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Effect of online psychoeducational support on caring burden in family caregivers of COVID-19 patients: a parallel randomized controlled trial

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A – Study Design, **B** – Data Collection, **C** – Statistical Analysis, **D** – Data Interpretation, **E** – Manuscript Preparation, **F** – Literature Search, **G** – Funds Collection

Summary **Background.** The COVID-19 pandemic has imposed a psychological burden on a wide range of people in the community, including COVID-19 patients and their family caregivers.
Objectives. This study aimed to evaluate the effect of online psychoeducational support on the caring burden in family caregivers of individuals with COVID-19.
Material and methods. This study was conducted on 70 family caregivers of patients with COVID-19 referred to Imam Reza Hospital in Mashhad, Iran in 2021 by using a convenience sampling method. The participants were randomly assigned to intervention and control groups. The intervention group received one week of online psychoeducational support in six online group sessions of 35 to 45 minutes. Data were collected using the Zarit Burden questionnaire at the beginning and one week after the intervention. The data were analyzed using descriptive and inferential statistics (Independent *t*-Test, Chi-squared test, Fisher's exact test, Mann–Whitney U test, Wilcoxon, and Paired *t*-Test).
Results. At the baseline, the level of caring burden in the two groups was moderate and no significant difference was observed between the groups ($p = 0.28$). The 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 ($p = 0.04$).
Conclusions. It is recommended to implement online psychoeducational support for the caregivers of patients with COVID-19 to reduce their caring burden.
Key words: COVID-19, caregiver burden, patients.

Background

The unprecedented COVID-19 crisis has profoundly affected and changed the lives of people around the world and caused various economic and government ramifications [1, 2]. Studies have shown that a significant percentage of the general population experienced moderate to severe levels of stress or anxiety symptoms during the COVID-19 pandemic [3, 4]. Among the people affected by the psychological consequences of the COVID-19 pandemic are patients with COVID-19 and their families. People with illnesses experience various psychosocial consequences, which reduces the quality of life of the patients [5]. Uncertainty about the disease and its treatment, as the unprecedented public health crisis evolves, as well as stigmatization of the infected individuals may be some of the factors that cause psychological distress in people affected by the disease and their families [6]. This disease disrupts patients' lives and affects their caregivers, but it can also disrupt the family relationships [7].

Caregivers are the people who are mostly involved in patient care and disease control during illness and treatment. Studies show that the quality of life of the caregivers is affected during the treatment of the patient. Fear of illness, feelings of helplessness, uncertainty about the future, anxiety, sadness, anger, emotional reactions, economic worries, psychological stress in interpersonal relationships, and fear of death are the most important social and psychological burdens during the COVID-19 pandemic. On the other hand, the process of transferring care from hospital to home puts the burden of care on family caregivers [8]. The results of a study in Iran showed caregivers of patients with COVID-19 experienced a caring burden in the post-discharge period [9]. The caring burden means the extent to which caregivers feel that their emotional or physical health and social and financial life has been impacted as a result of caring for their patient [10]. The caring burden is considered as a two-dimensional concept; the objective caring burden (activities and care needs) and the subjective caring burden (attitudes and emotional reactions to care) [11]. The caring burden may negatively affect the family caregiver's ability to provide quality care, leading to poor outcomes for the patient, including poor quality of life and exacerbation of distress [12, 13].

To reduce the burden of care in caregivers, there are various strategies. One of them is the use of supportive interventions

with psychosocial approaches [14]. This strategy involves performing interventions for different strata of society, including family caregivers [9, 15, 16]. One of the effective psychosocial approaches is supportive psychoeducational interventions that address the concerns caused by the discomfort experienced by individuals [17]. Psychoeducational interventions are structured and time-limited programs that include stress management, health education, and psychological support [18]. Studies show the positive effect of a wide range of psychoeducational interventions in reducing negative outcomes in caregivers, such as caring burden, unmet needs, and psychological distress, and improving outcomes such as quality of life, resilience, and self-efficacy [19–22]. A study by Cheng et al. aimed to determine the effectiveness of a strength-oriented psychoeducation on caring competence, coping skills, psychological outcomes, and caring burden of those caring for stroke survivors. This study showed that the implementation of a psychoeducation support program for caregivers significantly improved caregiver competence and coping skills in problem solving and reduced caregiver burden [23]. Also, Ata and Doğan showed that a psychoeducational support program with content on cognitive-behavioral stress management was effective in reducing the score of caring burden, stress, and risk of psychological disorders as well as in increasing scores in emotion-based and problem-based coping skills [24].

Due to the emergence of new needs and major lifestyle changes as a result of the outbreak of the emerging COVID-19 disease, family members experience a great deal of distress [25]. It should be noted that the mental health of caregivers plays a crucial role in inpatient care. Therefore, the implementation

of interventions such as psychoeducational support to reduce psychological stress seems to be necessary for these people.

Objectives

This study was conducted to determine the effectiveness of online psychoeducational support on the caring burden in family caregivers of patients with COVID-19.

Material and methods

Design

This randomized controlled trial with a pretest–posttest design was performed on two groups of caregivers of COVID-19 patients (intervention and control groups).

Participants

The study was conducted on 70 family caregivers of patients with COVID-19 referred to Imam Reza hospital (Referral center for patients with COVID-19) in Mashhad, in northeast Iran in February–March 2021. The eligible participants were divided into two groups of intervention and control by using quadruple random blocking allocation (by a statistics consultant via SPSS software) (Figure 1). The exclusion criteria were as follows: not participating in the posttest, missing two or more supportive sessions, having history of psychiatric disorders, participating in COVID-19 supportive interventions, being a member of health care staff and deciding to withdraw from the study.
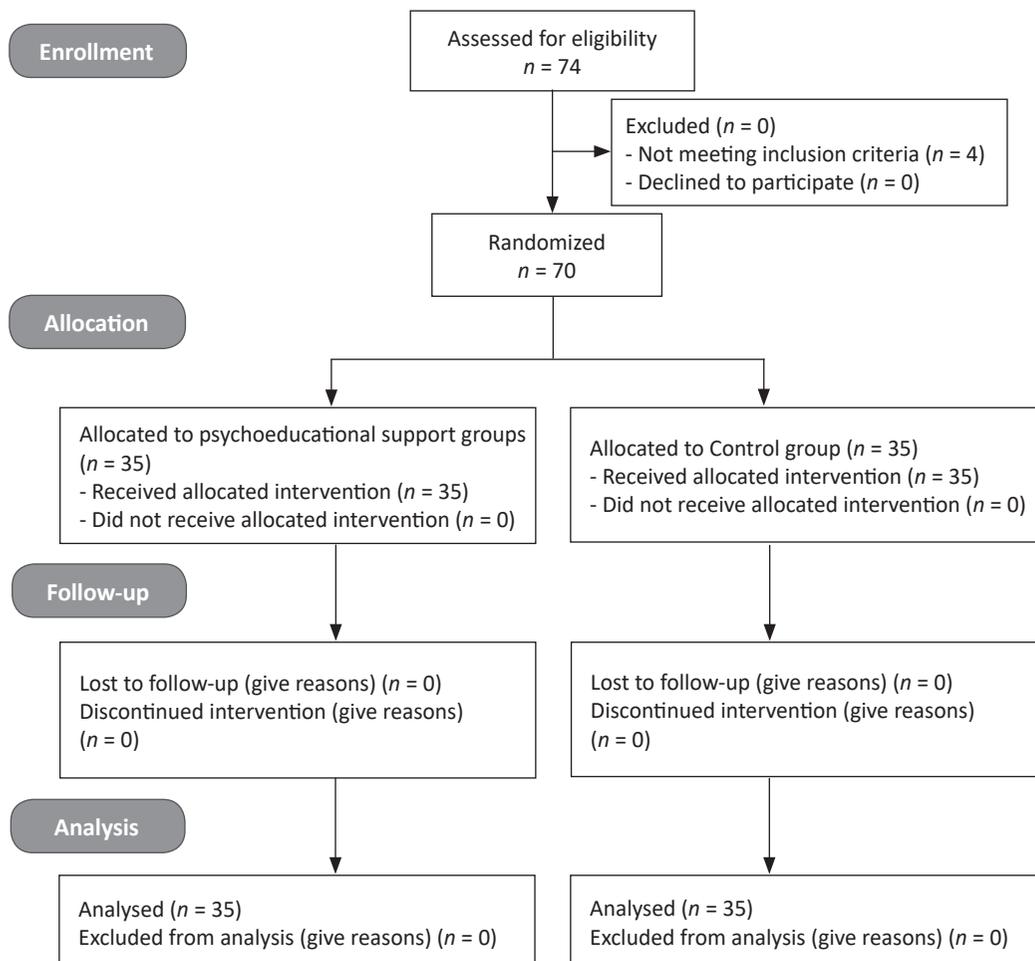

Figure 1. CONSORT flow diagram of the study

Table 1. Description of sessions	
1	1 – Introduce and present a general description of the sessions. 2 – Educational needs about COVID-19. 3 – How to use masks and personal protective equipment. 4 – Caring for a COVID-19 patient at home after discharge
2	1 – Nutrition management 2 – How to care for elder and child patients
3	1 – Principles of infection control and disinfection. 2 – Warning signs of the disease. 3 – Education on how to administer the patient's drugs
4	1 – Definition of stress, the relationship between personality types and stress, the stress process and its consequences. 2 – Examining the aspects and situations of stress during the patient care period (personal, family and environmental factors) and the social stigma of these people
5	1 – Identifying stressful dysfunctional thoughts, their challenges and replacing irrational thoughts with logical ones and then reviewing and re-evaluating them. 2 – Selecting appropriate problem-based and emotion-based coping strategies while dealing with stressors
6	1 – Discussion and exchange of views of caregivers according to the training provided during the previous sessions, the integration of training in daily life

Measurements

The data collection tools included a demographic form, a COVID-19 educational needs assessment checklist, and the Zarit Burden Inventory (ZBI).

The demographic profile form includes variables of age, gender, marital status, level of education, occupational status and chronic diseases in patients and their caregivers, the caregiver's relationship and cohabitation status with the patient, the caregiver's income, insurance status, support from supportive associations, history of hospitalization in critical care units, and the need for supplemental oxygen at home.

The COVID-19 Educational Needs Assessment Checklist consists of 17 questions in seven areas (general education needs in COVID-19, infection control, nutrition, child protection, geriatric protection, contact with a COVID-19 patient, and the stigma on the COVID-19 patients and their families). The response scale of the checklist was as follows: no need, low, medium, and high need.

The Zarit Burden Inventory (ZBI) is a tool for measuring the level of care burden. This questionnaire consists of 22 questions. A score less than 30 is considered a mild burden, 31 to 60 is thought to be a moderate burden, and 61 to 88 is believed to be a severe care burden. The minimum and maximum score that can be achieved are 0 and 88, respectively. Higher scores indicate a greater burden of care [10]. This questionnaire includes four subscales of individual caring burden (1, 2, 7, 10, 11, 17, 19, and 20), social caring burden (3, 6, 12, and 13), emotional caring burden (4, 5, 8, 9, 14, and 22), and economic caring burden (15, 16, and 27) [26]. The reliability of this tool in Iran has been reported by Navidian et al. using the test–retest method (0.94) [27]. The internal consistency of this method is 91% as measured by Cronbach's alpha coefficient [28, 29]. The face validity of the instruments used in the present study was confirmed by seven faculty members of Mashhad School of Nursing and Midwifery.

Intervention

The intervention was performed as a psychoeducational support for caregivers in the WhatsApp social network during a live video call of a group of three to five people, in six sessions of 35 to 45 minutes during a week. The WhatsApp social network was selected for intervention due to reasons such as ease of use, availability, and the possibility of making encrypted group video calls. The intervention was planned by the researcher and the time of implementation was adjusted in prior coordination with the caregivers. Educational support was provided in the first three sessions since the patients were recently discharged, and then in the second three sessions of the intervention, psychological support was planned according to the stress management program based on the Lazarus and Folkman transactional stress-coping model (1984). The day before each session, the supportive content required for the next session was sent to the members in the form of video clips based on Table 1, which was sent to the caregivers in the group to discuss and exchange views on the content during the session. All the caregivers in the intervention group were given the opportunity to ask questions in the online groups and share their caregiving experiences with other caregivers in case of any ambiguity or questions about their patient care. The control group received regular training in the referral hospital. A description of the content presented in the sessions is available in Table 1.

Sample size

According to the study of Ata and Doğan [24], considering the 95% confidence interval and 80% test power, with a 20% probability of data loss, the sample size of this study was 70 (35 people in each group).

Blinding

In this study, according to the type of intervention, the statistical consultant was blinded to the allocation of individuals to the intervention and control groups.

Statistical methods

The normality of quantitative data was evaluated using the Kolmogorov–Smirnov test. The data were analyzed using descriptive (absolute and relative frequency, mean and standard deviation) and inferential statistics (independent t-Test, Chi-squared test, Fisher's exact test, Mann–Whitney U test, Wilcoxon, and paired t-Test) in both the control and intervention groups. The significance level was set at $p < 0.05$ for all statistical tests.

Ethical considerations

This study was approved by the ethics code IR.MUMS.NURSE. REC.1399.051 in the Ethics Committee of Mashhad School of Nursing and Midwifery. The trial was registered at the Iranian Registry of Clinical trial with the IRCT20210109049978N1. The implementation method was explained to all study participants. In addition, they gave their consent to participate in the study through an online form. They were also informed that they could stop participating in the study at any point. As this was an online intervention, all the groups created were gender disaggregated. Female caregivers were allowed to share their voice only while making a video call. Data collection tools were shared online to caregivers and were completed in two stages before and after the intervention (one week after the intervention).

Results

No significant difference was observed ($p > 0.05$) in patients with COVID-19 between the intervention and control groups in terms of the demographic variables (i.e. gender, age, marital status, level of education, history of hospitalization in critical

care units, need to supplement oxygen, and receiving support from supportive associations). However, in terms of employment status, 45.7% of the patients in the intervention group were unemployed and housewives. In the control group, 34.3% of patients were employed ($p = 0.043$). Additional information is available in Table 2.

Table 2. Demographic characteristics of COVID-19 patients				
Variables		**Groups**		***p***
		Intervention	**Control**	
		n (%)	***n (%)***	
Gender	male female	21 (60) 14 (40)	18 (55.7) 17 (44.3)	0.470*
Marital status	single married	11 (31.4) 24 (68.6)	6 (17.1) 29 (82.9)	0.163*
Level of education	secondary school high school associate degree academic degree	16 (45.7) 6 (17.1) 2 (5.7) 11 (31.4)	12 (34.3) 6 (17.1) 2 (5.7) 15 (42.8)	0.873**
Employment status	housewife or unemployed self-employed retired employee student	16 (45.7) 5 (14.3) 9 (25.7) 4 (11.4) 1 (2.9)	9 (25.7) 1 (2.9) 12 (34.3) 12 (34.3) 1 (2.9)	0.043**
History of hospitalization in critical care units	yes no	18 (51.4) 17 (48.6)	14 (40.0) 21 (60.0)	0.337*
Need for supporting associations	yes no	1 (2.9) 34 (97.1)	0 (0.0) 35 (100)	1.000**
Need for supplemental oxygen	yes no	16 (45.7) 19 (54.3)	13 (37.1) 22 (62.9)	0.467*
		Mean ± SD	**Mean ± SD**	
Age (years)		56.4 ± 18.1	60.8 ± 17.6	0.301***

* Chi-squared test, ** Fisher's exact test, *** Independent *t*-Test, *n* – frequency, % – percent, SD – standard deviation.

Table 3. Demographic characteristics of caregivers				
Variables		**Groups**		***p***
		Intervention	**Control**	
		n (%)	***n (%)***	
Gender	male female	17 (48.6) 18 (51.4)	14 (40.0) 21 (60.0)	0.470*
Marital status	single married	17 (51.5) 18 (48.6)	16 (48.5) 19 (51.4)	0.811*
Level of education	secondary school diploma associate degree academic degree	1 (2.9) 3 (8.6) 7 (20.0) 25 (71.4)	0 (0.0) 2 (5.7) 6 (17.1) 27 (77.1)	0.816**
Employment status	housewife or unemployed self-employed retired employee student	12 (34.3) 10 (28.6) 1 (2.9) 11 (31.4) 1 (2.9)	1 (2.9) 10 (28.6) 1 (2.9) 21 (60.0) 2 (5.7)	0.003**
Relationship with the patient	mother sister grandchild daughter son wife	2 (5.7) 1 (2.9) 1 (2.9) 10 (28.6) 10 (28.6) 11 (31.4)	1 (2.9) 1 (2.9) 1 (2.9) 15 (42.9) 6 (17.1) 11 (31.4)	0.788**
Cohabitation with the patient	yes no	31 (88.6) 4 (11.4)	27 (77.1) 8 (22.9)	0.205*
		Mean ± SD	**Mean ± SD**	
Age (years)		39.09 ± 11.4	40.1 ± 10.01	0.674***
Income (million toman per month)		4.10 ± 1.40	4.63 ± 4.65	0.148***

* Chi-squared test, ** Fisher's exact test, *** Independent *t*-Test, *n* – frequency, % – percent, SD – standard deviation.

Variables		Groups		Intergroup test results
		Intervention (*n* = 35)	Control (*n* = 35)	
		Mean ± SD	Mean ± SD	
Individual	pre-intervention	21.4 ± 4.6	21.0 ± 4.6	*p* = 0.646**
	post-intervention	18.8 ± 4.3	19.8 ± 2.9	*p* = 0.254*
	mean differences	-2.6 ± 3.9	-1.1 ± 4.7	*p* = 0.175*
	intragroup test results	*p* = 0.001****	*p* = 0.152***	
Social	pre-intervention	8.6 ± 2.8	8.5 ± 2.3	*p* = 0.786**
	post-intervention	8.1 ± 2.5	7.7 ± 2.1	*p* = 0.544*
	mean differences	-0.5 ± 2.8	-0.7 ± 2.5	*p* = 0.755*
	intragroup test results	*p* = 0.261***	*p* = 0.134****	
Emotional	pre-intervention	15.5 ± 3.7	15.2 ± 3.4	*p* = 0.873**
	post-intervention	14.6 ± 3.3	15.2 ± 3.2	*p* = 0.448*
	mean differences	-0.9 ± 2.9	0.0 ± 3.3	*p* = 0.230*
	intragroup test results	*p* = 0.992****	*p* = 0.074***	
Economic	pre-intervention	4.6 ± 1.7	4.3 ± 1.3	*p* = 0.397*
	post-intervention	4.5 ± 1.5	4.4 ± 1.3	*p* = 0.842**
	mean differences	-0.1 ± 1.8	0.1 ± 1.6	*p* = 0.495*
	intragroup test results	*p* = 0.839****	*p* = 0.567****	
Total	pre-intervention	50.2 ± 10.5	49.0 ± 9.0	*p* = 0.282*
	post-intervention	46.0 ± 9.2	47.3 ± 5.6	*p* = 0.495*
	mean differences	-4.1 ± 5.6	-1.7 ± 5.5	*p* = 0.047**
	intragroup test results	*p* < 0.001***	*p* = 0.072***	

Table 4. Mean scores of caring burden and its subscales in caregivers of COVID-19 patients before and after intervention in both groups

* Independent *t*-Test, ** Mann-Whitney U test, *** Paired *t*-Test, **** Wilcoxon, *n* – frequency, *p* – *p*-value, SD – standard deviation.

According to the results in Table 4, the mean and standard deviation of the scores of caring burden subscales between the two groups, before and after the intervention (including individual, social, emotional, and economic caring burden) were not significantly different (*p* > 0.05). The mean and standard deviation of individual caring burden in the intervention group after the intervention were significantly different (18.8 ± 4.3 vs 21.4 ± 4.6; mean difference = -2.6 ± 3.9).

The mean score of the total caring burden of the intervention and control groups before the intervention was not significantly different and the two groups were homogeneous in this respect (*p* > 0.05). The total score of caring burden in the intervention group after the intervention had significantly decreased (46.0 ± 9.2 vs 50.2 ± 10.5; mean difference = -4.1 ± 5.6). Also, there was a significant difference between the mean difference scores of total caring burden in the intervention and control groups. The caring burden score in the intervention group decreased more than the control group after the intervention (-4.1 ± 5.6 vs -1.7% 5.5).

Discussion

Our findings showed that remote-based psychoeducational support can reduce the caring burden in caregivers of patients with COVID-19 in the post-discharge period. These changes are important because these caregivers are faced with caring for patients with an unknown, emerging, and prevalent disease with high physical and mental complications, which can increase the burden of care. Also, limited studies have been conducted on various aspects of mental health and supportive needs in caregivers of patients with this disease.

The results of the present study showed that the caregivers of patients with COVID-19 in both groups before the intervention experienced a moderate caring burden (50.2 ± 10.5 and 49.0 ± 9.0 for intervention and control group, respectively). The results of a study by Hekmatpou et al. showed that the mean scores of caring burden before intervention in the intervention and control groups were severe (67.84 ± 4.23, 61.60 ± 11.30) [30]. Possible reasons for the difference in these findings can be attributed to the difference between the type of patients and the sample size. In that study, patients had suffered stroke, which is a chronic disorder that results in different caregiving needs than for a patient with COVID-19. Consistent with the findings of the present study, a study by Ghorbani et al. was conducted to investigate the effect of education and telephone counselling on caregiver strain and unmet needs in family caregivers and self-care behaviors in patients with cancer. The results showed that the mean scores of pre-intervention caregiver strain in the intervention and control groups were (49.1 ± 7.9 and 46.2 ± 7.0, respectively) and that caregivers in both groups experienced a moderate caregiving burden [20]. Mirzaei et al. previously conducted a study to evaluate the caring of family caregivers of patients with COVID-19 in Iran. The results showed that 83.2% and 80.9% of family caregivers of inpatients and outpatients suffered from severe caring burden, which indicates the intensity of caregiving burden for COVID-19 patients and the need to implement support programs to reduce it [9].

It should be noted that one of the factors associated with the caring burden in caregivers is the coping strategies of caregivers in dealing with stressors [31]. According to a study by Sun et al., coping styles and psychological growth are essential for maintaining the mental health of caregivers of patients with COVID-19 [32]. Dhital et al. also recommended the use of appropriate coping strategies for patients and their families to manage COVID-19-induced distress [33]. In this regard, the stress management program according to the Lazarus and Folkman transactional stress-coping model (1984) relying on the psychological support of caregivers was used to provide appropriate coping strategies in dealing with stressors. Various studies have shown the effectiveness of this type of support. For example, the results of the study by Pihet and Kipfer showed that the use of a group psychoeducative program based on this model has a significant effect on reducing psychological distress and

caring burden and on improving the self-efficacy of caregivers of patients with dementia [34]. López-Liria et al. also showed that using a stress management program based on this model has a significant effect on reducing the distress of parents of children with disabilities and improving their coping strategies in dealing with stressful situations [35]. Ducharme et al. also demonstrated that using this supportive intervention for elderly caregivers as a nursing-based intervention has increased self-efficacy and reduced perceived threat and health risks in caregivers. Providing online support is an innovative intervention method that allows nurses to reach caregivers who cannot normally participate in support programs. Providing this program at the beginning of the care path helps caregivers learn as soon as possible how to face caregiving needs and improve their health [36]. Although the communities studied in previous studies were caregivers of the chronic patients or the elderly, the results were consistent with the present study.

In this study, a part of the intervention was to provide the necessary education on caring for a patient with COVID-19. Blevins (2020) states the need for caregivers to receive the necessary educational support to provide home care for a family member with COVID-19 [37]. One of the ways to reduce the complications of COVID-19 in patients and their families is to provide education to the family to care for the patient in the post-discharge period, which can be done remotely to prevent the spread of the disease [38]. The caregiving needs of the caregiver and insufficient knowledge and skills have been identified as major risk factors for increasing the caregiver burden [39, 40].

In line with the results of the present study, the results of the study of Hekmatpou et al., which aimed to determine the effectiveness of patient care education on the caring burden and quality of life of caregivers of stroke patients, showed that providing training to caregivers in the form of telephone counselling sessions and a training booklet, in addition to routine training methods, had a significant effect on reducing the burden of care and improving the quality of life of caregivers [30]. Also, a study conducted by Ghorbani et al. investigated the effect of education and telephone counselling on the burden of care and unmet needs in caregivers and the self-care behaviors in cancer patients. The results showed that by providing educational support during four sessions of 15 to 20 minutes of telephone counselling, in addition to face-to-face training and training booklets, a significant reduction was seen in the caring burden and unmet needs in caregivers and in the improvement of self-care behaviors in patients [20]. Also, a study by Thimmajja and Rathinasamy aimed to determine the effect of psychoeducational support on knowledge about schizophrenia and caring burden in 350 caregivers of patients with schizophrenia. They showed that educating caregivers with general information about schizophrenia, the causes, signs, and symptoms, drug management, psychosocial management, nursing support, and family roles of these patients significantly reduced the caring burden and increased the knowledge of the caregivers [41]. The present study differed from other studies in terms of the disease, cultural background, and sample size. However, it confirms the results of previous studies which revealed a favorable effect of psychoeducational support in reducing negative outcomes (such as caring burden) in caregivers.

Limitations of the study

The characteristics of COVID-19 are significantly different from other diseases. Also, the period of home care for patients is usually considered to be two weeks. Therefore, the generalizability of the results of the present study to other studies may be limited.

Conclusions

Family caregivers of patients with COVID-19 experienced caregiving burden during the post-discharge care period. Implementing a psychoeducational Intervention is recommended as an effective way to reduce the caring burden in family caregivers of COVID-19 patients.

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