitoring tools, and the internet.<sup>[15]</sup> Among telecommunication devices used in telenursing, the phone is more commonly and popularly used than other ways, and people use it more easily.<sup>[16]</sup>

Several studies have been conducted regarding the provision of care using face-to-face training and telenursing. Some of the studies concluded that face-to-face training is more effective than telenursing or other training methods,<sup>[17-19]</sup> whereas some considered telenursing training more effective,<sup>[20-23]</sup> and in some studies, no significant difference in the effects of these training methods was found.<sup>[24-26]</sup> Therefore, considering the contradictions observed in previous studies and the importance of training and its impact on the quality of care, this question arises: What is the impact of different training methods on improving the “quality of care” in family caregivers of patients with cancer?

## Objectives

Considering the importance of providing appropriate training for these caregivers, who play an important role in supporting and caring of patients with cancer, the present study was conducted to determine the effect of face-to-face training and telenursing on the quality of care among family caregivers of patients with cancer in Ilam, Iran.

## Materials and Methods

### Study design and participants

This research was an interventional study whose participants were family caregivers of patients with cancer (stages I–IV based on oncologist’s diagnosis) who referred to The Department of Oncology of Shaheed Mostafa Khomeini Hospital in Ilam, Iran, for their first period of their chemotherapy from August 2017 to February 2018. Out of 425 family caregivers, within 3 months, 103 people who had entry criteria were selected as participants in the study. These criteria include (a) being the main person responsible for the care of the patient and have a family relationship with the patient, including parent, spouse, child, brother, sister, and other family members who are living with the patient and can take care of the patient or do not live in patient’s home but can go there to take care of the patient; (b) lack of speech, hearing, or visual disorder; (c) ability to speak Persian; (d) having reading and writing skills; (e) having access to telephone or cellphone; (f) being interested and welcoming the existing training methods and having the consent to participate in the study; (g) aged 18–68 years old. Criteria exclusion are as follows: (a) unwillingness to cooperate, (b) no response to the phone for 2 weeks, (c) death of the patients, and (d) incidence of an acute stage during treatment were excluded from the study.

### Data collection

To collect data, a demographic questionnaire, health information, and a researcher-made questionnaire “quality of care among family caregivers of patients with cancer” were used. The demographic information questionnaire included gender, age, grade of status, education level, occupation, economic status and place of living (city or village), duration of day care, and number of caregivers. The health information questionnaire included the status and type of health insurance, diagnosis interval, previous treatment, and type of cancer.

Considering the lack of access to a standard questionnaire, a questionnaire was designed by the researchers through literature review and corrected based on the viewpoints of the experts in the nursing and oncology department. The items in this questionnaire are based on problems and complications faced by patients with cancer and their caregivers during chemotherapy based on valid nursing and oncology references. Finally, the questionnaire was classified into two dimensions: physical health (38 questions) and psychosocial health (16 questions). Regarding physical health, subgroups of skin and hair (7 items), digestion (8 items), excessive fatigue (4 items), pain (4 items), infection and weak immune system (10 items), physical activity (2 items), and libido (3 items) were measured. Regarding sociomental health, subgroups of sleep disorders (4 items), stress (3 items), depression (2 items), communication (5 items), and self-confidence (2 items) were measured with a 5-point Likert scale (never, rarely, sometimes, often, and always), and scores of 0–4 were, respectively, assigned. The total score of care for the total number of questions was 216, which means that a higher score would indicate a higher quality of care.

The content validity of the questionnaire was carried out using the help of 10 experts familiar with the subject of the research and the reliability was evaluated based on the Cronbach’s alpha coefficient of 0.76.

### Intervention

Family caregivers of patients with cancer who referred to the only center of oncology in Ilam, Iran, were simple randomly allocated to 3 groups: control = 35 people, face to face = 34 people, and telenursing = 34 people within 3 months. The questionnaires of demographic information, health information, and “researcher-made quality of care” were completed by all three groups of family caregivers in two stages (beginning of the study and 3 months after the intervention), and appropriate explanations were provided in case of any question or ambiguity, as the researcher was present at the time of completing the questionnaire.

After the initial completion of the questionnaires, a researcher-made training booklet was introduced to the face-to-face and telenursing groups to improve the effect of training. Intervention in both groups lasted for 12 weeks.

Face-to-face group received one session every 2 weeks (i.e., a total of six sessions), each session took 20–25 min based on previous studies<sup>[20,27]</sup> and the content of the booklet in personal and individually and in a room in the same department of oncology, and at a time when chemotherapy was done for their patients.

In the telenursing intervention group, one session was held every week during the first month, and one session was held every 2 weeks during the second and third months (i.e., a total of eight sessions) and each session took 15–20 min based on previous studies<sup>[18,28]</sup> and the content of the booklet on the phone. Hours of contact with caregivers were also agreed by the researcher and caregivers to be from 8:00 to 20:00. At the same time, the content of the training and the hours of training (140 min) in both groups were eventually equal. The educational content was recorded by the researcher in each session in both intervention groups to be reassessed in subsequent sessions.

The educational content based on a researcher-made booklet after the appointment of professors from the Department of Nursing and Oncology included introduction of the work, cancer and family, awareness of cancer and complications of chemotherapy, nausea and vomiting, anorexia, oral dryness, ulcers or oral infections, oral hygiene, changes in bowel movements (diarrhea and constipation), weight changes (weight loss or weight gain), physical activity and exercise, skin and nail care, hair loss (alopecia), pain, weak immune system and infection, decreased white blood cells, platelet loss and bleeding, numbness and tingling in fingers and imbalance, excessive fatigue, libido changes, how to use medications at home, changes in psychological condition status, depression, body image and self-confidence, sleep-related issues, stress, and general summary.

Three months after the intervention, the researcher-made questionnaire was completed again by the intervention and control groups. After the final questionnaire was completed by the family caregivers of the control group, they were also provided with the educational booklet.

### Ethical considerations

The Ethics Committee of Ilam University of Medical Sciences, Ilam, Iran, approved this study (approval code: IR.MEDILAM.REC.1396.95). Introduction and permission letters were obtained from the same university and were provided to the selected-only chemotherapy center in Ilam, Iran. All participants were provided with information about the aim of the study and were assured that their information was confidential and the questionnaires were anonymous and informed consent was obtained from each participant.

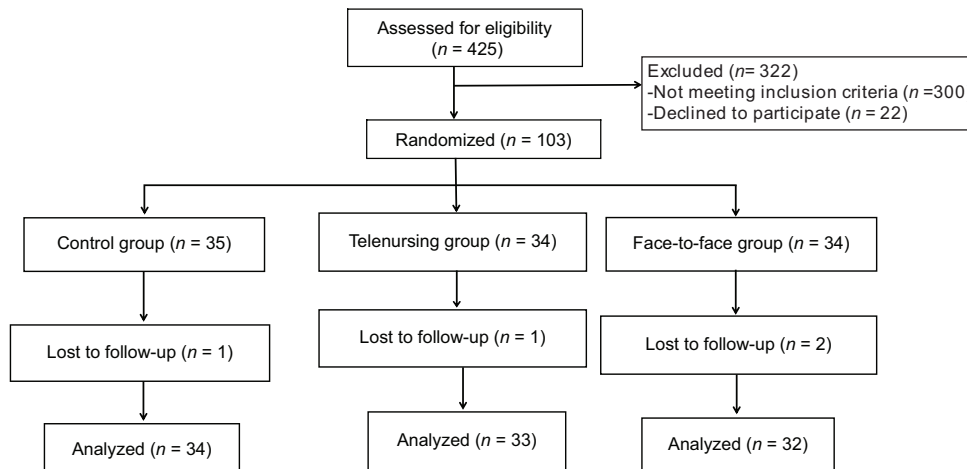
### Data analysis

To characterize the quantitative variables, the mean and standard deviation were used and qualitative variables were characterized by frequency and frequency percentage. To analyze the relationship between variables, Chi-square, Fisher’s exact test, one-way analysis of variance (ANOVA), and least significant difference (LSD) post-hoc test were used. All statistical steps were performed using SPSS software version 16 (Chicago, IL) and the level of significance for the tests was lower than 0.05.

### Results

Out of the 103 participants, 4 people left the study (1 in the control group due to unwillingness to complete the second questionnaire; 1 in the telenursing group due to sudden death because of heart attack and 2 in face-to-face group; 1 due to unwillingness to continue the study, and the other due to the tendency of his/her patient to herbal medicine and leaving chemotherapy), and a total of 99 people were present until the end of the study [Figure 1].

More than 45% of caregivers were children of the patients, and about 87% of all caregivers lived with the patient and most of them were either self-employed (36.4) or housewife (23.2). As Table 1 shows, family caregivers in the three groups did not differ significantly in terms of demographic variables [ $P > 0.05$ ; Table 1].



**Figure 1:** Consort flow diagram of the study

**Table 1: Characteristics of family caregivers for patients with cancer**

Variable	Group n (%)			P
	Telenursing	Face-to-face	Control	
Gender				0.930
Female	16 (48.5)	17 (53.1)	17 (50.0)	
Male	17 (51.5)	15 (46.9)	17 (50.0)	
Age (years)				0.174
18-29	9 (27.3)	8 (25.0)	9 (26.5)	
30-39	5 (15.2)	13 (40.6)	5 (14.7)	
40-49	11 (33.3)	5 (15.6)	11 (32.3)	
50 and more	8 (24.2)	6 (18.8)	9 (26.5)	
Education				0.740
<Diploma	12 (36.4)	8 (25.0)	11 (32.4)	
Diploma	13 (39.4)	12 (37.5)	9 (26.5)	
B.A.	6 (18.2)	10 (31.3)	12 (35.2)	
Higher than B.A.	2 (6.0)	2 (6.2)	2 (5.9)	
Duration of daycare (h)				0.550
<4	10 (30.3)	7 (21.9)	14 (41.2)	
4-8	5 (15.2)	6 (18.7)	3 (8.8)	
9-12	2 (6.0)	5 (15.6)	4 (11.8)	
>12	16 (48.5)	14 (43.8)	13 (38.2)	
Marital status				0.650
Single	9 (27.3)	12 (37.5)	10 (29.4)	
Married	24 (72.7)	20 (62.5)	24 (70.6)	
Relationship				0.960
Parents	2 (6.1)	1 (3.1)	2 (5.9)	
Spouse	10 (30.3)	9 (28.1)	8 (23.5)	
Child	15 (45.4)	15 (46.9)	15 (44.1)	
Sister/Brother	3 (9.1)	4 (12.5)	7 (20.6)	
Others	3 (9.1)	3 (9.4)	2 (5.9)	

**Table 2: Total care score among family caregivers before and after intervention by groups**

Group	Mean±SD	Sig.
Control		
Before	81.70±16.93	P=0.171
After	82.51±16.84	
Face-to-face		
Before	80.43±11.19	P=0.000
After	166.13±13.91	
Telenursing		
Before	74.50±13.70	P=0.000
After	157.76±17.24	

We conducted paired *t*-test to show the effect of intervention in study groups. According to Table 2, significant differences between mean scores before and after intervention groups (face-to-face and telenursing) indicated the effectiveness of training to family caregivers [ $P = 0.001$ ; Table 2].

One-way ANOVA showed that no significant differences in total score for quality of care among groups before intervention were found [ $F = 2.62$ ;  $P = 0.08$ ]. However, at the end of intervention, we found a significant difference between groups in terms of quality care, indicating the effect of intervention [ $F = 251.4$ ;  $P = 0.001$ ].

LSD post-hoc analysis revealed that the effect of intervention on the total score of care and the subgroups of physical and psychosocial care was significant between the control group, and face-to-face and telenursing groups ( $P < 0.05$ ). There was no significant difference between the intervention groups (face-to-face and telenursing) in the total score of care and the physical care subgroup ( $P > 0.05$ ). However, in the score of psychosocial care subgroup, the effect of intervention was significant between intervention groups (face-to-face and telenursing) [ $P < 0.05$ ; Table 3].

## Discussion

The results of this study showed that after the intervention, the quality of family caregiver's care in intervention groups (face-to-face and telenursing) was increased in comparison to the control group, that is, the intervention was effective, and studies in this field confirm the results of the present study.<sup>[29-32]</sup>

In addition, the results of the present study showed that the mean score of overall quality of care and subscale of physical health was not significantly different between intervention groups (face-to-face and telenursing), indicating that the effectiveness of the two training methods was to a similar extent. The studies of Cuperus *et al.*,<sup>[24]</sup> Setoyama *et al.*,<sup>[25]</sup> and Sheikh Abumasoudi *et al.*<sup>[26]</sup> confirm this conclusion. They also found that after the

**Table 3: LSD Post-hoc results of quality of care in groups after intervention**

Variable	Mean difference (SE)	P
Total Care		
Face-to-face-control	83.62 (4.12)	0.000
Telenursing-control	75.25 (4.12)	0.000
Face-to-face-telenursing	8.37 (4.15)	0.115
Quality of physical care		
Face-to-face-control	64.58 (3.32)	0.000
Telenursing-control	61.41 (3.33)	0.000
Telenursing-face-to-face	3.16 (3.35)	0.348
Quality of psychosocial care		
Face-to-face-control	19.03 (1.46)	0.000
Telenursing-control	13.83 (1.46)	0.000
Telenursing-face-to-face	5.20 (1.47)	0.001

intervention, no significant difference was found in the training methods and suggested a combination of face-to-face and telenursing methods.

In three studies,<sup>[20-22]</sup> telephone follow-up was more effective than face-to-face education, but our results showed that face-to-face education was more effective than telenursing in psychosocial counseling. Perhaps this was because in our study, family caregivers in face-to-face training methods could easily raise questions and ambiguities of the issues in this regard and, in particular, regarding shame in some areas, such as sexual and marital affairs, and they would respond appropriately to the needs of the researcher. However, in these three studies, face-to-face intervention group received only one or two in-class training sessions, whereas the telenursing and telephone follow-up groups received training during 12 weeks and several successive sessions. Therefore, it is expected that 12-week telenursing training would be more effective than one or two sessions of the workshop (face-to-face training). For this reason, in their studies and similar studies, telenursing training has been more effective than face-to-face training. However, in our study, the content of the training (based on the booklet), the training time (140 min), and the duration of the training (12 weeks) were the same in both groups, which could indicate the strengths of our study.

This study was accompanied by limitations, such as these: as caregivers who could not read and write were not included in the study, the generalizability of findings is limited to family caregivers who are literate and have reading and writing skills. On the other hand, as a wide range of cancers was included (considering the small size of the statistical population in a province), and considering the course of treatment and the progression of the disease in them, one could expect that the quality of care and services in the family caregivers of the affected patients is different in different types of cancer, but due to the fact that there was no significant difference in the type of cancer in these three groups, this factor was controlled to some extent.

Therefore, due to the limited number of interventional studies conducted in this area, most of the studies conducted on the

quality of care of family caregivers, and in particular family caregivers of cancer patients, were qualitative, cross-sectional, or overview; it is suggested that further research and studies be conducted on the importance of care and responsibility of caregivers, in particular family caregivers of cancer patients. It is also suggested that a study with the same title be carried out among family caregivers of each type of cancer or among family caregivers of children with cancer, given their greater dependence on their parents and family caregivers, in the larger statistical community, in different regions of Iran and even at internationally level, as the care may vary in any type of cancer, and therefore, the quality of family caregivers may be different, and more accurate results can be obtained by choosing a larger statistical community.

Given that patients with cancer are hospitalized and monitored for only a few hours in chemotherapy centers, and given the time limit for training staff, it is recommended that training the patients and their family caregivers be done as a combination of face-to-face training and telenursing in a way that the initial discussions and critical topics be presented face-to-face, and the details of the discussions be presented through telephone follow-up and other telenursing methods, including Telegram messenger and online training, and it is also recommended that trained nurses take the responsibility of providing the necessary trainings to the patient and their family caregivers.

## Conclusion

The results of this study clearly showed that face-to-face training and telenursing were effective in improving the quality of physical care and psychosocial care and generally improved the quality of care in family caregivers of patients with cancer. This necessitates the need for more attention from the authorities and managers of educational and medical centers to educate and provide better and higher quality services because implementation of such programs is a step toward increasing the awareness of the family members of the patient, reducing the problems of patients and their caregivers, reducing the side effects of chemotherapy drugs, and preventing frequent hospitalization due to the unwanted side effects of chemotherapy.

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## Conflicts of interest

There are no conflicts of interest.

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