

Effect of Educational Program on the “Quality of Life” of Family Caregivers of Patients Undergoing Hemodialysis



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Citation: Ghane, G, Ashghali Farahani, M, Seyed Fatemi, N & Haghani, H 2016, 'Effect of educational program on the “quality of life” of family caregivers of patients undergoing hemodialysis', *Journal of Client-Centered Nursing Care*, vol. 1, no. 4, pp. 167-176.

doi: <http://dx.doi.org/10.15412/J.JCCNC.04010401>

Article info:

Received: 12 May. 2015

Accepted: 20 Sep. 2015

ABSTRACT

Background: The family caregivers of patients undergoing hemodialysis have a major role in the care of patients at home. The study results indicate that these caregivers face with multiple problems regarding responsibilities and issues arising from the care and treatment of the patients. These issues decrease their quality of lives. However, these caregivers are mostly neglected and no studies are available on the effectiveness of educational program on their quality of lives. Therefore, this study aimed to examine the effects of educational program on the quality of life of family caregivers of patients undergoing hemodialysis.

Methods: This research was a randomized controlled clinical trial, conducted on 76 family caregivers of patients undergoing hemodialysis referred to Shahid Hasheminejad, a medical and educational center in Tehran, Iran. The subjects were equally allocated into 2 groups of 38 patients. The caregivers of the patients who referred in even or odd days of the week were randomly assigned into the intervention and control groups, respectively. The intervention group received 4 training sessions on home care training program during 2 weeks, but the control group just received the routine training at the center. Both groups answered demographic information and “quality of life” (SF-36) questionnaires before and 6 weeks after the intervention. Then, the obtained data were analyzed in SPSS, 21. Descriptive statistics, the Chi-square and Fisher exact tests, as well as independent samples t-test, t-couple, and Mann-Whitney U test were used to analyze the data.

Results: The majority of caregivers (54%) were in the age range of 35-55 years. About 68.4% were female and 70% were married. No significant difference was found between the baseline mean scores of “quality of life” of the intervention and the control groups (45.95±14.94 vs. 45.08±11.02, P=0.775). However, the mean scores of quality of life of the intervention group increased at the end of the study and the 2 groups were significantly different in this regard (63.51±11.55 vs. 41.74±10.51, P<0.001).

Conclusion: The current study showed that home care training program can be effective in improving the quality of life and compatibility with the responsibilities of caregivers and change their lifestyle. Therefore, we suggest that managers of educational and medical center encourage their staffs to use such programs for improving the caregivers' health.

Keywords:

Educational program,
Quality of life, Family
caregivers, Hemodialysis
patients

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1. Background

Chronic renal failure (CRF), irreversible loss of kidney function, is one of the common illness that nowadays affected 2% to 3% of world population. More than 10% of Americans are affected by CRF. Thus, its incidence is 336.20 people per one million population in the year in America (United States Renal Data System 2014). The disease is increasing in developing countries so that its prevalence in Iran increased from 238 cases per million people in 2000 to 354 cases per million in 2006 (Aghighi et al. 2009).

The existing treatment methods for patients with CRF comprise hemodialysis, peritoneal dialysis, and kidney transplantation. In Iran, 47.7% all patients with CRF use hemodialysis. In this regard, a total of 25934 patients were under chronic hemodialysis in 2013 (Mousavi et al. 2014; Arefzadeh et al. 2009). Although the widespread availability of hemodialysis save and prolong the lives of thousands of patients with end-stage renal diseases (ESRD); However, these patients suffer from many problems and complications (Bağ & Mollaoglu 2010; Brunner et al. 2010).

ESRD creates significant changes in the lives of patients and their families. Frequent hemodialysis and its associated health problems will deplete the patients' energy (Ayoub & Hijjazi 2013). Patients undergoing hemodialysis suffer a high degree of disability, loss of functions, and dependency to the caregivers. Therefore, they need more support from the others and in this regard, the family of caregivers have the maximum share in the patient care (Belasco et al. 2006; Belasco & Sesso 2002).

Chronic illness of a family member and its economic and psychosocial consequences involve the family and affect their life styles. Studies show that family caregivers of patients with chronic illnesses experience physical and emotional distresses and psychological symptoms such as depression, anxiety, anger, despair, and feelings of guilt and shame (Mollaoglu 2006; Low et al. 2008). Furthermore, having the role of a caregiver in the family (an increasing phenomenon) affects the people's quality of lives and accordingly has become one of the community health problems. Therefore, these family caregivers are at risk of becoming ill and are sometimes called hidden patients (Mollaoglu 2006; Palma et al. 2012).

Caregiver's "quality of life" is a concept that includes health and performance, socio-economic conditions, as well as mental, emotional, and spiritual aspects of the

family (Glozman 2004). Changes in the quality of lives of caregivers are inevitable. These changes are due to the chronic nature of the disease and its long-term treatment, negative experiences, no support from healthcare system, physical and emotional stresses, and devoting the time and energy to provide the home care (Belasco et al. 2006; Keighobadi et al. 2013). Studies have shown that family caregivers have an exclusive role in caring for patients undergoing hemodialysis and their quality of lives decrease in this situation (Alvarez-Ude et al. 2004; Belasco et al. 2006; Shadaifat & Abdul Manaf 2012). Similarly, Habibzadeh et al. (2009) reported the low caregivers' "quality of life" in the all aspects. Regarding the importance of caregivers, identifying, assessing, and promoting factors of their quality of lives can be useful to improve the health of both caregivers and patients (Glozman 2004).

The hemodialysis patients refer to hemodialysis centers only for undergoing hemodialysis and maybe relieving its complications. Therefore, health professionals are responsible for patients' care in these centers.

However, at home, the patient's relatives undertake this role. Thus, they should have sufficient information about patient care and prevention of hemodialysis complications (Isenberg & Trisolini 2008). However, the studies have shown that these caregivers usually lack the information and skills related to patient care; They have no social support as well. With disease progression, patients become more disabled and caregivers are confronted with more complex caring needs. One of these needs is the information about home care of these patients (Hudson et al. 2008; Mollaoglu et al. 2013).

In the study of Isenberg and Trisolini, most of the families of the hemodialysis patients have reported the lack of sufficient information about the disease, control of symptoms, and patient care. They mostly wanted to know about the food and drug management of their patients (Isenberg & Trisolini 2008). In this regard, the research results of Belasco et al. (2006) shows that 70% of hemodialysis patients caregivers are facing with 2 major problems; the caring and treatment problems and conformity with their home caring responsibilities. Also, a review study indicates the necessity of educational interventions to support these caregivers (Tong et al. 2008).

With increase in the patients caring needs, caregivers' quality of lives decrease and they experience the limitations and changes in their lives such as daily activity limitation and impairment in working and familial life which can lead to anger, anxiety, and inability to cope

with their caring roles (Belasco et al. 2006; Aydede et al. 2014). However, the caregivers of hemodialysis patients are mostly neglected and few studies are available on home care training for these caregivers (Mollaoglu et al. 2013; Khorami Markani et al. 2015). Accordingly, this study aimed to examine the effect of educational program on the “quality of life” of family caregivers of patients undergoing hemodialysis.

2. Materials & Methods

This study was a controlled clinical trial, conducted on caregivers of hemodialysis patients referred to Shahid Hasheminejad educational and medical center in Tehran, Iran. The study was conducted since February to August 2015.

Inclusion criteria for the caregivers were as follows: Being a patient's first degree relative, having the responsibility for home care of the patient, willingness to participate in the study, being 18 years or older, having writing and reading literacy, lacking any known psychological and neurological disorder, lacking any severe family conflict, not being a healthcare worker. Inclusion criteria for the patients were as follows: Performing regular hemodialysis at least 3 times a week and for 3-4 hours in each session, having no history of kidney transplantation, and having a family caregiver to do home care.

Lack of appropriate cooperation by the caregiver, participation in similar training courses, occurrence of a family crisis (divorce, financial crisis, death of a first degree family member) during the study, subject's decision to withdraw from the study, absence of even one training session, and booking the patient in the kidney transplantation list composed the patient's exclusion criteria.

To determine the required sample size with the confidence level of 95% and the power analysis of 80%, and with assuming effectiveness home care training on the quality of life in family caregivers of patients undergoing hemodialysis and based on similar studies (Bahrami & Farzi 2014; Belgam et al. 2013), d and S were estimated as 5 and 7, respectively. By using the following formula.

$$N = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 \times 2S^2}{d^2}$$

The required sample size for each group was estimated as 32 caregivers and with regard to the possibility of sample decline, 20% was added to the above sample size. Finally, the determined sample size in each group was 38.

In this study, a 2-part instrument was used. The first part was a demographic questionnaire, including questions on the caregiver's and the patient's demographic data such as the caregiver's age, gender, marital status, education level, job, type of family relationship with the patient, financial status, his or her known physical illness, and the size of their family, and also the duration of the patient's disease and using regular hemodialysis, history of kidney transplantation, membership in Dialysis Association, the patient's ability to perform his/her own personal tasks, having an active insurance coverage and the type of insurance coverage. Short-form quality of life (SF-36) questionnaire was used as the second part of the study instrument.

Quality of life (SF-36) questionnaire is a universal standard criteria. Its shortened form contains 36 items divided into 3 levels: 1) questions, 2) eight scales with any combination of 2 to 10 questions as physical health (10), bodily pain (2), general health (6), physical role functioning (4), vitality (3), emotional role functioning (3), social functioning (2), mental health (6), and 3) two summary scales forming physical health components (physical function, bodily pain, general health, physical role functioning) and mental health components (vitality, emotional role functioning, social functioning, mental health).

Each of the questionnaire domains is proportional to the questions, measured with different options, including 2 options questions (yes, no) and 6 options (at all times, often, often, sometimes, sometimes, never). The mean scale is calculated separately and the results of each scale vary from 0 to 100. To calculate the questionnaire scores, total sum obtained from each subscales dividing by 8. The obtained number is between 0-100. The lowest score on this questionnaire is 0 and maximum score is 100. Zero is the worst case and the higher scores reflect the better quality of life (Ware Jr & Sherbourne 1992).

This scale was translated to Farsi by Montazeri et al. (2005) and its validity and reliability were confirmed through content validity and internal consistency method (0.70 to 0.85), also its Cronbach α has been reported in the range of 0.70 to 0.90. Furthermore, in a preliminary study on the 30 caregivers of patients undergoing hemodialysis, the Cronbach α was calculated as 0.82. However the data of preliminary study was not used in the final analysis. The content validity of the educational booklet and demographic questionnaire was confirmed by 10 nursing professors of Shahid Beheshti University of Medical Sciences, Tehran, Iran.

After approval of the study, the first researcher referred to Shahid Hasheminejad hemodialysis center. After tak-

ing the permission from director of this center, the study subjects were selected based on the inclusion criteria through file review and interviewing the patients. The researcher introduced herself, explained the study objectives, invited the patients to cooperate and finally enrolled the study patients after taking their informed consent.

Afterward, caregivers of the patients who referred in even or odd days of the week were randomly assigned into the intervention and control groups, respectively. Then, both groups completed the questionnaire of demographic information and quality of life (SF-36) before the intervention. The 38 caregivers in the intervention group were divided into 5 small subgroups of 5 to 8 patients, and each subgroup participated in 4 training sessions on home care training, held twice a week, in 2 consecutive weeks. Each session lasted for about 1 hour in the educational hall of the dialysis center. Each session consisted of a combination of a short PowerPoint facilitated lecture, group discussion, question and answering, and role playing. Also, the phone number of researcher was given to caregivers for consultations to solve the problems and answer the questions.

In the first session, the researcher after introducing herself, explained the training program, purpose of the intervention, importance of their cooperation and participation in all training sessions. Also, she explained about the ESRD, signs and symptoms of disease, etiology, its treatments, and importance of hemodialysis for patients. At the end of the first session, an educational booklet related to the issue was given to all participants to be read and exercised at home. In the second session, the home care training on how to perform and control specific activities such as the personal care for the patient (the food and pharmaceutical regime, bathing, hygiene observance, clothing, physical activities) was explained. In the third session, subjects were trained about weight control, blood pressure, and taking care of vascular access (fistula and catheter).

They were also told the importance of adjusting the hemodialysis sessions and monitoring patient's conditions. Finally, in the fourth session, the subjects were taught about the hemodialysis complications and take appropriate actions with regard to these complications. Then, by sharing the experiences of caregivers about patient care, their problems about the home care were assessed through group discussion and role playing. The control group just have received the routine training at the center. Similar to previous studies (Bahrami & Farzi 2014; Khanjari et al. 2014; Belgcam et al. 2013), 6 weeks after the last educational session, all subjects in the intervention and control groups were again responded to the study instrument. Then, statistical analysis was performed using SPSS ver-

sion 21. Descriptive statistics such as frequencies, percentage, mean and standard deviation were calculated. Also inferential statistics such as the Chi-square test, independent samples t, t-couple, Mann-Whitney and Fisher exact test were used to compare the variables. P-value less than 0.05 was considered significant in all tests.

This study was approved by the Ethics Committee of Iran University of Medical Sciences (grant No. 94-01-28-25834-110422) and was registered at Iranian registry for clinical trial under the registration code IRCT138809032769N1 (available at: <http://www.irct.ir/user.php?lan=fa>). Permissions were also sought from the authorities of the university and the Shahid Hasheminejad hemodialysis center. All participants were briefed about the study objectives and the voluntary nature of their participation. They all signed written informed consents, assured of anonymity and confidentiality of the data and were also reminded that they can withdraw from the study at any time. To observe ethics, the caregivers in the control group were also received the educational booklet after the last assessment.

3. Results

The majority of caregivers (77.6%) had no physical disorder. Most of their patients had a low or very low ability to perform their own personal tasks (79%), and they were using regular hemodialysis for more than 2 years (76.35%) with an insurance coverage.

No significant difference was found between the mean age of the intervention and the control groups (46.57 ± 10.82 vs. 44.28 ± 8.52 y, $P=0.269$). Also the results of Table 1 show that no significant difference was found between the 2 groups with regard to other demographic variables.

No significant difference was found between the baseline mean "quality of life" scores of the 2 groups before the intervention ($P=0.039$). However, the mean "quality of life" score in the intervention group increased at the end of the study and the 2 groups were significantly different in this regard ($P<0.001$). Degree of freedom (df) was different before and after the intervention as one of the subjects in intervention group did not answer a few questions at the baseline assessment, but this subject was not removed from the study (Table 2).

The mean scores of the different domains of "quality of life" were also compared between 2 groups. Before the intervention, no significant difference was observed between them. However, the mean scores of the intervention group increased in all domains (except in physical domain) after the intervention and ($P\text{-value}<0.001$) (Table 3).

Table 1. Distribution of demographic variables in 2 groups of caregivers.

Variable	Group		Test result
	Control	Intervention	
Age, year			0.269*
<35	5(13.1)	7(18.4)	
35-45	15(39.5)	8(21.1)	
45-55	12(31.6)	12(31.6)	
>55	6(15.8)	11(28.9)	
Gender			0.99*
Female	26(68.4)	26(68.4)	
Male	12(31.6)	12(31.6)	
Family relationship with patients			0.341**
Child	17(45.9)	19(59.4)	
Spouse	11(29.7)	10(31.2)	
Sister/Brother	3(8.1)	0	
Father/Mother	6(16.2)	3(9.4)	
Marital status			0.132*
Single	6(15.8)	11(28.9)	
Married	27(71.1)	26(68.4)	
Divorced or widowed	5(13.1)	1(2.7)	
Education level			0.858*
Elementary school	4(10.5)	6(15.8)	
Intermediate school	8(21.1)	6(15.8)	
High school	15(39.5)	16(42.1)	
Academic	11(28.9)	10(26.3)	
Job			0.793*
Employed	14(36.9)	13(43.2)	
Unemployed	4(10.5)	6(15.8)	
Homemaker	20(52.6)	19(50)	
Financial status			0.785**
Unfavorable	4(10.5)	6(16.2)	
Relatively food	30(79)	28(75.7)	
Favorable	4(10.5)	3(8.1)	
Duration of hemodialysis			0.528**
Less than 1 month	2(5.2)	2(5.2)	
A few months to 1 year	6(15.8)	8(21.1)	
2 to 4 years	15(39.5)	9(23.7)	
Over 4 years	15(39.5)	19(50)	

Variable	Group		Test result
	Control	Intervention	
Size of family			0.116*
1	6(15.6)	11(28.9)	
2	12(31.6)	17(44.7)	
3	10(26.3)	4(10.5)	
≥4	10(26.3)	6(15.8)	
Type of insurance			0.763*
Social security insurance	24(66.7)	28(73.7)	
General health insurance	12(33.3)	10(26.3)	
Membership in dialysis association			0.086**
Yes	36(94.7)	30(81.1)	
No	2(5.3)	8(18.9)	

*The Chi-square test was performed.

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**The Fisher exact test was performed.

Table 2. Comparison of the mean scores of “quality of life” in the study groups before and after the intervention.

Groups	Control		Intervention		Results of independent t-test
	Mean	SD	Mean	SD	
Quality of life					
Baseline assessment	45.08	11.02	45.95	14.94	t=0.287, df=73, P-value=0.775
At the end of the study	41.74	10.51	63.51	11.55	t=8.596, df=74, P-value<0.001
Test results of the t-couple	t=2.315, df=37 P-value=0.039		t=6.855, df=36, P-value<0.001		

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4. Discussion

The results of studies indicate the necessity to train and support for caregivers of patients undergoing hemodialysis to cope with their caring roles, the new conditions of lives, and reduce the pressure arising from the care and finally to improve their quality of lives (Belasco et al. 2006; Tong et al. 2013; Aydede et al. 2014). Therefore, in this study, for the first time, an educational program was administered to the caregivers that led to the improvement of their quality of life.

The caregiving role can be associated with the feelings of compassionate, love, and intimacy in relationships. It also helps caregivers find a meaning in their lives (Gauth-

ier et al. 2007). However, with the growing number of patients and their caring needs along with the caregivers' lack of knowledge and support, the quality of lives of caregivers can decrease (Alvarez-Ude et al. 2004).

Not surprisingly, the mean score of quality of life among caregivers of patients undergoing hemodialysis was lower than 50 at the start of the current study; that is representative of the low quality of life in these caregivers. Previous studies reported that the care of patients undergoing hemodialysis creates the feeling of pressure and negative effects on caregivers' quality of lives and stated that training and attention to caring needs in these caregivers could have pos-

Table 3. Comparison of the mean of different domains of quality of life in the study groups before and after the intervention.

Groups	Baseline assessment			At the end of the study		
	Control	Intervention	Test results	Control	Intervention	Test results
Domains	Mean(SD)	Mean(SD)		Mean(SD)	Mean(SD)	
Physical health	81.7(14.4)	74.7(23.6)	t=1.544, P-value=0.127	76(13.4)	79.3(17.4)	t=0.920, P-value=0.360
Physical role functioning	34.2(29.3)	33.5(35.2)	t=0.087, P-value=0.931	30.9(2.24)	61.2(2.2)	t=5.762, P-value<0.001
Bodily pain	53(18.4)	51.8(22.1)	t=0.269, P-value=0.788	45.2(18.4)	62.1(19)	t=3.917, P-value<0.001
General health	39(10)	43.2(13.6)	t=1.232, P-value=0.222	37.6(9.9)	51(11.9)	t=5.997, P-value<0.001
Vitality	32.6(10.5)	39.8(20.2)	t=1.955, P-value=0.054	26.3(10.9)	56.7(14.8)	t=5.321, P-value<0.001
Social functioning	48.3(8.8)	46.3(19.9)	t=0.559, P-value=0.578	46(11.2)	61.5(15.4)	t=10.154, P value<0.001
Emotional role functioning	25.4(28.4)	31.5(34.1)	t=0.840, P-value=0.404	28.9(20.7)	68.4(26.7)	t=7.181, P-value<0.001
Mental health	45.3(9.5)	46.9(15.2)	t=0.549, P-value=0.585	42.7(10.3)	67.7(13)	t=9.268, P-value<0.001
Physical health components	54.3(13.2)	51.5(16.2)	t=0.802, P-value=0.425	30.5(13.49)	66.0(13.6)	t=5.326 P-value<0.001
Mental health components	35.8(10.9)	40.3(17.1)	t=1.352, P-value=0.181	33.9(9.6)	60.9(12.1)	t=10.763, P-value<0.001

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itive results on their quality of lives (Belasco et al. 2006; Shadaifat & Abdul Manaf 2012).

These caregivers are mostly neglected so that studies showed that these caregivers are often deficient in knowledge and skills related to the patient care. With increase in the patients' caring needs, their quality of life will decrease and they will have problems in the adapting to their caring roles (Aydede et al. 2014; Belasco et al. 2006). Thus, these caregivers need to be trained in their caring roles to

alleviate the problems associated with patient care at home and improve their quality of lives (Belasco & Sesso 2002; Alvarez-Ude et al. 2004).

However, no interventional studies and just a few interventional studies are available to improve their quality of lives. In a study without control group in Turkey, Mollaoglu et al. (2013) investigated the effects of education on caregivers' burden and reported that education was effective in reducing caregivers' burden.

In another study, [Khorami Markani et al. \(2015\)](#) examined the effect of a family centered educational program on home care knowledge of these caregivers and reported its positive effects; however, they have not done any intervention on their quality of lives.

Regarding these results, for the first time we decided to evaluate the effectiveness of educational program on the quality of lives of caregivers for patients undergoing hemodialysis. The present study showed that home care training can improve their quality of lives. So that it increased the mean(SD) of caregivers' quality of lives from 45.9(14.9) to 63.5(11.5). Similar to the present research, several previous studies on caregivers of patients with cerebrovascular accident, cancer, diabetes, cardiac and mental disorders showed that training the caregivers can significantly increase their self-esteem, perceived health and quality of life, and eventually will increase the quality of patients' care ([Oupra et al. 2010](#); [Belgacem et al. 2013](#); [Grey et al. 2011](#); [Etemadifar et al. 2014](#); [Pahlavan-zadeh et al. 2010](#); [Bahrami & Farzi 2014](#)).

Also, the results of current study showed that these caregivers had a lower quality of lives in the domains of emotional role functioning, general health, mental health, and vitality. However, they were better in the physical health domain before the intervention. In this context, the results of a study in Spain showed that quality of lives of caregivers were significantly low in the aspects of social support, emotional, and mental health ([Rivera-Navarro et al. 2009](#)). [Alvarez-Ude et al. \(2004\)](#) also reported the low quality of life in the domains of physical, social, and emotional in the caregivers of patients undergoing hemodialysis. They reported that the caregivers with high burden had a lower "quality of life" scores in the domains of social support and mental health ([Alvarez-Ude et al. 2004](#)).

After the intervention, our results showed the highest increase of the "quality of life" scores in the domains of emotional health, mental health, vitality, and the social function. Similarly, the results of a study on caregivers of women with breast cancer showed that after the administration of the supportive educative program, their quality of lives in physical, emotional and mental domains significantly increased, but not in the social domain ([Bahrami & Farzi 2014](#)). Also in the present study, the caregivers had no consensus over the provided services by the Dialysis Association Society, therefore the lower score of social domain can be related to the insufficient social support of caregivers from the Dialysis Society.

The study of [Tong et al. \(2013\)](#) showed that besides knowledge and skills on coping with caring role, caregiv-

ers of hemodialysis patients need counseling, empathy, and psychological support. The results of previous studies showed that group discussions and sharing experiences among caregivers were effective in providing ways for giving and receiving empathy and psychological support ([Isenberg & Trisolini 2008](#); [Khanjari et al. 2014](#)).

Also in the current study besides group discussion, we used role playing to educate home care, and gave caregivers the researcher's phone number to ask any caring questions. It can be acknowledged that using the different methods of education such as role playing, group discussion, question and answer, and phone consultation was helpful in the better learning and practical application of the learned skills and improving the caregivers' quality of lives.

In conclusion, the current study showed the effectiveness of educational program on the quality of lives of family caregivers of patients undergoing hemodialysis. Presently, few programs are running on educating family caregivers in the health care system of Iran and caregivers of patients undergoing hemodialysis are almost ignored. Authorities and policymakers in the healthcare system are responsible to take strategies to integrate educational programs (such as the program implemented in the current study) into the country's healthcare system. Additionally, the importance of educating and empowering family caregivers should be emphasized in in-service and continuing nursing educations.

This study was conducted only on caregivers of patients in one dialysis center, the small sample size and relatively short time follow-up might also be considered as limitations to generalize the findings of this study. Therefore, replication of similar studies with larger sample sizes and longer periods of follow-up is recommended.

Conflict of Interests

The authors declared no conflict of interests.

Acknowledgements

This resultant article has been part of the master's thesis of the author and also is the research project approved by Iran University of Medical Sciences (Project No. 94-01-28-25834) and was funded by Research Deputy of Iran University of Medical Sciences. At the end, the authors are deeply thankful to the authorities in Shahid Hasheminejad Hemodialysis Center and all family caregivers who participated in this study.

References

- Aghighi, M, Mahdavi-Mazdeh, M, Zamyadi, M, Heidary Rouchi, A, Rajolani, H & Nourozi, S 2009, 'Changing epidemiology of end-stage renal disease in last 10 years in Iran', *Iranian Journal Kidney Disease*, vol. 3, no. 4, pp. 192-196.
- Alvarez-Ude, F, Valdes, C, Estebanez, C, Rebollo, P & Group, FS 2004, 'Health-related quality of life of family caregivers of dialysis patients', *Journal of Nephrology*, vol. 17, no. 6, pp. 841-850.
- Arefzadeh, A, Lessanpezeski, M & Seifi, S 2009, 'The cost of hemodialysis in Iran', *Saudi Journal of Kidney Diseases and Transplantation*, vol. 20, no. 2, pp. 307.
- Aydede, SK, Komenda, P, Djurdjev, O & Levin, A 2014, 'Chronic kidney disease and support provided by home care services: A systematic review', *BMC Nephrology*, vol. 15, no. 1, pp. 118.
- Ayoub, AM & Hijjazi, KH 2013, 'Quality of life in dialysis patients from the United Arab Emirates', *Journal of Family & Community Medicine*, vol. 20, no. 2, pp. 106-112.
- Bağ, E & Mollaoglu, M 2010, 'The evaluation of self-care and self-efficacy in patients undergoing hemodialysis', *Journal of Evaluation in Clinical Practice*, vol. 16, no. 3, pp. 605-610.
- Bahrami, M & Farzi, S 2014, 'The effect of a supportive educational program based on COPE model on caring burden and quality of life in family caregivers of women with breast cancer', *Iranian Journal of Nursing and Midwifery Research*, vol. 19, no. 2, pp. 119-126.
- Belasco, AG, Barbosa, D, Bettencourt, AR, Diccini, S & Sesso, R 2006, 'Quality of life of family caregivers of elderly patients on hemodialysis and peritoneal dialysis', *American Journal of Kidney Diseases*, vol. 48, no. 6, pp. 955-963.
- Belasco, AG & Sesso, R 2002, 'Burden and quality of life of caregivers for hemodialysis patients', *American Journal of Kidney Diseases*, vol. 39, no. 4, pp. 805-812.
- Belgacem, B, Auclair, C, Fedor, MC, Brugnon, D, Blanquet, M, Tourmilhac, O et al 2013, 'A caregiver educational program improves quality of life and burden for cancer patients and their caregivers: A randomised clinical trial', *European Journal of Oncology Nursing*, vol. 17, no. 6, pp. 870-876.
- Brunner, LS, Smeltzer, SC, Bare, BG, Hinkle, JL & Cheever, KH 2010, *Brunner & Suddarth's textbook of medical-surgical nursing*, Lippincott Williams & Wilkins, Philadelphia.
- Etemadifar, S, Bahrami, M, Shahriari, M, Farsani, AK 2014, 'The effectiveness of a supportive educative group intervention on family caregiver burden of patients with heart failure', *Iranian Journal of Nursing and Midwifery Research*, vol. 19, no. 3, pp. 217-223.
- Gauthier, A, Vignola, A, Calvo, A, Cavallo, E, Moglia, C, Sellitti, L et al 2007, 'A longitudinal study on quality of life and depression in ALS patient-caregiver couples', *Neurology Journal*, vol. 68, no. 12, pp. 923-926.
- Grey, M, Jaser, SS, Whittemore, R, Jeon, S, Lindemann, E 2011, 'Coping skills training for parents of children with type 1 diabetes: 12-month outcomes', *Nursing Research Journal*, vol. 60, no. 3, pp. 173-181.
- Glozman, JM 2004, 'Quality of life of caregivers', *Neuropsychology Review*, vol. 14, no. 4, pp. 183-196.
- Hudson, P, Quinn, K, Kristjanson, L, Thomas, T, Braithwaite, M, Fisher, J et al 2008, 'Evaluation of a psycho-educational group programme for family caregivers in home-based palliative care', *Journal of Palliative Medicine*, vol. 22, no. 3, pp. 270-280.
- Isenberg, KB & Trisolini, M 2008, 'Information needs and roles for family members of dialysis patients', *Dialysis & Transplantation Journal*, vol. 37, no. 2, pp. 50-57.
- Keighobadi, S, Neishabouri, M, Haghghi, N & Sadeghi, T 2013, 'Assessment of Quality of life in Caregivers of Patients with Mental Disorder in Fatemie hospitals of Semnan city', *Journal of Nursing and Midwifery*, vol. 22, no. 79, pp. 36-44.
- Khanjari, S, Seyedfatemi, N, Borji, S, Haghani, H 2014, '[Effect of Coping Skills Training on Quality of Life among Parents of Children with Leukemia (Persian)]', *Hayat*, vol. 19, no. 4, pp. 15-25.
- Khorami Markani, A, Saheli, S, Sakhaei, S & Khalkhali, HR 2015, 'The effect of family centered care educational program on home care knowledge among caregivers of patients with chronic renal failure under hemodialysis', *Journal of Nursing and Midwifery Urmia University of Medical Sciences*, vol. 13, no. 5, pp. 386-394.
- Low, J, Smith, G, Burns, A & Jones, L 2008, 'The impact of end-stage kidney disease (ESKD) on close persons: A literature review', *NDT Plus*, vol. 1, no. 2, pp. 67-79.
- Mollaoglu, M 2006, 'Perceived social support, anxiety, and self-care among patients receiving hemodialysis', *Dialysis & Transplantation Journal*, vol. 35, no. 3, pp. 144-155.
- Mollaoglu, M, Kayataş, M & Yürügen, B 2013, 'Effects on caregiver burden of education related to home care in patients undergoing hemodialysis', *Hemodialysis International Journal*, vol. 17, no. 3, pp. 413-420.
- Mousavi, S, Soleimani, A & Mousavi, M 2014, 'Epidemiology of end-stage renal disease in Iran: A review article', *Saudi Journal of Kidney Diseases and Transplantation*, vol. 25, no. 3, pp. 697.
- Oupra, R, Griffiths, R, Pryor, J & Mott, S 2010, 'Effectiveness of Supportive Educative Learning programme on the level of strain experienced by caregivers of stroke patients in Thailand', *Journal of Health & Social Care in the Community*, vol. 18, no.1, pp. 10-20.
- Pahlavanzadeh, S, Heidari, FG, Maghsudi, J, Ghazavi, Z & Samandari, S 2010, 'The effects of family education program on the caregiver burden of families of elderly with dementia disorders', *Iranian Journal of Nursing and Midwifery Research*, vol. 15, no. 3, pp. 102.
- Palma, E, Simonetti, V, Franchelli, P, Pavone, D & Cicolini, G 2012, 'An Observational Study of Family Caregivers' Quality of Life Caring for Patients With a Stoma', *Gastroenterology Nursing Journal*, vol. 35, no. 2, pp. 99-104.
- United States Renal Data System 2014, *USRDS annual data report: Epidemiology of kidney disease in the United States*, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD.
- Rivera-Navarro, J, Benito-León, J, Oreja-Guevara, C, Pardo, J, Dib, WB, Orts, E & Belló, M 2009, 'Burden and health-related quality of life of Spanish caregivers of persons with multiple sclerosis', *Multiple Sclerosis Journal*, vol. 15, no. 11, pp. 1347-1355.

Shadaifat, EA, & Abdul Manaf, M 2012, 'Quality of Life of Caregivers and Patients Undergoing Haemodialysis at Ministry of Health, Jordan', *International Journal of Applied Science and Technology*, vol. 2, no. 3, pp.1-10.

Tong, A, Palmer, S, Manns, B, Craig, JC, Ruospo, M, Gargano, L et al 2013, 'The beliefs and expectations of patients and caregivers about home haemodialysis: An interview study', *BMJ Open*, vol. 3, no. 1, pp. e002148.

Tong, A, Sainsbury, P & Craig, JC 2008, 'Support interventions for caregivers of people with chronic kidney disease: A systematic review', *Nephrology Dialysis Transplantation*, vol. 23, no. 12, pp. 3960-3965.

Ware Jr, JE & Sherbourne, CD 1992, 'The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection', *Medical Care*, vol. 30, no. 6, pp. 473-483.