

# EFFECT OF A CONFINED PROGRAM OF HOME-CARE ON THE HEALTH STATUS OF PATIENTS RECEIVING HEMODIALYSIS

H. Babamohammadi\* and H. Khalili

Department of Medical Nursing, Semnan University of Medical Sciences, Semnan, Iran

**Abstract-** The role of education in improving quality of life of patients with chronic renal failure has been emphasized by many studies. This survey was performed to assess the effect of a confined program of home-care on the health status of patients who were receiving hemodialysis. In this research, 37 patients afflicted by chronic renal insufficiency were chosen and put into two categories randomly, 19 patients as patients group and 18 patients as control group. At the start of therapy, the patients' health condition was assessed and recorded. For the patients group a confined program of home-care, containing four visits per month (one session every week) was performed. No intervention was performed for the control group. After the complete performance of home-care programs, the health condition of both groups were assessed and recorded again. The results of the research showed that after the home-care program, weight gain, nausea, vomiting, headache, bone pain, weakness and fatigue and itching decreased and general condition and levels of BUN, creatinine, potassium and phosphorus of the blood improved in cases compared to the controls ( $P < 0.05$ ); the mean values of blood pressure, pulse and temperature, sodium, calcium and hematocrit level were not significantly changed. It is concluded that home-care program as an effective and beneficial method can be applied in chronic diseases such as chronic renal insufficiency and for patients who are under the hemodialysis treatment.

*Acta Medica Iranica*, 44(1): 28-32; 2006

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**Key words:** Home-care, health status, hemodialysis, chronic renal failure

## INTRODUCTION

Increased survival rate of patients with chronic disorders should be accompanied by improvement in their quality of life. Along with health workers, patients should have active involvement in promotion of quality and quantity of their life and it is obvious that this goal is not achievable unless these groups of patients acquire adequate knowledge about their treatment and care.

One of the important chronic diseases is chronic renal failure (CRF), affecting 30 to 60 millions people

the world (1, 2). In first half of the year 1996, more than 6386 persons were under treatment at 123 hemodialysis centers in our country, Iran (3).

The role of education in resolving problems of dialysis patients has been emphasized by many scientists (4) but this process does not succeed unless person is ready for learning (5). Redman stated that factors such as cognitive problems, problem-solving ability, psychomotor skills and motivation affect learning (6). Nearly all of the studies performed on the hemodialysis patients show that hemodialysis period is not an appropriate time for education because of cognitive problems in patients (7, 8). Since there are minimum of cognitive changes and maximum of readiness at one day before dialysis schedule, it has been proposed as the best time for education of these patients (4).

Received: 24 Dec. 2003, Revised: 21 Apr. 2005, Accepted: 26 Jun. 2005

**\* Corresponding Author:**

H. Babamohammadi, Department of Medical Nursing, School of Medicine, Semnan University of Medical Sciences, Semnan, Iran  
Tel: +98 231 3330014-16; Fax: +98 231 3330014  
E-mail: babamohammady2001@yahoo.com

Overall, the literature on patient education in a nephrology setting focuses on effectiveness, the factors affecting effectiveness and tools utilized for patient education. Most of the studies deal with medication, diet and modality choice. Although these areas are indeed important, the literature suggests that more attention is needed to be paid to those areas that are reported to be of higher interest to the patients (9-12).

There are many complex issues surrounding patient education in a nephrology setting. Not only is the information detailed and the regimen frequently changing, there is often suspected cognitive impairment that enters into the equation. Martin-Lester reported that "in the presence of suspected cognitive impairment, nursing management should emphasize techniques that provide individualized, innovative and ongoing reinforcement of treatment goals and outcomes" (13). Other factors that can affect renal patients' ability to learn include the concomitant life style adjustments, changes in social relationships, and problems with body image and sexual performance. The literature on patient education in the area of nephrology also addresses the various methods or tools utilized (14-16).

Based on our experiences that support more physical and mental readiness of patients between dialysis schedules (at home), we decided to study the effects of a confined program of home-care on the health status of hemodialysis patients.

## MATERIALS AND METHODS

A total of 37 patients who were afflicted by chronic renal insufficiency were chosen by goal-oriented method. The patients were under treatment with hemodialysis from 2 to 8 years. They had reading skill and were not afflicted by mental disease. We obtained informed consent from all participants.

At the beginning of study, the patients' health condition, including vital signs, clinical signs and laboratory values was assessed and recorded. Patients then put into two groups randomly: 19 patients as case and 18 patients as control group. For the case group a confined program of home-care (designed by researchers), containing four visits

monthly (one session every week which was usually before day of the hemodialysis schedule) was performed (Table 1). During these sessions, patients and their family conditions were assessed. Furthermore, interventions such as listing the problems and providing necessary nursing cares such as blood pressure, weight and temperature control were performed. The patients were educated with regard to kidney anatomy and physiology, chronic renal failure and its complications, hemodialysis and its complications, method of shunt or fistula care, diet and daily consumption of drugs, different blood tests etc. Control group were not involved in such educating program.

After the completion of home-care program, the health condition of both groups were assessed and recorded again. A demographic data questionnaire and health assessment form and rating scale (designed by researchers) were used to collect the data. Health assessment form contained three parts: 1) vital sign recording, containing systolic and diastolic blood pressure, weight, temperature and pulse, 2) clinical sign recording containing severity of nausea, vomiting, headache, bone pain, weakness and fatigue, itching and general condition, and 3) laboratory sign recording containing levels of BUN,

**Table 1.** Performed plan of home-care programs

Session	Intervention
One	Communication with family, assessment of present condition. List of family problems, determine the educational needs and priority. Provide necessary nursing cares.
Two	Special education based on assessment. Provide education's regard to kidney anatomy and physiology, chronic renal failure and its complications and hemodialysis. Answer to patient and family questions. Provide necessary nursing cares.
Three	Review of before session educations. Continue the family health needs education. Provide education in regard to diet and fluid consumption, method of shunt or fistula care. Answer to patient and family questions. Provide necessary nursing cares.
Four	Review of before session education. Provide education in regard to during hemodialysis cares and different blood tests and drugs. Answer to patient and family questions. Provide necessary nursing cares. Evaluation of plan.

## Health status of patients under hemodialysis

creatinine, sodium, potassium, phosphorous and blood hematocrit. A mercurous sphygmomanometer, accurate balance, oral thermometer and wristwatch were used to control vital signs. Visual scales were used to detect clinical signs. Validity of demographic data questionnaire, health condition form and visual scales were determined by using content validity method. Reliability of tools was determined by test-retest method. For providing balance reliability, this device was controlled with 1 kilogram weight before application. For laboratory test devices reliability, devices were calibrated with standard solution before each test and then blood tests were performed.

Acquired data were analyzed using SPSS-WIN statistical software, *t* test, Chi square and Mann-Whitney tests.

## RESULTS

Mean  $\pm$  SD age of patients was  $56.37 \pm 15.38$  year in case and  $57.83 \pm 16.64$  year in control group. There were 12 males (63.2%) in case and 11 in control group (61.1%). Average duration of treatment with hemodialysis was  $27.1 \pm 24.2$  months

for case and  $19.38 \pm 25.75$  months for control group. The Chi square analysis test showed that these factors and causes of renal failure, educational history, family history of dialysis and frequency of dialysis per week were not significantly different in two groups. Comparison of two groups did not show significant difference in the health condition (vital, clinical and laboratory signs) of two groups at the commencement of study; a finding that was confirmed by *t* test and Mann-Whitney statistical tests.

At the end of study, means of weight changes between dialysis sessions, severity of nausea, vomiting, headache, bone pain, itching, weakness and fatigue decreased and general condition and levels of BUN, creatinine and phosphorous of case group improved significantly compared to that of control group ( $P < 0.05$ ). Changes of systolic and diastolic blood pressures, pulse, temperature, sodium, calcium and hematocrit mean values were not significant (Tables 2 and 3). There was not significant relation between improvement in health and factors such as age, sex and duration of hemodialysis at home visit (patients) group.

**Table 2.** Comparison means of changes and standard deviation of quantity health condition indicators at pre and post study in two groups (case and control)

Variable	Case	Control	<i>t</i> test result	
	Mean $\pm$ SD	Mean $\pm$ SD	<i>P</i>	Result
Systolic BP (mmHg)	3.95 $\pm$ 24.27	1.67 $\pm$ 23.20	0.773	NS
Diastolic BP (mmHg)	1.58 $\pm$ 14.25	1.11 $\pm$ -17.79	0.614	NS
Temperature	0.09 $\pm$ 0.26	0.14 $\pm$ 0.52	0.714	NS
Pulse (min)	0.63 $\pm$ 3.77	3.5 $\pm$ 18.83	0.352	NS
Weight (kg)	1.58 $\pm$ 2.34	1.48 $\pm$ 1.45	0.001	S
BUN (mg/dl)	13.11 $\pm$ 10.18	15.61 $\pm$ 14.73	0.002	S
Cr (mg/dl)	1.10 $\pm$ 0.80	1.13 $\pm$ 0.86	0.001	S
Na (meq/l)	0.22 $\pm$ 2.46	0.56 $\pm$ 2.96	0.396	NS
K (meq/l)	0.59 $\pm$ 0.48	0.48 $\pm$ 0.70	0.003	S
Ca (mg/dl)	0.48 $\pm$ 0.77	0.16 $\pm$ 0.52	0.145	NS
P (mg/dl)	1.13 $\pm$ 1.10	0.60 $\pm$ 1.58	0.001	S
Hct (%)	1.00 $\pm$ 3.84	0.36 $\pm$ 5.54	0.686	NS

Abbreviations: BP, blood pressure; NS, Non significant; S, Significant; BUN, blood urea nitrogen; Cr, creatinine; Hct, hematocrit.

**Table 3.** Comparison means of changes and Standard deviation of quality health condition indicators at pre and post study in two groups (case and control)\*

Variable	Case	Control	Mann-Whitney test result	
	Mean $\pm$ SD	Mean $\pm$ SD	P	Result
Nausea	0.68 $\pm$ 0.95	1.11 $\pm$ 1.68	0.001	S
Vomiting	0.95 $\pm$ 1.51	1.00 $\pm$ 1.41	0.002	S
Headache	0.95 $\pm$ 1.31	1.11 $\pm$ 1.23	0.001	S
Bone pain	1.21 $\pm$ 1.13	0.94 $\pm$ 1.30	0.003	S
Weakness	1.58 $\pm$ 1.50	0.67 $\pm$ 1.08	0.001	S
Fatigue	1.74 $\pm$ 1.59	1.39 $\pm$ 1.96	0.002	S
Itching	1.89 $\pm$ 1.82	0.89 $\pm$ 1.37	0.002	S
General condition	1.84 $\pm$ 1.01	1.67 $\pm$ 5.29	0.001	S

\* Data are given severity score.

Abbreviations: S, significant.

## DISCUSSION

Severity of nausea, vomiting, headache, bone pain, itching, weakness and fatigue decreased, and general condition and levels of BUN, creatinine and phosphorous improved in case group. Overweight also decreased in patients after home-care program, but mean value of blood pressure, temperature and pulse had minimal changes with no significant differences. Mean value of sodium, calcium and hematocrit were in normal range and changes were not significant. Considering that home-care program improved most of studied factors (15 items of 19 items), the hypothesis of effectiveness of home-care program on hemodialysis patients' health condition was confirmed.

This finding is not in concordance with another study suggesting hemodialysis patients' knowledge after educational program was not increased (8). Also, findings of several studies on hemodialysis patients have revealed that unlike other patients, these patients were unable to adopt their life style with restrictions caused by disease (17). One of the reasons can be inappropriate timing of education, which often had been during hemodialysis (7). Smith and Winslow and Madarshahian have emphasized that education of patients is not effective during hemodialysis, thus, this period is not a good time for patient education (7, 4).

In our study, educational program was performed through home visits and between hemodialysis sessions in patients with a better physical and mental condition. The results showed that the control group had better clinical outcome and laboratory signs were near normal range. Considering these results, effectiveness of this study could be due to selection of appropriate time (between dialysis sessions) for education. Method of education performance (home-care program) could be another reason for its effectiveness. Most studies have confirmed the effectiveness of home-care program on different conditions (8, 18-20).

We suggest that the paradigms by which we measure success must change. We believe that the tools that are used to measure success in the healthcare setting must change from measuring blood chemistries, utilization management, *etc.* to measuring patients' satisfaction. The first step in doing this is to actually determine what the patient considers "success". Success cannot and should not be prescribed by a healthcare provider. We must ask the question: is our approach effective and how do we measure that effectiveness?

By considering the results, it is concluded that our suggested home-care program can be used as an effective and beneficial method in education of patients with chronic renal insufficiency under the hemodialysis treatment.

### Conflicts of Interests

We have no conflicts of interest.

### Acknowledgement

The authors would like to thank Dr. Raheb Ghorbani (statistical consultant), Dr. Davachie (nephrologist and research scientific consultant), Fatemyeh Hospital managers, Nursing services, Hemodialysis unit staff and all hemodialysis patients and their families who took part to accomplish this study. We also wish to thank Dr. Rezvany for his creative comments.

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