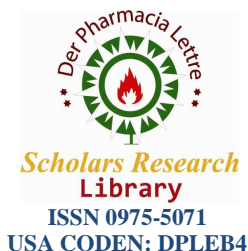




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## Assessment of nutritional status in patients undergoing hemodialysis

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### ABSTRACT

The present study aimed to determine the nutritional status of patients undergoing hemodialysis. This was a Quasi experimental study. The data collection tool was a questionnaire. A total of 60 patients based on purposeful sampling method were selected and divided in two intervention and control groups [30 patients in each group]. After pre- test, designed nutritional care program was carried out for the intervention group in three stages: 1- nutritional care needs assessment in the study subjects 2- to intervene in physical, psychological and social care needs areas 3- patients were followed up for 45 days, then post –test was carried out. Data were analyzed using SPSS software version 16 and independent t test, chi-square [X<sup>2</sup>] and Mann Whitney. The results showed that there was no statistically significant difference between the mean of nutritional training needs assessment score [ $p=0.77$ ] and nutritional status efficacy score [ $p=0.95$ ] in pre-test. But, there was a significant difference in the post-test, in training needs assessment in the self care of the nutritional status between the two groups [ $p=0.04$ ]. In terms of nutritional status efficacy, there was a difference between the two groups, but this difference was not statistically significant [ $p=0.418$ ]. Due to the dependency of hemodialysis patients to receive care services, recognizing self care needs, particularly patients nutritional needs based on nursing theories and health care planning will help to increase patient compliance and self care activities.

**Keywords:** self efficacy, hemodialysis, nutritional status

### INTRODUCTION

Chronic diseases are the greatest public health challenge in the world and end stage renal failure is a chronic disease [1]. It occurs when 95 percent of kidney function is lost, methods of treatment for this disease were; long-term dialysis or kidney transplant [2]. About 400,000 people worldwide are suffering from chronic renal failure, of these, more than 300,000 are under hemodialysis treatment [3]. About 400,000 people worldwide are suffering from chronic renal failure, of these, more than 300,000 are under hemodialysis treatment [4].

Hemodialysis patients experience multiple problems. The most common problems include; sleep disorder, peripheral neuropathy, infection, stress, anxiety and depression, renal osteodystrophy. Cognitive changes, anemia, acute pulmonary edema, pallor, scratch, color change, reducing the strength and fragility of the skin and nutritional problems [5].

These various problems particularly nutritional problems, affect different aspects of life of patients undergoing hemodialysis. Because of the long-term treatment with dialysis, these patients require changes in their lifestyle and nutritional status in order to cope and manage their disease. Treatment of these patients without their participation and doing some self care activities is not enough [6]. Therefore, self-care and self-efficacy are the basic concepts in this group of patients in order to improve the nutritional status. A wider concept of self-care which is considered in patients undergoing hemodialysis is self-efficacy. Self-efficacy means self-care capabilities in specific conditions [7] and emphasizes understanding individual skills and abilities to fulfill a successful performance [8]. People with chronic diseases such as hemodialysis may not be able to do treatment regimens as instructed. Also, it is possible to forget the appointment with the doctor and not to be able to do daily activities [9]. Hemodialysis Patients must understand their care needs and care practice based on their nutritional needs [10]. Considering the critical role of nurses regarding the rehabilitation of patients with mental and physical disabilities, they can help patients to enhance the ability of performing daily living activities and improving their nutritional status and also reduce their social, psychological and nutritional problems [11].

Patient education and nutritional support are necessary to increase self-efficacy and to improve outcomes and to reduce unnecessary hospitalization. [12]. Stimulating the nutritional efficacy in patients undergoing hemodialysis and planning based on this potential has a great importance. Given that hemodialysis patients must depend on a device or a technique to sustain life, there are concerns about their self care and their nutritional problems and also doubts about the ability to perform daily activities. Therefore, researchers decided to assess the nutritional status of hemodialysis patients.

#### MATERIALS AND METHODS

This quasi-experimental control intervention study was conducted in Iran to determine the nutritional status of patients undergoing hemodialysis. A total of 60 patients were selected based on purposeful sampling method and divided in two intervention and control groups [30 patients in each group]. Based on previous studies and test power of 80% and confidence interval of 95% the sample size was calculated. A 3-part questionnaire was used for data collection. The first part included demographic information; the second part consists of 20 questions about the nutritional training needs and the third part consists of 15 questions to assess nutritional efficacy. The answer to each question was based on the Likert scale scores from 1 to 4. After obtaining consent the questionnaires were completed under researcher supervision via interview. Patient's nutritional training needs and their nutritional problems in self-care and self-efficacy levels were determined. Data were analyzed using SPSS software version 16 and independent t test, chi-square [X2] and Mann Whitney.

#### RESULTS AND DISCUSSION

The patients age range was 20 to 60 years and the mean age in the intervention and control groups were 46.56 and 47.85 years respectively. A total of 15 patients [50%] of the samples in both intervention and control groups were women. In both intervention and control groups, 23 patients [76.7%] were married, and 7 patients [23.3 %] were single. The mean duration of chronic kidney disease in the intervention group was 7.59 years and in control was 7.96 years. Hemodialysis duration mean in the intervention and control groups were 5.14 and 5.59 years respectively. In both groups, the majorities were without kidney failure family history, this rate in the intervention group was 22 patients [73.3%] and in the control group it was 24 patients [80%]. In terms of distribution of other underlying disease the most frequency was the absence of these diseases, this amount for the intervention group was 50% and for the control group it was 63.3%.

In both intervention and control groups the most frequency belonged to primary school and high school diploma. This rate for the intervention group [15 patients] was 50% and for the control group [14 patients] it was 46.7%. The average monthly income in the intervention group and the control group were 430.2 and 371.5 thousand Tomans, respectively. Statistical tests showed no significant differences between the two groups in terms of the above variables. Table 1 shows findings related to the nutritional training needs of patients treated by dialysis before the intervention. As shown in the table, the nutritional training needs of both groups before intervention are similar [ $p=0.77$ ].

Table 2 shows findings related to the nutritional training needs of patients treated by dialysis after the intervention. As shown, 96.7% of the intervention group and 80% of the control group had independent nutritional status, that there is a significant difference between these two groups statistically [ $p=0.04$ ].

Findings about the nutritional efficacy of patients undergoing hemodialysis before and after the intervention are shown in Table 3. The results show that the nutritional efficacy status before the intervention is the same in both groups [ $p=0.748$ ], after the intervention difference was observed in both groups, but the difference was not significant statistically [ $p=0.418$ ].

**Table 1: Absolute and relative distribution of the subjects in terms of nutritional training needs in both intervention and control groups before the intervention**

Group Nutritional needs assessment before intervention	Intervention		Control	
	Number	Percent	Number	Percent
Independent	21	70.0	22	73.3
Semi-dependent	9	30.0	8	26.7
Total	30	100	30	100

$$X^2=0.82 \quad d.f=1 \quad P.Value=0.77$$

**Table 2: Absolute and relative distribution of the subjects in terms of nutritional training needs in both intervention and control groups after the intervention**

Group Nutritional needs assessment before intervention	Intervention		Control	
	Number	Percent	Number	Percent
Independent	29	96.7	24	80.8
Semi-dependent	1	3.3	6	19.2
Total	30	100	30	100

$$X^2=4.04 \quad d.f=1 \quad P.Value=0.04$$

**Table 3: Mean and standard deviation of nutritional efficacy status scores of the subjects before and after the intervention in both intervention and control groups**

Group Nutritional status	Intervention		Control		P-Value Mann-Whitney
	Mean	SD	Mean	SD	
Before Intervention	50.73	7.8	52.8	4.1	0.95
After Intervention	53.70	4.7	53.3	3.3	0.418
Comparing before and after	3	8.1	0.46	3.6	0.46

In the present study 70.0% of patients in the intervention group and 73.3% in the control group were independent in terms of nutritional self care before the intervention. These percentages were changed to 96.7% after the intervention, and 80.0% for intervention and control groups respectively.

In Bag et al's study self care and self efficacy mean score of subjects were  $99.86 \pm 15.30$  and  $25.76 \pm 6.85$  respectively. In this study there was a statistically significant relationship between self care score and self efficacy score of the patient's nutritional status [ $p<0.05$ ][13].

In the present study, the self care nutritional status score of patients before the intervention were the same [ $p=0.77$ ]. In Jaarsma study, which was conducted to determine the effect of education and support on nutritional self care ability of patients with chronic diseases, the results showed that at the beginning of the study there was no significant difference in patients nutritional self care score [ $p=0.2$ ][14]. Also in the Unsar et al study, which was conducted to determine the factors affecting the nutritional self care of patients undergoing hemodialysis and peritoneal dialysis, the mean score of self care was  $112.43 \pm 18.35$  and there was no difference between groups [ $p>0.05$ ][15].

In the present study, the results of Mann-Whitney test showed that after training, there was a significant difference between the self care, nutritional status of patients in both groups [ $P=0.04$ ]. The reason for this significant difference between the scores after the intervention could be due to nutritional self care implementation on patients undergoing hemodialysis. Therefore, it can be concluded that the training effect nutritional status of patients and can improve it faster. In Jaarsma study, after the intervention, patients in both the intervention and control groups compared with the beginning of the study had higher scores in food appropriate behaviors [ $p=0.001$ ][16]. Training is the proper tool

to increase awareness of patients. Studies have shown that lack of awareness and inadequate knowledge about nutritional self care, proper diet; fluid intake and vascular care in these patients cause various problems and eventually leads to numerous complications ending up in death [17]. There are different models for patient's nutritional education, given the problems of these patients; education should provide active and conscious participation of patients in self-care. Hence, face to face and family training can close them to independence and to find their continuous nutritional care jurisdiction.

The results of Naji et al showed that there was a significant difference between patient's self care ability in the intervention group compared with the control group [ $p < 0.001$ ]. Also improvement of nutritional status in the intervention group was better than the control group [ $p < 0.001$ ] [18]. In the present study, after training, nutrition programs levels of self-efficacy was increased, but this increase was not statistically significant [ $p = 0.418$ ]. So It seems that to have a better impact, a multilateral training program is needed. Because nutritional status improvement would be more effective alongside with changes in lifestyle, physical activity and social support [19]. It is recommended that patients from the beginning of hemodialysis unit be under the supervision of a team of nurses, psychologist, social worker, and a nutritionist.

The results of this study showed that there are differences between nutritional efficacy scores of subjects after training, but this difference is not significant statistically. The reason may be the duration of hemodialysis; our subjects were under hemodialysis for a maximum of 12 hours per week, but in other studies this time was 20-24 weeks. Inadequate dialysis is among factors which cause anxiety, tension, fatigue and nutritional problems. The results of Song et al study to determine the relationship between nutritional status and self-care of hemodialysis patients showed that the mean score of nutritional efficacy status and the mean score of patients' self care were 3.113 and 3.822, respectively. There was a positive correlation between self-efficacy and self-care [ $p = 0.000$ ] [20].

In this study, the results of the t-test and chi-square showed that, there is no significant difference between both intervention and control groups in terms of age, gender, level of education and the need for nutritional education. Age, gender and educational level influence the need for nutritional education scores. Individuals, self care ability reduced with increasing age. Also by increasing the level of education, information is obtained easier and individual interest to maintain and improve the health is further.

The results of Saraie et al study showed that there is a significant correlation between patient's knowledge and attitude and self-care [ $p < 0.01$ ]. The results also showed that there is a significant relationship between variables such as age, number of children, and number of dialysis per week, educational level and monthly income with the patient's knowledge about the nutritional status. Also, there was a statistically significant relationship between patient education and self-care performance [21].

The results of Baraz et al study, which conducted to determine the effect of education on nutritional status and physical problems of hemodialysis patients showed a significant reduction [ $p < 0.05$ ] on problems such as high urea, uric acid, creatinine, phosphorus, potassium, weight gain between dialysis sessions, systolic and diastolic blood pressure, edema, skin rash, localized vascular problems and improved the quality of life [22].

Narimani et al study, which conducted to determine the effect of education on the nutritional status of hemodialysis patients showed that, self-care education improved nutritional status [ $p = 0.04$ ] physical function [ $p < 0.001$ ], energy levels [ $p = 0.001$ ], mental health [ $p = 0.002$ ] and overall perception of health [ $P < 0.001$ ] significantly [22].

The results of TsaySL et al study revealed that 50-33% of patients do not follow the diet and food limitations. After intervention and education and increasing self-efficacy adherence to dietary limitations improved statistically [24].

## CONCLUSION

Due to the dependency of hemodialysis patients to receive care services, recognizing self care needs, particularly patients nutritional needs based on nursing theories and health care planning will help to increase patient compliance and self care activities.

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