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Research Article

The Effect of Education through Telenursing on the Caregiver Burden among Family Caregivers of COVID-19 Patients: A Randomized Clinical Trial

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Purpose. Family caregivers are under a lot of burden during the treatment of patients with COVID-19. This study aimed at determining the effect of education through telenursing on the caregiver burden among family caregivers of COVID-19 patients. *Design and Methods*. This was a randomized clinical trial that was performed on 66 caregivers of COVID-19 patients discharged from Vasei Hospital, Sabzevar, Iran, during 6 months from March to August 2021. The research units were selected using the convenience sampling method and were randomly allocated to two groups, intervention and control, by using permutation blocks. The training workshop and telenursing were conducted in the experiment group, and the control group received only usual care. Novak and Guest care burden scale and demographic questionnaire were collected online by caregivers before and one month after the intervention. Data were analyzed by using SPSS version 24 and paired t-test, independent t-test, Fisher's exact test, chi-square tests, and covariance analysis. The significance level of the tests was considered to be 5%. *Findings*. After training the intervention group, the mean caregiver burden before and one month after the intervention was significantly decreased compared to the control group ($p < 0.001$). The groups show a significant difference only in terms of educational resources ($p = 0.005$). The results of analysis of covariance for the total caregiver burden score in post-test indicated that the mean values of the caregiver burden score between the two groups were statistically significant ($p < 0.05$). *Practice Implications*. Telenursing has suggested that health care managers put the telenursing process by creating appropriate policies and careful planning.

1. Introduction

Transferring the care of COVID-19 patients from the hospital to home care has led to caregiver burdens on family caregivers [1]. The caregiving burden is hidden and completely personal, and understanding this concept is personal and internal, which includes components such as time-dependent, developmental, physical, social, and emotional caregiver burdens [2].

Disappointing relationships and feelings caused by caregiver burden cause family caregivers to feel anxious and conflicted in the care process without social support and also experience a higher level of burden and distress [3]. Caregivers' anxiety, little sleep, and stress lead to physiological changes [4]. In addition, expensive treatments and medications that are needed for patients exacerbate their economic problems [5]. Completing care tasks means reducing leisure time and social interactions, leading to gradual isolation [6]. In the case of social contribution and life satisfaction, recent research has shown that the COVID-19 crisis and its aftermath may also be related with feelings of loneliness, sadness, and dissatisfaction with life [7, 8]. Also, interactions with family and friends and participation in social life may also be reduced [8, 9]. Recent reports indicate

an immediate need for investigation to help better understand the psychosocial consequences of COVID-19 [10].

Family caregivers are defined as those who are responsible for the patient's care at home, who must adhere to the guidelines given by the health care providers, and who have the most participation in the patient's care and disease management and treatment implementation [11]. Family caregivers face many challenges in caring for a family member, such as lacking insight, training, clinical knowledge, and distressing physical, psychological, and social symptoms [12]. Also, family caregivers are considered forgotten patients because following the creation of psychological stress and care pressure resulting from it, problems such as anxiety, depression, and job burnout occur in family caregivers of patients [13]. It is worth mentioning that Ćosić et al. emphasized the capacity of digital tools to cope with COVID-19-related psychological distress [14].

The responsibilities of home caregivers vary from assisting the patients in performing daily activities and managing treatment. Also, they are educating, communicating, and empowering patients to take care of themselves. The intricacy of the care provided by family caregivers has expanded because they implement complex medical and nursing tasks and harmonize care [15, 16].

The relationship among the patient, the family, and the health care system can lead to the correct and continuous receipt of the required care for the patient, shortening the length of hospital stay and improving the life quality for the family and patient [17, 18]; conversely, the lack of support of the patient and family by health care systems and disconnection with the care system lead to many complications and exacerbations of the disease [19]. A recent study in Iran has shown that after a family member has been discharged from the hospital, family caregivers experience a care burden [20]. Also, caregivers who are under too much pressure may provide poor quality care [21].

Education is the main role of nurses and today the emphasis of nursing knowledge. Its main purpose is self-care and empowerment and advancement of the quality of life of patients and families. Therefore, it seems that teaching patients and their families is one of the useful treatment approaches [22].

Considering the effects of COVID-19 on patients, another way should be chosen to improve the quality of care and ensure the continuity of care outside the hospital. Telenursing is thought to be a good choice because it can compensate the lack of resources and equipment in hospitals and reduce the risk of disease transmission [23].

Telenursing includes all types of services and nursing care provided remotely and includes a large number of communication technologies such as the Internet, email, and telephone to save time, distance problems, and provide better nursing care [24]. Calls after the patient's discharge from the hospital are useful in diagnosing and correcting the care gap that may occur [25].

Since the onset of the disease, limited studies have assessed the mental health of caregivers of patients and survivors of COVID-19. However, most of these studies are descriptive, and as a result, few empirical studies have been conducted with supportive interventions for these individuals.

Studies have confirmed the effectiveness of telenursing in reducing care burden, stress management, and better functioning among family caregivers of heart patients [26] and caregivers of elderly patients with Alzheimer's disease [27]. Also, studies confirmed the effect of online psychoeducational support on reduction caring burden in family caregivers of COVID-19 patients [28].

Considering the importance of the problem and the prevalence of this disease, which is a global health emergency, it imposes a significant mental, physical, and social burden on caregivers. Also, since there is not enough evidence of telenursing intervention on the caregiver burden among family caregivers of COVID-19 patients, this study was conducted to ascertain the effect of education through nurse-led telephone follow-up (telenursing) on the caregiver burden among family caregivers of COVID-19 patients.

2. Method

2.1. Study Design. This randomized clinical trial study was conducted in 6 months from March to August 2021. The study was registered in the Iranian Registry of Clinical Trials (IRCT20210111050011N1). The study population included all the family caregivers of patients with COVID-19 discharged from Vasei Hospital, Sabzevar, Iran, who took care of them at home.

2.2. Sample Size. According to the study of Lai et al. [29], considering the confidence level of 0.95%, the test power of 0.80%, and usage of G* Power software (version 3.1), the sample size with considering the possibility of sample attrition during the study and considering 10% was estimated to be 66, and 33 participants were placed in each group (Figure 1) (Algorithm 1).

2.3. Participants. Inclusion criteria included consent to participate, speaking and understanding Persian, ability to read or write, caregivers who were living with the patient, should be the patient's spouse or offspring or parents, having a home phone or mobile phone, and those who were at least 18 years old. Lack of auditory or visual impairments, absence of cognitive and mental disturbance, absence of mood-emotional disturbance, absence of stressful incidents in the last 6 months for the caregivers, not participating in an empowerment program, do not use counseling centers, and provide nursing care at home were considered inclusion criteria. The exclusion criteria included those who did not participate in the research study, failed to respond to the follow-up for 3 continuous days, failed to participate in the training session, and had desired to leave the study. It should be noted that caregivers were selected to participate in the study whose patients were infected with COVID-19 and had a positive PCR diagnostic test and were also discharged from the internal and COVID-19 wards of Vaesi Sabzevar Hospital. The exclusion criteria included those who did not participate in the research study.

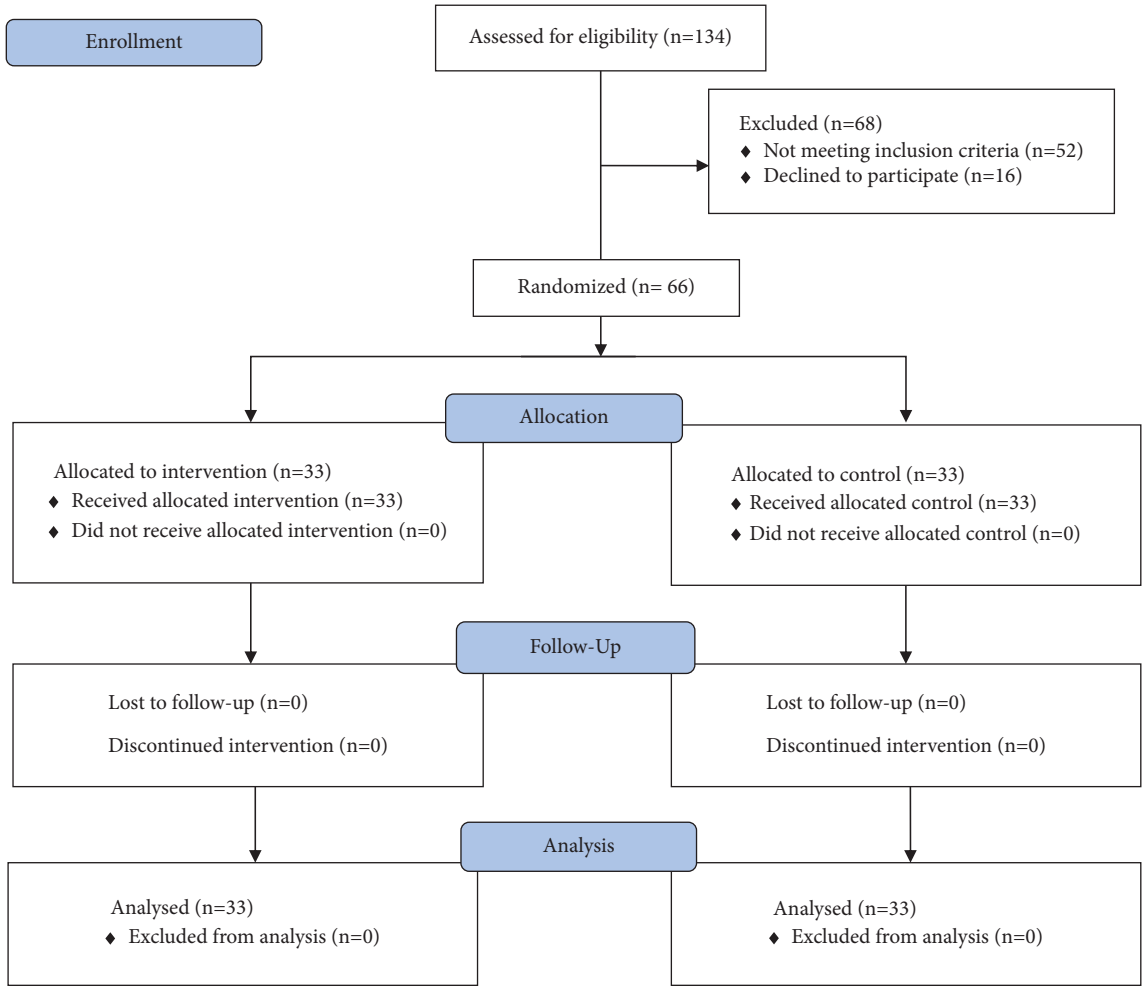

Figure 1: Flowchart of the design, group, and participants in the study.

t tests-Means: Wilcoxon–Mann–Whitney test (two groups)
Options: A.R.E. method
Analysis: A priori: Compute required sample size
Input: Tail(s) = Two
Parent distribution = Normal
Effect size $d = 0.8128180$
α err prob = 0.05
Power $(1 - \beta$ err prob) = 0.85
Allocation ratio N2/N1 = 1
Output: Noncentrality parameter $\delta = 3.0762713$
Critical $t = 2.0038039$
Df = 55.2957795
Sample size group 1 = 30
Sample size group 2 = 30
Total sample size = 60
Actual power = 0.8559876

Algorithm 1: Result test of G* Power software.

2.4. Variables. Data collection was performed using the demographic form and caregiver burden inventory (CBI) of Novak and Guest [30]. The demographic form included age, sex, marital status, work, education, family income, live with, insurance, smoking and addiction, family support, home caregiver, having disease, media literacy, educator resources, and access to care and support. Also, the CBI had 24 items, which was developed by "Novak and Guest." This

questionnaire consisted of five subscales, and caregivers' responses could be measured on a 5-point Likert scale so that in answering the questionnaire, participants chose one of the items as completely incorrect [1], incorrect [2], somewhat correct [3], correct [4], and completely correct [5]. Therefore, the scores obtained from this questionnaire were between 24 and 120, and scores of 24 to 39, 40 to 71, and 72 to 120 were considered mild, moderate, and severe care burden, respectively [30].

Based on the study report of Abbasi et al., the content validity index of the CBI in terms of relevance, clarity, simplicity, and fluency of its sentences was examined by ten faculty members.

Respectively for being relevant at 91.8%, clarity at 90.2%, and simplicity and fluency at 93.6%, in total, the content validity index of the CBI was 91.86%, as well as its reliability with Cronbach's alpha coefficient was 0.90 [28]. In our study, the reliability of the CBI was assessed using Cronbach's alpha coefficient ($\alpha = 0.856$). The qualitative validity of CBI was confirmed by a panel of experts consisting of 10 faculty members in fields of psychiatric nursing, psychiatry, medicine, epidemiology, and infectious disease.

2.5. Data Collection. In this research, after obtaining permission from relevant authorities, sampling was performed from all family caregivers of COVID-19 patients. The research units were chosen immediately after the patient's discharge from the hospital using the convenience sampling method. The selection of samples and collection of data were performed by the research team. The research team included nurses from the COVID-19 department, a person by Master's degree nursing, a person doctorate in nursing, and an infectious disease specialist. In both groups, data collection was performed online before and after the intervention by informed consent, demographic questionnaire, and CBI. After the initial contact of the researcher with the research units and explaining the subject of the study, the link of questionnaires and informed consent were sent to them via social networks such as Telegram, WhatsApp, and IMO, and the caregivers replied the questions.

2.6. Randomization. The research units were randomly divided into control and intervention groups using the permuted block technique. R software (4.0.3 version) was used to achieve the blocks. 4 English letters (A, B, C, and D) formed each of these blocks. C and D were considered for the control group, and A and B were considered for the intervention group. Selection of blocks was blindfolded and was done randomly. The study is one-sided blind, and only the statistical consultant was not informed of whether the research units were in the control or intervention group.

2.7. Interventions. The research units of the intervention group were trained in their homes for 3 hours and 12 to 24 hours after the patient's discharge. This training was conducted by the researcher (telenursing specialist) as a workshop and through the Skyroom platform in two 90-minute sessions. The topics discussed in this workshop include the following: the disease and how to prevent its transmission, attention to quarantine time, place (quarantine room specifications, room disinfection, patient circulation space such as toilet and bathroom), social relations, medicine and diet, psychological problems (stress control), sleep and relaxation in quarantine, healthy lifestyle, and outpatient care (weakness, fever, body pain, lack of sense of smell, diarrhea, nausea, vomiting, ventilation, nutrition, sufficient fluids, and providing minimum convenience for psychosocial support). The content presented in the workshops was extracted from the instructions prepared by the Ministry of Health for the care of patients with COVID-19 at home, the ninth edition. The prepared content as well as the research team that was responsible for holding the workshop was reviewed and approved by the Ethics Council of Sabzevar University of Medical Sciences.

In this workshop, research units presented their issues and challenges. Also, the educational pamphlet and educational photos designed by researchers were sent to the intervention group through social networks. Then, daily telephone follow-up was conducted in the first two weeks and once every two days in the second two weeks for the intervention group. In the phone calls, the caregivers' questions related to the disease and how to care and the problems that arose were answered. Also, recommendations were made to guide the caregiver and comfort him. Telenursing care was designed by a team consisting of an infectious disease specialist and nurses of that ward. The time of the calls was agreed upon, and the researcher's contact number and SMS, Telegram, IMO, and WhatsApp details were provided to the research units. Therefore, if needed, they could communicate and express their problems. It was explained to the caregivers that whenever the patient's condition changes, they can contact the telenursing specialist and receive the necessary guidance. If the patient's condition became critical, for example, in severe shortness of breath, fever above 38.5 Celsius for three days, and severe purulent cough, the patient was referred to the emergency department in consultation with an infectious disease specialist. In addition, mental and emotional support was given to the caregiver by training in the use of relaxation and meditation techniques, as well as prayer and worship. In the case of the control group, no intervention was performed and only usual hospital care was performed. The routine care was such that the ward nurse taught necessary recommendations regarding the prevention of transmission, medication consumption, and revisits.

2.8. Ethical Considerations. For all research units, an explanation was given about the purpose, study method, and benefits against the risks of the study. They signed a written informed consent and were assured that the study was anonymous, voluntary, and confidential. In addition, research units were given the right to leave the study at any time. This article was approved by the ethical code of IR.MEDSAB.REC.1399.174 and registered in the Iranian Registry of Clinical Trials (IRCT20210111050011N1).

2.9. Data Analysis. The SPSS version 24 was used to analyze the data, and the significance level of the tests was considered to be 5%. Descriptive statistics were used to describe the frequency of data, and paired *t*-test, independent *t*-test, Fisher's exact test, and chi-square test were used to compare the data. *T*-test was used to examine the difference in the mean scores of caregiver burden in two groups. Also, covariance analysis was used to remove the effect of pretest scores on caregiver burden scores in the post-test.

3. Results

The mean and standard deviation of age of caregivers in the control group and in the intervention group were 38.5 ± 9.7 and 35.7 ± 10.0, respectively, and the *t*-test did not show a significant difference in this respect ($p = 0.258$). Other information is given in Table 1 in full. As can be seen, the groups show a significant difference only in terms of educational resources ($p = 0.005$) (Table 1).

The average of caregiver burden after usual education in the control group decreased from 20.75 ± 8.63 to 16.15 ± 8.60. However, in the intervention group after telenursing, it decreased from 29.69 ± 10.68 to 11.15 ± 6.67 and this difference was statistically significant ($p < 0.0001$) (Table 2). The results of analysis of covariance for the total caregiver burden score in the post-test by adjusting the effect of the educational resources and the total caregiver burden score in the pretest indicated that the mean of the caregiver burden score between the two groups was statistically significant ($p < 0.05$) (Table 3).

4. Discussion

In this study, we investigated the effect of telenursing education on caregiver burden among family caregivers of COVID-19 patients. The unique feature of the present study compared to similar studies is that other studies related to telenursing have investigated caregiver burden in patients suffering from chronic diseases. While as an innovation, in the present study, education through telenursing was used for a caregiver of acute respiratory disease named COVID-19, which was considered as a global crisis so that the results of the research on providing telenursing care for victims: a simulated study for introducing possibility nursing interventions in disasters which showed that the average score of the possibility of remote nursing in disasters is at a high level of 77.50 [31].

The results revealed the role of education and telenursing, which has led to a decrease in the caregiver burden amongst family caregivers of COVID-19 patients and its various dimensions such as time-dependent, emotional, social, physical, and developmental caregiver burden. This difference was statistically significant. Before the educational intervention, the mean caregiver burden between the two groups was statistically significant. It seems that because in this era, people were drawn to any kind of factor that would help them get out of this problem. Both control and intervention groups used other resources and facilities apart from the intervention that was performed for them in this study, which is uncontrollable. Various sources are mentioned as follows. Also, due to the fact that the issue is related to the treatment of patients in the control group, they cannot be prohibited from taking special measures to follow up the treatment. Also, one month after the intervention, there was a significant decrease in caregiver burden of the intervention group. These results can be due to continuing follow-up and education through telenursing. This is because the two important factors for improvement in recovery period can be support and training.

As can be seen, the groups show a significant difference only in terms of educational resources. Due to the fact that during the COVID-19 pandemic, people were receiving information from different sources to treat and care for their patients, so this issue was uncontrollable. Various sources such as people's friends who were part of the treatment staff, social media, and various tools such as the Internet, people's different ability to deal with crises and problems, and people's beliefs and opinions were involved in this subject.

In line with the results of the present study, different studies have shown the effectiveness of telenursing in decreasing the caregiver burden of family caregivers of patients with diagnoses of hemodialysis [32], stroke [33], heart failure [26, 34], Alzheimer's disease [27, 35], and dementia [35].

For example, Sadegh Moghadam et al. observed that 6 weeks of educational interventions using the telenursing method significantly reduced the caregivers' burden in the caregivers of elderly patients with Alzheimer's disease, as compared to the control group [35].

Many home care problems arise due to lack of necessary knowledge and skills related to patient care in the fields of health, poor nutrition, and lifestyle. Lack of education and counseling for patients and lack of access to a center for earning guidance and answering the questions exacerbate these problems [26].

Lai et al. studied the protective effect of telemedicine on people with dementia and their caregivers during epidemic COVID-19. Findings showed that at the end of 4 weeks, the cognitive performance scores of the intervention group were higher than the control group. There was no difference between the two groups in terms of mental and behavioral problems. Caregivers who were in the video conference group had a significant improvement in the perceived burden, physical and mental health, and self-efficacy, which was not present in the telephone-only group. They concluded that video conferencing should be considered as a method of telemedicine practice beyond the field of social distance associated with the epidemic [29].

The present study showed that caregiver burden caused by caring for COVID-19 patients, which was measured by Novak and Gast caregiver burden scale, was significantly high in all dimensions before the intervention. After one month of telenursing intervention, caregiver burden in the intervention group compared to before was reduced to one-third. These findings were in agreement with a study by Cravello et al. They showed that the preintervention caregiver burden was higher among family caregivers [36]. This agreement can prove that the web-based communication

Table 1: Comparison of demographic variables of family caregivers by the control group and intervention group.

Variables		Groups		Test results
		Intervention group number (percent)	Control group number (percent)	
Sex	Woman	19 (57.6)	16 (48.5)	$p = 0.45^{*}$
	Men	14 (42.4)	17 (51.5)	
Marital status	Single	7 (21.2)	4 (12.1)	$p = 0.25^{**}$
	Married	24 (72.7)	29 (87.9)	
	Divorced	1 (3.0)	0 (0)	
	His wife died	1 (3.0)	0 (0)	
Education	Illiterate	0 (0)	0 (0)	$p = 0.24^{*}$
	Elementary	3 (9.1)	6 (18.2)	
	Secondary school	7 (21.2)	7 (21.2)	
	High school	13 (39.4)	11 (33.3)	
	University	10 (30.3)	9 (27.3)	
Work	Employee	0 (0)	3 (9.1)	$p = 0.57^{**}$
	Retired	1 (3.0)	3 (9.1)	
	Worker	1 (3.0)	2 (6.1)	
	Self-employed	9 (27.3)	7 (21.2)	
	Student	4 (12.1)	4 (12.1)	
	Housekeeper	14 (42.4)	12 (36.4)	
	Unemployed	4 (12.1)	2 (6.1)	
Family income	More than adequate	0 (0)	2 (6.1)	$p = 0.59^{**}$
	Adequately	16 (48.5)	16 (48.5)	
	Less than adequate	17 (51.5)	15 (45.5)	
Live with	Spouse	3 (9.1)	10 (30.3)	$p = 0.057^{**}$
	Children	1 (3.0)	1 (3.0)	
	Spouse and children	22 (66.7)	18 (54.5)	
	Parents	7 (21.2)	4 (12.1)	
Insurance	Rural	0 (0)	0 (0)	$p = 0.55^{**}$
	Health service	3 (9.1)	4 (12.1)	
	Social security	18 (54.5)	15 (45.5)	
	Health insurance	9 (27.3)	13 (39.4)	
	No insurance	3 (9.1)	1 (3.0)	
Smoke	Yes	4 (12.1)	2 (6.1)	$p = 0.67^{**}$
	No	29 (87.9)	31 (93.9)	
Addiction	Yes	0 (0)	0 (0)	$p > 0.99^{**}$
	No	33 (100)	33 (100)	
Family support	Weak	12 (36.4)	9 (27.3)	$p = 0.80^{**}$
	Medium	11 (33.3)	11 (33.3)	
	Good	6 (18.2)	9 (27.3)	
	Excellent	4 (12.1)	4 (12.1)	
Home caregiver	Spouse	23 (69.7)	22 (66.7)	$p = 0.84^{**}$
	Father	1 (3.0)	1 (3.0)	
	Mother	1 (3.0)	3 (9.1)	
	Parents	8 (24.2)	7 (21.2)	
Educator resources	Doctor	3 (9.1)	2 (6.1)	$p = 0.005^{**}$
	Nurse	3 (9.1)	7 (21.2)	
	Family and relatives	6 (18.2)	8 (24.2)	
	Radio and TV	5 (15.2)	14 (42.4)	
	Internet	11 (33.3)	2 (6.1)	
	Medical magazines and books	1 (3.0)	0 (0)	
	Friends	1 (3.0)	0 (0)	
	No training	3 (9.1)	0 (0)	
Media literacy	Weak	2 (6.1)	4 (12.1)	$p = 0.54^{**}$
	Medium	18 (54.5)	14 (42.4)	
	Good	9 (27.3)	13 (39.4)	
	Excellent	4 (12.1)	2 (6.1)	

Table 1: Continued.

Variables		Groups		Test results
		Intervention group number (percent)	Control group number (percent)	
Having disease	High blood pressure	2 (6.1)	1 (3.0)	$p = 0.85^{**}$
	Heart disease	0 (0)	0 (0)	
	Hyperlipidemia	2 (6.1)	1 (3.0)	
	Diabetes	0 (0)	2 (6.1)	
	Kidney disease	0 (0)	0 (0)	
	Lung disease	1 (3.0)	1 (3.0)	
	No disease	28 (84.8)	28 (84.8)	
Access to care and support	Weak	20 (60.6)	15 (45.5)	$p = 0.69^{**}$
	Medium	7 (21.2)	10 (30.3)	
	Good	4 (12.1)	5 (15.2)	
	Excellent	2 (6.1)	3 (9.1)	

*Chi-square test. **Fisher's exact test.

Table 2: Mean and standard deviation of family caregivers of types of caregiver burden in the control group and intervention group.

Types of caregiver burden		Mean ± SD		Independent t-test results
		Intervention group	Control group	
Time-dependent caregiver burden	Pretest	8.21 ± 4.42	6.69 ± 3.91	$T = 1.47$ $p = 0.146$
	Post-test	2.96 ± 2.25	4.15 ± 3.01	$T = -1.80$ $p = 0.076$
	Paired t-test result	$T = 6.46$ $p > 0.0001$	$T = 4.20$ $p > 0.0001$	
Evolutionary caregiver burden	Pretest	6.69 ± 3.22	4.75 ± 3.07	$T = 2.50$ $p = 0.015$
	Post-test	2.78 ± 2.02	3.69 ± 2.75	$T = -1.52$ $p = 0.132$
	Paired t-test result	$T = 6.78$ $p > 0.0001$	$T = 2.79$ $p = 0.009$	
Physical caregiver burden	Pretest	6.03 ± 3.97	3.93 ± 2.31	$T = 2.61$ $p = 0.012$
	Post-test	1.69 ± 1.33	3.15 ± 1.97	$T = -3.51$ $p = 0.001$
	Paired t-test result	$T = 6.65$ $p > 0.0001$	$t = -2.44$ $p = 0.02$	
Social caregiver burden	Pretest	5.09 ± 2.21	3.60 ± 2.49	$T = 2.55$ $p = 0.013$
	Post-test	2.06 ± 1.74	3.0 ± 2.19	$T = -1.92$ $p = 0.059$
	Paired t-test result	$T = 9.70$ $p > 0.0001$	$T = 2.10$ $p = 0.044$	
Emotional caregiver burden	Pretest	3.66 ± 2.41	1.75 ± 1.92	$T = 3.55$ $p = 0.001$
	Post-test	1.63 ± 1.55	2.15 ± 1.98	$T = -1.17$ $p = 0.245$
	Paired t-test result	$T = 6.63$ $p > 0.0001$	$T = -1.22$ $p = 0.231$	
Total caregiver burden	Pretest	10.68 ± 29.69	8.63 ± 20.75	$t = 3.73$ $p = 0.001$
	Post-test	6.67 ± 11.15	8.60 ± 16.15	$t = -2.638$ $p = 0.01$
	Paired t-test result	$t = -10.26$ $p < 0.0001$	$t = 4.254$ $p < 0.0001$	

Table 3: Results of ANCOVA test with the control confounding effect of the group before the intervention and educator resources.

Dependent variable	Sources	Mean square	F	Sig.
Total caregiver burden (post-test)	Intercept	102.368	2.384	0.128
	Total caregiver burden (pretest)	1021.505	23.786	0.00
	Group	811.881	18.905	0.00
	Educator resources	33.313	0.776	0.382

method between health care providers and family is very effective in reducing patients' stress and family caregivers. This is consistent with the present study in a study conducted by Mirzaei et al. to evaluate the care provided by family caregivers to COVID-19 patients in Iran. The results showed that 83.2% and 80.9% of family caregivers of in-patients and out-patients suffered from severe caring burden, which indicates the severity of caregiving burden for COVID-19 patients and the need to implement support programs to reduce it [20].

Also, consistent with the findings of the present study, a study by Mirhosseini et al. was conducted to investigate the effect of online psychoeducational support on caring burden in family caregivers of COVID-19 patients. The results showed that caregivers in both groups experienced moderate caregiving burden before the intervention and total mean scores of caring burden before and after the intervention in the support group were 50.2 ± 10.5 and 46.0 ± 9.2, respectively, which significantly decreased after the intervention ($p < 0.001$). Consequently, the decrease in the burden mean score was significantly greater in the support group than in the control group ($p = 0.04$) [28].

On the other hand, the result of Chen et al.'s study is on the contrary to the present study. They reported that most study groups suffered from different burdens after intervention although they received social support [37]. This inconsistency could prove that intervention used in the present study was more effective in reducing caregiver burden than the intervention used in the other study or may be the differences in the disease examined in both studies.

It seems that providing distance nursing care has reduced the caregiver burden by reducing stress and anxiety and improving the mental and psychological condition of caregivers. The results of previous studies also confirmed the effect of telenursing on reducing the anxiety of family caregivers of patients with stroke [33], heart failure [34], Alzheimer's disease [35], and dementia [38].

Also, studies conducted in the field of web-based programs for caregivers of dementia patients and generally chronic disease caregivers showed that caregivers have described the use of distance nursing care as easy, useful, and practical, and it has a positive effect on awareness, self-efficacy, attitude, and feeling of empathy and reduces anxiety and stress in caregivers. It also increases caregivers' self-confidence in caring skills and connecting with patients [39, 40].

Also, a study conducted by Nia et al. investigated the effects of family-centered empowerment model on depression, anxiety, and stress of the family caregivers of patients with COVID-19. The results showed that by providing the combination of a face-to-face orientation session and online methods of the family-centered empowerment model (FCEM), it is likely to lower stress, anxiety, and depression in family caregivers, which can be contributed to the practicability, simplicity, and effectiveness of this home health intervention [41].

The results of the aforementioned studies indicate that education through new methods such as distance education is very important and most of them are similar to the present study. In the field of health care, providing care for an individual with chronic diseases can be stressful for the caregiver and the patient's family, especially if they have an acute illness such as COVID-19 and the conditions of transmission are more special.

In a study by Rajab Dizavandi et al., the effect of telenursing intervention on improving the self-efficacy of COVID-19 patients was shown, and the need to use telenursing technologies in the COVID-19 pandemic was emphasized [23].

Also, Kord et al. found that telenursing is very effective and helpful in the fields of education, follow-up, support, care, and counseling of patients during the COVID-19 period [42].

4.1. Strengths, Limitations, and Recommendations. The strengths of the study include the random selection of research units and the use of a control group. Also, the educational booklet designed was provided to the intervention group, which was a useful guide for caregivers.

On the other hand, the limitations of this research were receiving training and information from other sources that may affect the research results, which was controlled to some extent by using the control group. Furthermore, people's ability to deal with crises and problems and people's trainability were different, which can affect the results that are uncontrollable.

More research with a larger sample size and different locations is needed to strengthen our findings. It is also suggested that physiological parameters, heart rate variability, sleep or wakefulness, and behavioral responses should also be investigated in the studied groups.

5. Implications for Nursing Practice

According to the findings of the present research, it seems that in the COVID-19 crisis, telenursing can be an effective way to reduce the caregiver burden among family caregivers as well as the problems, especially the costs of the health care system and the transmission of infection.

The finding showed that training and telenursing have led to a decreased caregiver burden among family caregivers

of COVID-19 patients and its various dimensions such as time-dependent, emotional, social, physical, and developmental caregiver burden.

Considering the large number of patients and their families and the limited number of specialists to answer and solve their problems, training through telenursing is a strategic option. Therefore, it is suggested that health care managers expand and improve the telenursing process by creating appropriate policies and careful planning to decrees the caregiver burden among family caregivers of COVID-19 patients.

Based on the results of the present study, it seems that in the COVID-19 crisis, telenursing can be an effective way to reduce problems, especially the costs of the health care system and the transmission of infection.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethical Approval

This article was approved by the ethical code of IR.MEDSAB.REC.1399.174 in the Vice-Chancellor for Research and Technology of Sabzevar University of Medical Sciences and registered in the Iranian Registry of Clinical Trials (IRCT20210111050011N1).

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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