

Effect of Telenursing on Levels of Depression and Anxiety in Caregivers of Patients with Stroke: A Randomized Clinical Trial

Abstract

Background: Telenursing is a low-cost, highly accessible method that can lead to increased awareness on the principles of care, and may eventually help reduce the stress experienced by caregivers of patients with stroke. The present study aimed to investigate the effect of telenursing through phone consultation on the levels of depression and anxiety in family caregivers of patients with stroke. **Materials and Methods:** This was a randomized clinical trial including 152 caregivers of stroke patients discharged from Mohammad Vase'ee Hospital in Sabzevar in 2016. Participants were recruited through purposive sampling method and were randomly assigned to control ($n = 76$) and intervention ($n = 76$) groups. The intervention consisted of 32 sessions of phone consultation. Research tools included demographic characteristics form, needs assessment questionnaire, Beck Depression Inventory, and Beck Anxiety Inventory. Data were analyzed with independent t test using SPSS, version 23. **Results:** Mean (SD) post-intervention anxiety scores for the intervention and the control group were statistically significant ($t = 3.51, p = 0.001$). However, the difference in mean depression scores after intervention was not significant ($p = 0.70$). **Conclusions:** Telenursing can be employed to facilitate the care of chronic patients as well as increase the psychological well-being of the caregivers through providing practical and specialized information.

Keywords: Anxiety, caregivers, depression, stroke, telenursing

Introduction

Stroke presents a major health problem in modern societies, being the second cause of mortality for people older than 60 years and the fifth leading cause of death in people aged 15–59 years old in the world.^[1,2] The incidence rate of first-time stroke in Iran is 139 per 100,000 people that today we see an increasing number of these individuals due to the advancement of science in the field of diagnosis and treatment of diseases.^[3,4] According to the World Health Organization, after discharge from hospital, about 80% of patients with stroke will depend on family members and their caregivers for their daily activities.^[5] In addition to the mortality caused by the stroke, stroke-associated disabilities place a tremendous burden on economy, amounting to approximately \$57 billion a year.^[6,7]

Meanwhile, informal caregivers play an important role in home care.^[8] However, if caregivers do not have enough information about the disease, how to care and support the patients at different stages of diagnosis,

treatment and its side effects, they may not be successful in providing support and care and may even compromise the social health of the patients and their families.^[5] Hence, due to the direct effects of caregiver issues on the family as well as the course of treatment of patients, health care systems pay more attention to home care and addressing the needs and problems of caregivers.^[9]

Telenursing, as one of the main services of caring for chronic patients at home,^[10] refers to the provision of nursing services through the use of telecommunications technologies such as telephone, computer, telemonitoring tools and Internet.^[11] The use of this technology leads to rapid access of the patient to better services for lower costs, easy access to the most appropriate professional skills, and an all-round increase in quality of health service provision.^[12] Hence, given the chronic nature of the stroke, providing support for family members would increase their efficiency in caring.^[13]

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Few studies have looked at the problems of caregivers of patients with stroke,^[14,15] and no one has addressed the issue of depression and anxiety in caregivers of patients with stroke. Therefore, this study aimed to investigate the effect of telenursing through phone consultation on levels of depression and anxiety in caregivers of patients with stroke.

Materials and Methods

This study is a clinical trial registered in Iran's Clinical Trials Registration System (IRCT2015080423493N1). Participants were recruited from a list of elderly patients with stroke in the period of July–December 2016, provided by Mohammad Vase'ee Hospital in Sabzevar city. The number of participants in each group was calculated to be 76, based on $\alpha = 0.05$, power = 0.80, and a variance of 60 (equivalent to 3.5 unit decrease in anxiety score). One hundred fifty-four people were selected through purposive sampling and informed written consent was obtained. The inclusion criteria were having no cognitive impairments (dementia, delirium), speaking Farsi, being able to communicate, having no history of psychiatric hospitalization and psychiatric treatment, and having no experience of mourning during the past 6 months. People who attended psychotherapy sessions were also excluded from the study. Thus, 152 participants were randomized to an intervention and a control group by using a four-block design [Figure 1].

Data were collected using demographic characteristics form, needs assessment questionnaire, Beck Depression

Inventory (BDI) and Beck Anxiety Inventory (BAI). The researcher-made needs assessment questionnaire comprised 43 items on six components: knowledge of health support, social support, emotional support, specialized support, instrumental support, and treatment involvement. Clarity and relevance of items were evaluated and verified by ten experts in the field by using a 4-item Likert scale. The total score for this questionnaire ranges from 0 to 43, with a higher score corresponding to greater needs. Both Beck's Depression and Anxiety inventories include 21 items in a 4-degree Likert scale (0 to 3 score) that evaluate the symptoms of depression and anxiety over the past two weeks. Total score for each inventory ranges from 0 to 63. In BDI, a score of 0–9 represents no depression, 10–18 mild depression, 19–29 moderate depression, and 30–63 severe depression.^[16] In BAI, a score of 0–7 would represent partial anxiety, 8–15 mild anxiety, 16–25 moderate anxiety, and 26–63 severe anxiety.^[17] Cronbach's alpha coefficient for BDI and BAI are 0.93 and 0.92, respectively.^[17,18]

Intervention for the intervention group began as a preliminary meeting with participants' families to explain the counseling procedure and provide instructions regarding how to fill out the questionnaires and reach out to the consultant (i.e., the researcher). Based on the caregivers' needs assessed through aforementioned questionnaire, telephone consultation with the nurse was performed every other day in the first month, and twice a week in the second and third months (32 sessions in total). Calling time was between 8 AM and 8 PM; however, participants could call in at other times in case of emergency. Also, instructions as

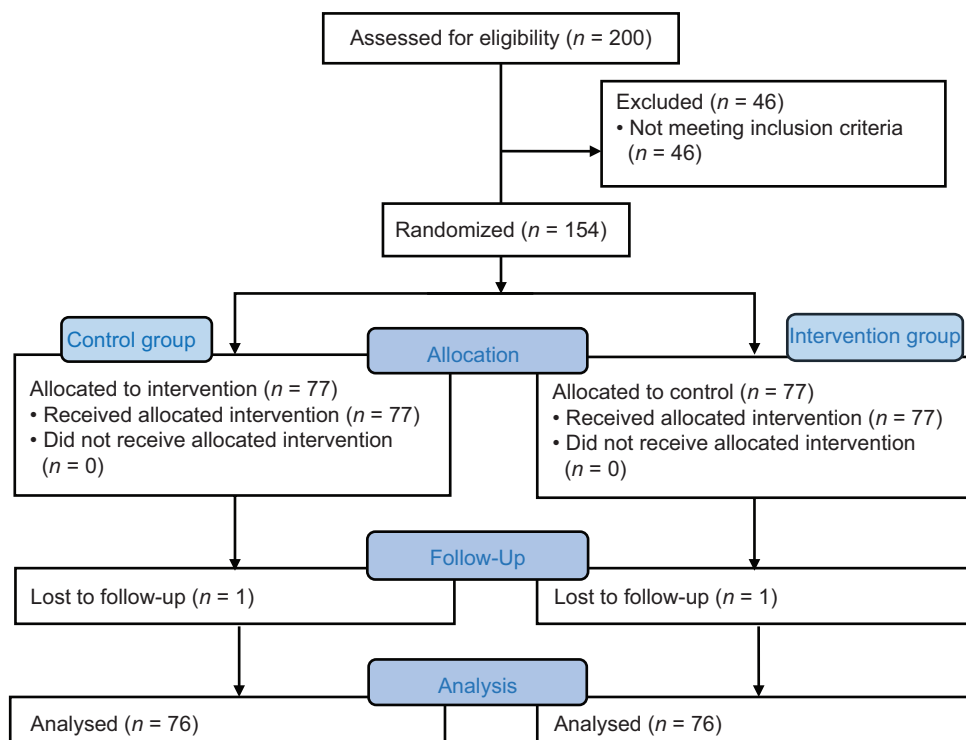


Figure 1: CONSORT 2010 flow diagram

to hypoglycemia, hypertension and hypotension symptoms, skin care, diet, dressing change, changing the patient's position, etc., were provided in these calls, if necessary. The control group continued with their usual care and was seen by their physician every month to extend their medications. After completion of the intervention, post-test data were obtained during a visit to the families. The data were analyzed with independent *t*-test using SPSS, version 23 (IBM SPSS Statistics).

Ethical considerations

The study was approved by Medical Research Ethics Committee of Social Welfare and Rehabilitation Sciences University (registration code: IR.USWR.REC.1394.184) and was conducted in full compliance with the requirements of the Declaration of Helsinki regarding the use of human subjects. Also, after the completion of the research, the participants in the control group were provided with telenursing through phone consultation.

Results

The sample of caregivers included 62 men (40.78%) and 90 women (59.21%). Participant characteristics are presented in Table 1. According to Table 1, there is no significant difference between groups in demographic data (caregiver age, duration of care, having help during care, etc.).

The means and standard deviations of the anxiety and depression scores in the pre-test and post-test are presented in Table 2. As shown in Table 2, the mean scores for depression and anxiety in the post-test were lower in the intervention group compared with the control group.

Results of the independent *t*-test revealed a significant difference in the anxiety scores between groups in the post-test; however, the difference was not statistically significant for depression scores. Therefore, it can be concluded that nursing through telephone counseling has been effective only in reducing anxiety, but not depression.

Table 1: Comparison of variables between two intervention and control groups

	Intervention group mean (SD)	Control group mean (SD)	<i>t</i> -test	<i>p</i>
Patient age (years)	66.96 (11.81)	70.07 (10.05)	1.75	0.08
Length of the disease (months)	18.61 (18.16)	21.14 (18.34)	0.85	0.49
Length of stay (days)	13.75 (20.21)	14.23 (14.61)	0.16	0.87
Caregiver age (years)	49.04 (14.96)	49.48 (15.05)	0.14	0.88
Length of patient care (months)	12.41 (9.44)	13.61 (11.44)	0.70	0.48
Length of daily Patient care (hour)	15.27 (8.29)	15.34 (13.81)	0.04	0.96

Discussion

In this study, we sought to evaluate the effect of a low-cost method, namely, telenursing through phone consultation, on the depression and anxiety of caregivers of stroke patients. Caregivers of patients with chronic diseases report high level of perceived stress,^[19,20] and strategies to relieve this stress, e.g., psychotherapy interventions, have limitations such as high cost, lack of insurance coverage, lack of experienced psychotherapists, and spending a lot of time.^[21] Our results indicate that providing telenursing through phone consultation can reduce the anxiety of caregivers, although it was found not effective in reducing depression.

The effect of telenursing on anxiety in the present study is consistent with the results of Chiang and Chen^[22] and Bastani *et al.*^[23] In a study of the effectiveness of tele-nursing on exhaustion, stress control, and performance of family caregivers of patients with heart disease, Chiang and Chen showed that caregivers who received telenursing had less exhaustion, more control over stress, and better performance in the family after a month. In the study of Bastani *et al.*,^[23] telenursing also led to reduced stress in elderly caregivers of patients with Alzheimer disease.

However, the lack of improvement in depression of caregivers in the present study is inconsistent with the study of Jahromi and colleagues^[24] and may suggest that depression requires specialized counseling and psychotherapy. Jahromi *et al.*^[25] randomized 22 stroke patient caregivers who had cared at least for 6 months into two groups. Participants in the intervention group were put on a 3-month intervention including two home visits and 18 phone calls, while the control group only received monthly pamphlets containing health care information. Depression was assessed before and after the intervention. They found that caregivers who received telephone counseling had lower levels of depression at first 3 months ($p < 0.01$) and 12 months later ($p < 0.05$). The inconsistency between the findings of this study and the results obtained in Jahromi *et al.* might be a result of the intervention package in their study, which included two visits, delivering the problem-solving manual, and using a multi-disciplinary therapeutic team. These two studies were also different in terms of depression measurement time courses. It should be noted that the results of Jahromi *et al.*^[25] were close to the current study at 12 months post-intervention, suggesting a descending trend in caregivers' depression graph over time. Hence, it seems that more interventional measures are required to improve depression and maintain it over time.

Our finding that telenursing reduces anxiety is also consistent with the findings of Damirclick *et al.*,^[26] although the results regarding depression are inconsistent. Damirclick and colleagues investigated the impact of multimedia nursing on anxiety and depression associated

Table 2: Comparison of mean and standard deviation of anxiety and depression scores in the intervention and control groups before and after intervention

	Intervention group mean (SD)	Control group mean (SD)	t-test	p
Anxiety				
Before intervention	34.47 (7.98)	34.86 (7.80)	0.38	0.75
After intervention	30.18 (5.52)	33.59 (6.40)	3.51	0.001
The difference in two measurement times	4.28 (5.26)	1.27 (7.61)		
t-test	3.854	1.097		
P value	0.001	0.14		
Depression				
Before intervention	34.68 (9.94)	35.26 (8.07)	0.40	0.68
After intervention	35.41 (9.34)	35.85 (7.80)	0.38	0.70
The difference in two measurement times	0.63 (1.34)	0.59 (1.55)		
t-test	0.466	0.458		
p value	0.001	0.001		

with coronary disease and showed that multimedia nursing was able to reduce the symptoms of depression and anxiety in their subjects. Of course, it should be noted that multimedia nursing is a way through which multimedia tools are used in nursing, while only a phone and an initial meeting were used in our study.

In short, the results of our study showed that telenursing with a simple device like telephone makes patient care somewhat easier for caregivers and decreases their daily anxiety during caregiving. However, caregivers who exhibit low mood symptoms, such as severe depression, require specialized counseling and psychotherapy services, and depression symptoms will not improve by simply providing them with necessary information on caring and communicating the patient as a nurse. Also, telenursing compensates for nursing shortages by reducing costs and increasing access to nursing counseling, and provides more satisfaction to nurses. Finally, it should be noted that this study faced some restrictions. Using self-report tools to measure anxiety and depression is associated with response bias, and purposive sampling method limits the generalizability of the findings.

Conclusion

Results of the present study showed that telenursing through a simple and low-cost device like telephone could make patient care easier for caregivers by providing them with the information on care, the disease, and other necessary information. In this regard, access to this information by telephone leads to decreased anxiety in daily caregiving. However, the results of this study showed that this method has no significant impact on depression of caregivers, and other methods are needed in this regard. Due to the limited use of other telenursing methods, e.g., video call, it is suggested that future studies use other methods as well as an allied therapeutic team. Also, it is recommended that patients with stroke be included in the interventions.

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Conflicts of interest

Nothing to declare.

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