Biomedical & Pharmacology Journal Vol. **8** (March Spl Edition), 131-137 (2015)

An Investigation on the Effect of Continuous Care Model on Depression, Anxiety and Stress Among Renal Transplant Patients

ZAHRA SALEHI, MOHSEN TAGHADOSI * and MOHAMMAD REZA AFAZEL

Department of Medical Surgical Nursing, School of Nursing and Midwifery,
Kashan University of Medical Sciences, Kashan, Iran.
*Corresponding author E-mail: taghadosi_m@kaums.ac.ir

DOI: http://dx.doi.org/10.13005/bpj/569

(Received: February 10, 2015; accepted: March 10, 2015)

ABSTRACT

Renal transplant patients suffer from various mental and spiritual problems due to their fear of transplant rejection. In spite of some advancement in medical treatment of these patients, their mental problems are less considered. This research aims to study the effect of the continuous care on renal transplant patients' depression, anxiety, and stress in Kashan. The study was conducted in 2014. This is a clinical trial with 80 participants randomly classified into two groups of 40. Finally, there were 35 in each group. Data were gathered by the demographic questionnaire and the specialized depression, anxiety, and stress scale (DASS-21) completed before and after the intervention. The control group received ordinary care and the experimental group received the continuous care for 3 months. Data were then analyzed by descriptive statistic, paired sample t-test and Mann–Whitney test with SPSS13. The participants' age mean was 48.19 ± 10.79. 43 were male and all transplantations were from mostly married strangers. There was no significant difference between two groups in terms of context features. Applying the continuous care model to the experimental group significantly reduced the mean scores for depression ($p = 0.003$), anxiety ($p = 0.04$), and stress ($p = 0.01$). However, no significant difference was observed in the control group. Additionally, there was no significant difference in depression, anxiety, and stress between two groups after the intervention. Applying the continuous care model reduces the mental disorders among renal transplant patients. So, to reduce the level of depression, anxiety, and stress, this model can be used.

Key words: Depression, Anxiety, Stress, Continuous Care Model, Renal Transplantation.

INTRODUCTION

Chronic kidney disease is the progressively destruction of kidney nephrons and performances. Patients are finally put under dialyze or renal transplant[1]. The appearance of the end stage renal disease, which requires renal replacement therapy such as dialyze and renal transplantation, is increasing[2]. The prevalence of chronic kidney disease around the world is 242 cases in a million. About 8 percent is added to this number annually[3]. Since the first renal transplant in 1950, transplant therapy has considerably advanced and now the one-year survival after the transplant is about 90 percent[4]. Dialysis and transplantation are preferred for patients with chronic kidney disease due to several reasons including return to health, improved nutrition model, limited liquid consumption during dialysis, long-term survival, low cost, and better life quality[5-6]. Renal transplantation is a complicated process in which since being nominated for that, blood tests, measuring consistency, transplantation, investigation the vital systems, and caring the transplanted kidney all create and maintain psychological reactions in patients[7]. Common

tension factors include suffering imposed therapies, therapeutic diets, changing the mental self-image, financial problems, losing job, sexual problems, fear from transplant rejection, and return to dialysis, lasting throughout a patient's life[8,9]. Tension factors can have a negative effect on patients' performance and interpersonal relations[10]. The outcomes of tension factors are physical and psychic problems, more intense pain, reduced rehabilitation and self-care power, and finally inability, lack of self-confidence, affinity, and loss of social performance[11]. Fokunishi and Perez (2008) showed that mental disorders and anxiety progressively increase after kidney transplant[12,13]. Depression is considered as an independent factor in death rate[14]. According to previous reports, more than one third of patients suffer from depression and a half of them experience anxiety after transplantation[15]. Harirchin (Tehran) also reported that kidney transplant did not have any impact on patients' psychological problems and general health[16].

Kidney transplantation is of chronic diseases. The purpose of therapy is not eliminating and terminating the disease but keeping the patient's performance. This requires a close connection between medical and educational cares so that the self-care ability and life conformity increase among patients[17]. Patients' conformity requires the treatment team to acquire awareness and specialized skills by protecting, leading and predicting the patients' revolutionary and educational environment[18]. Care is the foundation of nursery and the related activities[19]. The most important purpose of care is to reduce the intensity

Table 1: Way of scoring DASS-21

Intensity	Intensity of Each Subscales		
	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Slight	10-13	8-9	15-18
Average	14-20	10-14	19-25
Strong	21-27	15-19	26-33
Very Strong	+28	+20	+33

Table 2: The frequency distribution of patients' demography

Variable group		Conventional Care		Continuous Care		Chi-Square
		Number	Percent	Number	Percent	P-Value
Sex	Male	21	60	22	62.9	1
	Women	14	40	13	37.1	
Age	Mean 11.23 ± 49.74	Mean 10.35 ± 46.650.198				
Marital Status	Married	33	94.3	33	94.3	1
	Single	2	5.7	2	5.7	
Education	Illiterate	2	5.7	6	17.1	0.282
	Under Diploma	16	45.7	16	45.7	
	Over Diploma	17	48.6	13	37.1	
Employment	Employed	14	40	14	40	1
	unemployed	21	60	21	60	
Giver	Alive	28	80	24	68.6	0.412
	Dead	7	20	11	31.4	
Duration of transplant	Mean 3.12 ± 5.23	Mean 2.99 ± 4.220.055				
Giver relation	Stranger	35	100	35	100	
	relative	-	-	-	-	
Systemic disease	Diabetes	6	17.1	6	17.1	0.801
	High Pressure	7	20	10	28.6	
	Diabetes	11	31.4	11	3174	
	High Pressure	11	31.4	8	22.9	
	None	11	31.4	8	22.9	

of symptoms and stress in order to improve the quality of life[20]. In spite of wide care and health interventions for these patients, they still endure numerous physical and mental problems[21]. One offered measure to lessen patients' problem is using continuous care. The continuous care model was first developed and assessed by Ahmadi (2001) for patients with chronic coronary artery diseases. The continuous care refers to a well-arranged and consistent process for creating an effective, balanced and continuous relationship between the patient, as the factor of continuous care, and the health and care service provider (nurses) in order to recognize patients' needs, problems and sensitivities to have continuous health behavior and to help them improve their health. The main purpose of this model is to design and develop a program resulting in accepting and reinforcing an appropriate insight to have continuous care for controlling the disease and the probable effects. This model consists of four stages of familiarizing, making sensitive, controlling and appraising. The fundamental functions of this model include diagnosing the disease and its nature, identifying the potential problems of the disease, accepting the disease and its effects, playing the role of self-control, investing in health care, engaging family in managing the current and future issues, changing the life style, improving self-confidence, and identifying the therapy team[19].

Table 3: The statistical indices of physic disorders in both groups before intervention

Groups psychic disorders	Continuous Care Mean ± Standard Deviation	Conventional Care Mean ± Standard Deviation	P-Value
Depression	14.85 ± 9.68	14.68 ± 10.48	0.9
Anxiety	16.25 ± 8.75	13.71 ± 10.82	0.2
Stress	21.02 ± 10.27	20.68 ± 10.85	0.8

Table 4: The statistical indices of physic disorders in both groups after and before intervention

Groups	Continuous Care			Conventional Care		
psychic disorders	Mean ± Standard Deviation (before intervention)	Mean ± Standard Deviation (after intervention)	P-value	Mean ± Standard Deviation (before intervention)	Mean ± Standard Deviation (after intervention)	P-value
Depression	14.85 ± 9.68	11.65 ± 9.19	0.003	14.68 ± 10.48	14.29 ± 9.74	0.6
Anxiety	16.25 ± 8.75	14.05 ± 9	0.04	13.71 ± 10.82	12.97 ± 8.7	0.3
Stress	21.02 ± 10.27	18.97 ± 17.13	0.01	20.68 ± 10.85	20.29 ± 10.79	0.2

Table 5: The statistical indices of physic disorders in both groups after intervention

Groups psychic disorders	Continuous Care Mean ± Standard Deviation	Conventional Care Mean ± Standard Deviation	P-Value
Depression	11.65 ± 9.19	14.29 ± 9.74	0.1
Anxiety	14.05 ± 9.8	12.97 ± 8.7	0.7
Stress	18.97 ± 17.13	20.29 ± 10.79	0.1

In some research studies, this model was used for other chronic diseases, life quality, sleep, mental disorders and the positive effects were reported. Ghavami argued that implementing this model for continuous care resulted in improved life quality among patients with diabetes (22). Sadeghi assessed the effect of this model on the life quality of patients with heart failure and how it could help them improve the quality of their life (23). However the effect of this model on patients' stress, anxiety, and depression after kidney transplantation has not been studied. Given the increasing growth of patient with kidney transplantation and their mental and psychic problems, using a care model matching with their conditions seems critical. After transplantation, patients now only receive medical treatments and their psychic problems are less considered. One proposed care model for chronic diseases is the continuous care model, the results of applying it to patients with kidney transplantation have not though evaluated. The researcher intended, thus, to carry out this research to find the effect of the continuous care model on stress, anxiety, and depression among patients with kidney transplantation in Kashan, 2014.

Research Methodology

This is a clinical trial which was carried out on all patients with renal transplantation in Kashan between 2004 and 2014. This research engaged patients over 18 years old with transplantation duration of more than 6 months and less than 10 years without psychiatric treatment. Patients with acute physical conditions requiring hospitalization, with diagnosed psychic problem, and/or critical conditions in life (divorce, close relatives' death) were eliminated from the study. In recent 10 years, 166 have had renal transplantation. 99 were present, others had transplant rejection and under dialysis, or had died. 10 were not available because of immigration. Ultimately, 80 participants randomly classified into two groups of 40. During the study, one because of dissatisfaction, 3 because of transplant rejection and 6 because of hospitalization left the study. Finally, there were 35 in each group. At first, the research purposes and methodology were explained to patients and a written consent was taken from participants. Data were gathered by the demographic questionnaire and the specialized depression, anxiety, and stress scale (DASS-21) completed by patients before and after the intervention to assess the level of stress, anxiety, and depression. The questionnaire includes 21 questions and each of studied indices included 7 questions. Each question had a 0-3 Likert Scale. The table 1 indicates the way of scoring. This questionnaire was first presented by Lavibond in 1995 and tested for a large human sample. This questionnaire was employed in UK for a large number of patients and its validity and reliability has been confirmed[24].

The control group received the conventional interventions and the experimental group received the continuous care (in addition to conventional interventions) including four stages. The continuous care model was carried out in four stages of familiarizing, making sensitive, controlling, and appraising. The purpose of familiarizing was to correctly introduce the problem, motivate, and make them feel in need of this process. To do this, a 30-45 minute session in the presence of patients and one of the family member was held in order to introduce the stages, encourage patients, refer to patients' expectations from the health team and the health team's expectations from patients, and emphasize on the necessity of the continuity of the care relation by the end of the related time.

The trend of making sensitive relates to involving patients and their family in the process of implementing the continuous care approach. The interventions were carried out in forms of counseling sessions, group discussion, speech, question and answer, and individual sessions. Sessions were held in the Protective Association of Kidney Patients in Kashan. Participants were divided into groups of 12 with separate hours but with similar conditions. Four 1-2 hour sessions were held regarding the patients' endurance level. In case of problems out of the researcher's specialization and knowledge, the patients were referred to the specialist. The educational sessions were as follows: first session was explaining about kidney and its functions in the body, kidney failure and its types, causes and the methods of treatment including hemodialysis, peritoneal dialysis, and kidney transplantation. Second session was explaining about cares after renal transplantation. The most important factor in

keeping the transplanted kidney is the correct and on-schedule consumption of immunosuppressive drugs. The effects of these drugs include diabetes, obesity, hirsutism, acne, etc. which should not cause consumption stoppage. Patients should consult about them with their physicians and according to them they should change them. The other important point is personal sanitation, not being in crowded places and preventing from people with infective diseases. Observing symptoms such as fever, gaining weight, reduced urination, burning urination, and any pain in the point of transplanted kidney, patients should visit a nephrologist or a nurse. Patients were then provided with a summary of these educational issues.

Third and fourth sessions were held as question and answer sessions, group discussion and expression of patients' experiences. In the third stage, the follow-up and control of patients was done in three months and by a phone call with the researcher at the time of patient's need and at least a phone call in a week from the researcher with the patient. According to patients' demand, the individual appointment was held at patients' home or in the Protective Association of Kidney Patients. In the control group, the monthly contacts were done to be informed about their conditions. The final stage of appraisal completed one month after additional control by completing the questionnaires of stress, anxiety, and depression in the first stage.

Ultimately, data were then analyzed by descriptive statistic, paired sample t-test and Mann–Whitney test with SPSS13. The level of significance was considered at 0.05 ($p<0.05$).

Findings

According to results, among 70 participants with mean age 10.79 ±48.19, 43 were mostly married and unemployed males. Most of transplantation was from live givers. None of them had family relationship and averagely 3.05 ± 5.22 years had passed from their transplantation. Most people had a systemic disease. Table 2 presents separately the participants' demography.

Findings show that there is no significant difference between two groups in demographic features

Table 3 presents the mean scores of stress, anxiety, and depression in two groups before intervention.

Findings show that the mean scores for depression, anxiety and stress are significantly reduced after continuous cure in the experimental group. No significant difference, however, was observed in the control group.

Findings show that there is no significant difference between two groups in the mean scores of stress, anxiety, and depression.

DISCUSSION

Findings showed that implementing the continuous cure model for three months significantly decreased depression, anxiety and stress. Since patients forget the medical recommendations after discharging, the information should be supported. Thus, presenting educational contents, continuous face to face and phone follow-ups, delivering the needed guidelines and referring the patients to a specialist, the researcher tried to solve this problem. Evaluating the continuous cure model in hemodialysis patients, Ahmadi reported that stress, anxiety and depression decreased by applying this model (19). Raeisifar revealed that applying this model improved the renal transplant patients' life quality (26). In their research review titled "phone continuous care after heart revival", Foruya and Mata concluded that phone follow-up made positive statistical changes in patients' quality of life, mood symptoms and anxiety (27). Pomer thinks that educational sessions and personal advisements are effective in reducing chronic patients' anxiety and depression (28). Implementing medical program by nurses including education, counsel, control and follow-up, Vest et al. disclosed that patients' life quality has been both physically and mentally improved (29). In two separate studies, Haines and Cynthia showed the effectiveness of using Mindfulness-Based Stress Reduction (MBSR) including 8-10 week groups sessions, body-relaxing training, yoga gestures, and meditation during daily activities in reducing depression, anxiety, and stress (30, 31). Salesi stressed that less intense regular physical activities positively affected patients' depression, anxiety and

stress (32). On the other hand, there was no significant difference between two groups after the intervention in depression, anxiety and stress scores, because the mean score for the control group had rather decreased. The reduction was not significant, it can though relate to their conventional cures and the supports of the Supportive Association of Kidney Patients. It is, therefore, suggested that beside conventional cures, the appropriate ground is provided for implementing the model of continuous cure. This helps improving the nursery services in case of caring patients and reducing mental disorders.

ACKNOWLEDGEMENTS

The research team expresses its gratitude from the Research Assistance of Kashan Medical Sciences University due to their financial supports, from the head of the Protective Association of Kidney Patients and the nurse of kidney transplantation ward in Akhavan because of their cooperation in having access to renal transplant patients and in holding educational sessions, and from patients participated in this research and helped us in better conduction of this research.

REFERENCES

1. Zamanzade V, Heydarzade M, Ashvandi KH, Lak DS. Realationship between quality of life and social supportive hemodialysis patient. *Med J Tabriz Uni Sci*. **7**(29):49-54 (2007).
2. Couchoud C,Stengel B.The renal epidemiology and information network ;a new registery for end stage renal disease in france. *Nephrol Dial Transplant* **21**:411-418 (2006).
3. Sajadi M. Relationship of selfcare and depression in patients treated with maintenance hemodialysis. J Ofogh Danesh. *Med Sci and Health Serv Gonabad.* **41**(1):14-7 (2008).
4. Fiebiger W, Mittebauar C, Oberbauer R. Health –related quality of life outcomes after kidney transplantation. *Heal Qual Life Outcomes* **2**: 2-4 (2004).
5. Schold JD, Meier-Kriesche HU. Which renaltransplant candidates should accept marginal kidney in exchange for a shorterwaiting time on dialysis?clinical *Journal of the American society of Nephrology*. **1**(3):532-8 (2006).
6. Oniscu GC, Brown H,Forsythe JLR. Impact of cadavric renal transplantation on mmunosu in patients listed for transplantation. *Journal of the American society of Nephrology*. **16**(6):1856-65 (2005).
7. Fogarty C, Cronin P. Quality for health care a concept analysis. *Journal of advanced nursing*. **61**(4):463-71 (2008).
8. Kaneku H, Terasaki P. Thirty year trend in kidney transplants: UCLA and UNOS renal *transplant registery clinical transplant.* **1**(27):17-21 (2006).
9. Kollar A,Denhaerynck K, Moons P, Steiger J, Bock A, De Gast S. Distress associated with advers effects of mmunosuppressive medication (*Aliso Viejo Calif*) **20**(1):40 (2010).
10. Boyd MA, editor. Psychiatric nursing contemporary practice. 4 th ed. New York Lippincott Williams and Wilkins (2007).
11. Bollinger Lc, editor depression,substance abuse and collage students. Engagement: a review of literature. USA : The National Center on Addiction and Substances Abuse at Colombia University, 1-62 (2003).
12. Fukunishi I, Hasegawa A, Ohara T, *et al*.kidney transplantation and liaison psychiatry, part 1: Anxiety befor and the prevalenc rate of psychiatric disorders befor and after transplantation. *Psychiatric Clin Neuroci* **51**:301-4 (1997).
13. Perez San-Gregorio M, Martin –Rodriguez O. Influence of the sychological state of relatives on the quality of life patients at 1 year after transplantation. *Transplantation Proc*. **40**:3109-11 (2008).
14. Novak M, Molnar MZ,Kovacs AZ, Vamos EP, Zoller R, Keszei A, Mucsi I.. Depression symptoms and mortality in patients after kidney transplantation: a prospective prevalent cohort study. *Psychosom Med,*

72(6) :527-34 (2010).

15. Masoudi Alavi N,Sharifi KH,Aliakbarzadeh Z.Depression and anxiety in patients under taken renal replacement therapy in kashan during 2008.Fayz J. **4**(12):46-51 (2009).
16. Harirchi AM, Rasouli A, Montazeri A, Eghlima M. Hemodialysis and renal – transplantat recipients: Comparision of the qualityof life. *Payesh*.**2**:117-21 (1983).
17. Beck Black R, Dornan DH, Allegrant JP. Chalenges in developing health promotion services for chronically ill. *Soc work.* **31**(4): 287-93 (2001)
18. Jaarsma T, Halfens R, Senten M, Abu Saad HH, Dracup K. Developing a supportive-educative program for patients with advanced heart failure within Orem's general theory of nursing. *Nurs Sci Q*.Summer; **11**(2):79-85 (1998)
19. Rahimi A, Ahmadi A, Gholyaf M. The effect of continuous care model on depression, anxiety and stress in patients on hemodialysis. *Nephro Nurs J*.**35**: 39-44 (2008).
20. King CR, Hind P. Quality life form nursing and patients perspectives. Boston: *Jonse and Bantlett Publishers;*197-201 (1998).
21. Cumbie SA, et al. Advanced practice nursing model for comprehensive care with chronic illness: Model for promoting process engagement. *Adv Nurs Sci.***27**(1):70-80 (2004).
22. Ghavami H, Ahmadi F, Meamarian R. The effect of continuous care model on diabetic patients blood pressure. *J Med Edu.* **2**(6):87-97 (2006).
23. Sadeghi Sharme M, Alavi F,Ahmadi F, Karimi Zarchi A, Babatabar Darzi H, Ebadi A, et al. Effect of applying continuous care model on quality of life in heart failure patients. *Journals of Behavioral Sciences.* **3**(1):9-1 (2009).
24. Crawford JR, Henry JD. The Depression Anxiety Stress Scales (DASS). Normative data and latent structure in a large non-clinical sample. *Br J Clin Psychol* **42**:111-31 (2003).
25. Khayam Nekouei Z, Yousefi A, Manshaee Q. The effect of cognitive-behavioral therapy on improvement of cardiac patients life quality. *Iranian Journal of Medical Education .* **10**(2):148-54 (2010).
26. Raiesifar A, Tayebi A, Najafi Mehri S, Ebadi A, Einollahi B, Tabibi H, Bozorgzad P, Saii A. Effect of Applying Continuous Care Model on Quality of Life Among Kidney Transplant Patients .IJKD **8**:139-44 (2014).
27. Furuya RK, Mata LR, Veras VS, Appoloni AH, Dantas RA, Silveira RC, Rossi LA Original Research: Telephone Follow-Up for Patients After Myocardial Revascularization: a Systematic Review. *Am J Nurs.* **113**(5) :28-31 (2013).
28. Pommer A, Pouwer F, Denollet J, Pop V. Managing co-morbid depression and anxiety in primary care patients with asthma and/or chronicobstructive pulmonary disease: study protocol fora randomized *controlled trial*. **3**(6): (2012)
29. West J. A comprehensive management system for heart failure improves clinical outcomes and reduce medical resource utilization. *American Journal of Cardiology .* **79**(5):58-63 (2003).
30. J. Haines, K. C. Spadaro, J. Choi, L. A. Hoffman, A. M. Blazeck. Reducing Stress and Anxiety in Caregivers of Lung Transplant Patients: Benefits of Mindfulness Meditation. *International Journal of Organ Transplantation Medicine* **5**(2):50-56 (2014)
31. R. Gross, Mary Jo Kreitzer, William Thomas, Maryanne Reilly-Spong, Michel Cramer-Bornemann, John A. Nyman, et al. Mindfulness-Based Stress Reduction for Solid Organ Transplant Recipients. *Altern Ther Health Med.* **16**(5): 30–38 (2010).
32. Salesi M, Shakoor E, Pooranfar S, Koushkie Jahromi M, Roozbeh J. The Effect of a selected exercise on, stress, anxiety and depression in kidney transplant patients. *Pars Journal of Medical Sciences*, **12**(3):31-38 (2014).