

Effect of Diet Education on Blood Pressure Changes and Interdialytic Weight in Hemodialysis Patients Admitted in Hajar Hospital in Shahrekord

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ABSTRACT

Background and aim: Nutrition is a key factor in the treatment of patients with chronic kidney disease because kidney burden decrease causes uremic reduction and its side effects. The aim of this research is to examine the effect of diet education on blood pressure changes and interdialytic weight in Hemodialysis patients admitted to Hemodialysis ward of Hajar hospital in Shahrekord. **Methods:** This quasi-experimental and interventional study of 100 dialysis patients referred to Hemodialysis ward of Hajar hospital was performed in a pre-test and post-test in 2011. Diet education, including face to face training with instruction booklets, were conducted in the two sessions. Having carried out the educational program, blood pressure and interdialytic weight gain were measured and recorded one month before and during three stages and after the educational program by researcher-designed checklists. The data were analyzed through Spss16 software by Paired t-test and ANOVA. **Results:** The results showed that mean of primary weight of the patients increase from 66.15 ± 15.10 to 64.43 ± 14.67 . Mean of Systolic and diastolic blood pressure in patients in three stages were reduced to 6.65 ± 1.51 mmg 2.24 ± 1.82 mmg respectively. There was a significant difference between the creatinine amount in patients before and after of training ($p \leq 0.01$) but no meaningful difference was observed between the BUN amount before and after of training ($p \leq 0.031$). **Conclusion:** training to patients underwent hemodialysis in order to observe diet and its effects on improvement in treatment are of significant importance.

Key words: Hemodialysis, Diet Education, Blood Pressure Change, Weight

1. INTRODUCTION

Advanced chronic renal failure is a progressive and irreversible impairment where the kidney's ability to filter metabolic waste products from the blood, and maintain water and electrolyte balance disappears, hence resulting in uremia (1). In patients with advanced chronic renal failure, it is impossible for them to live without adequate alternative treatment. Nowadays, the best alternative treatment is hemodialysis. Renal failure is highly prevalent in the world and in Iran (2). Nowadays, 242 out of 1000 people in the world suffer from renal failure; besides, about 8% are added to this figure annually (3). Although hemodialyses has improved renal disease and prolong patients' lives, without the proper diet and medication, it is not highly efficient (4). Following diet, fluid restriction and drugs are essential in care and health maintenance of renal dialysis patients (5). For these patients, the purpose of diet is the reduction of kidney burden, prevention of renal complications, maintaining

proper nutrition, and prevention of uremia and its complications (6). Evidence indicates that many patients undergoing hemodialysis do not adhere to proper diet and fluid intake restrictions (7). It seems that many patients are not aware of diet and fluid restriction (2). Dialysis alone cannot provide the health and survival to the patients in long term. Besides hemodialysis, therefore, diet, fluid restriction, and drug therapies are essential treatments for chronic renal failure (8, 9). Poor diet, and lack of fluid restriction can have serious consequences for patients, including impaired physical abilities, depression, acute pulmonary edema, congestive heart failure, and premature death (3). A poor dietary habit is associated with low quality of life, and morbidity and mortality of dialysis patients (10). Further, malnutrition and inflammation increase cardiovascular risk and mortality in hemodialysis patients, while following the diet and restricting fluid intake decrease the risk of complications and increase quality of life. Yet, many patients do not follow their

Variable	Weight	BUN	Creatinine	BPS	BPD
Prior to training	66/5± 15/10	77/98± 21/8	9/47±2/80	152/4±18/12	88±7/6
Two weeks after training Second stage	64/40±14/07	66/14±12/10	9/09±2/50	134/0±17/70	79/03±11/05
At completion of the second month after training	64 ± 5/14	65/09±15/10	8/8±2/01	128/2±13/08	79/02±7/5
Pvalue	0/002	2/001	0/9	2/001	2/001

Table 1. Weight, creatinine, urea, and systolic and diastolic blood pressure in stages of study

diet (11). Previous studies on the role of nurses in the renal failure patients' diet plan show that the most important objectives in hemodialysis patient care are preventing malnutrition and maintaining good nutrition, edema control, delaying renal osteodystrophy by controlling phosphorus and calcium levels, and finally encouraging the patient to consume tolerable foods which are in accordance with lifestyle changes (12). Lack of awareness regarding the effects of diet on blood pressure made hemodialysis patients always suffer from its complications (5). Since this matter is of vital importance, the present study aims to determine the effect of diet on the interdialytic blood pressure and weight in patients undergoing hemodialysis treatment.

2. MATERIAL AND METHOD

This quasi-experimental and interventional study of 100 dialysis patients admitted in Hemodialysis ward of Hajar hospital was conducted in 2011 where a pretest as well as a post test took place. Patients were enrolled after giving informed consent. The patients who intended to undergo a kidney transplant during the educational program, or leave the place of dialysis, or those who are frequently ill and unable to afford a full time hemodialysis or those who suffer from another known disease besides advanced chronic kidney failure were excluded from the study. The instrument used for data collection was a two-part researcher-designed checklist which consisted of questions on demographic information, knowledge of consumption of food, systolic and diastolic hypertension control, as well as the weight control of the patients. The reliability of this checklist was determined by nutritionists. Before starting the educational program, data on weight, blood pressure and the results of Cr and BUN tests were recorded. The educational program was conducted during two months for the patients. Carried out through face to face interview, bulletins, pamphlets and educational CD, this program was concerned with the control of salt and fluid intake, and the right way of food consumption. Two weeks after beginning of the educational program, weight and blood pressure changes were measured, then at the end of the first month of program, a questionnaire was given to patients through which demographic data were recorded. Their knowledge of proper diet and nutrition was evaluated, as well. Two weeks later and at the end of the second month, weight and blood pressure were measured, and again the patients were given the questionnaire, then data obtained from the questionnaires, including weight, blood pressure and other variables were recorded. The data were entered into SPSS 16, and then the results were analyzed by using descriptive statistics, paired t-test and ANOVA.

3. RESULTS

Results showed that patients were between 13-80 years old with a mean age of 56.2± 15.14. Of them, 69% were male and the rest 31% were female. In terms of education, the majority of the subjects (81.4%) were illiterate or educated below the 9th

Variable	Women	Men	P value
The weight at third stage after training	59/6±13/02	67/85±14/68	0/006
The third stage creatinine	8/58±1/81	9/02±2/13	0/289
The third stage BUN	60/95±14/13	67/75±15/32	0/026
BPS3	123/59±11/58	131/97±14/2	0/003
BPS3	87/72±7/67	80±7/52	0/41

Table 2. Comparison of laboratory indices in two genders

grade, and 18.6% were educated beyond this grade. The mean duration of dialysis was 40.7± 36.40. The maximum and minimum of duration for the subjects undergoing dialysis were 20 years and 4 month, respectively. Further, the mean frequency of dialysis was 22.40± 2.9 times a week.

According to the patient's medical record, which was filled by the physician regarding muscle mass and cardiovascular problems each month, the initial mean weight of the patients was 66.15 ± 15.10. The lightest patient was 31.5 kg and the heaviest one 105 kg. After the first stage of educational program, the mean of weight become 64.43 ± 14.67.

Results showed that the mean of BUN and Cr for patients before training were 77.98 ± 21.74 and 9.47 ± 2.80 respectively, which become 66.14 ± 12.13 and 8.48 ± 2.36 after the first stage of training. There was a significant difference between the Cr of the patients before and after training ($P \leq 0/01$). However, the BUN of the patients were not significantly different before and after the training ($P \leq 0/31$).

Moreover, the findings represented that the mean systolic and diastolic blood pressure in the three stages of the research reduced to 6.65 ± 1.51 mmHg and 2.24 ± 1.82 mmHg, respectively. The mean systolic blood pressure before and after the test was significantly different ($P \leq 0/05$). However, there was no significant difference between the mean diastolic blood pressure before and after the test ($P \leq 0/20$) (Table 1).

Findings on the determination and comparison of the problems of the patients undergoing hemodialysis (with regard to the systolic and diastolic blood pressure, weight gain, and the changes before and after training including the changes in Urea, creatinine, blood pressure and weight) are important indicators and have a huge role in creating problems and reducing the quality of life. These findings indicated that there was no significant difference in the Cr means of males and females after diet education in the experimental investigation ($P=0.2$). The relationship between gender and BUN showed a difference in males and females after training ($P=0.026$). Further, males and females significantly differed from each other in terms of interdialytic weight gain and systolic blood pressure. ($P=0.003$), but no significant difference was observed between diastolic blood pressure ($P=0.4$).

4. DISCUSSION

The findings represented that educating patients with a special emphasis on diet can have a positive effect on their attitude. Interdialytic weight loss indicated that training had an effect on patients and enabled them to make adjustments in their diet. Toolabi has investigated the effect of diet education on the knowledge and practice of Hemodialysis Patients in Lorestan, which indicated a significant increase in knowledge of patients after training (13).

One of the common problems to these patients is Uremia that can cause poor appetite, memory loss, drowsiness, misjudgment and poor concentration. Interdialytic weight gain increases blood pressure by 3 mm Hg per kg of body weight (14). Results of nutritional evaluation of 99 hemodialysis patients in Tehran represented a significant positive correlation between protein intake through the correct way of nutrition, and body weight. Therefore, nutrition education is an important variable in increasing awareness and health status of hemodialysis patients (15). Previous research showed that it is necessary to educate patients with high blood pressure to follow a good diet and restrict the use of fat and sodium. Lack of attention to the patient education regarding drug use, and food and fluid restriction has adverse consequences. Considering the persistent problems as well as their kinds, inefficiency of dialysis in complete resolution of these problems, and the need for continuous care, education can provide an informed and active participation of the patient to care for themselves (16). The subjects in this study had a low level of awareness before training. This was due to the insufficient diet education which is consistent with the study carried out by Toulabi entitled Impact of education on knowledge and practice of dialysis patients in Lorestan (13). In this study, there was a significant relationship between education and weight after training which was consistent with Alipour's findings on knowledge, attitude and practice of renal dialysis patients' nutrition (17). In the study entitled the effect of diet education on dialysis efficacy which is conducted in Zanjan, Talebipour in three stages of training showed that after training, there was an increase in the tendency of these patients to follow an efficient diet. The results of Talebipour's study is similar to those of the current research (18). Shab Bidar, et al. in their study of dialysis adequacy and prevalence of malnutrition in hemodialysis patients have suggested that in 23% of patients albumin level was below 3 (severe malnutrition), and in 32% of them albumin was in the range of 3-3.5 (medium malnutrition)(19). Moreover, 75 to 80% of hemodialysis patients have high blood pressure, and despite using various drugs, the major cause of hypertension in these patients is the increase in blood volume, which is due to water and salt retention in the body; therefore, withdrawing fluid in a short period from these patients has had a significant effect on blood pressure (16). Durose, et al have shown that educating patients about diet and alternative consumption can lead to the fluid intake restriction and subsequently to weight loss (20). Based on the findings, there was a significant association between the weight of the subjects and their level of education that is consistent with the findings of the study conducted by Alipour representing a positive correlation between the knowledge and practice of the subjects, and their level of education. The main achievement in this study was that education is positively effective since the goal of education is to enable us to establish an assuring relationship between patients

and nurses—considering education and support of the patients. This is implemented if once patients are allowed to actively participate in decision-making and planning for themselves.

5. CONCLUSION

Diet and drug therapy besides hemodialysis can improve health condition and therapeutic effectiveness for patients with renal failure. However, it seems that many patients are not fully aware of diet and fluid intake restriction. This study showed that periodic educational programs can play a significant role in the health of patients and their attitude and knowledge of nutrition.

Acknowledgment: *This article was funded by Vice Chancellery for Research and Technology, Shahrekord University of Medical Sciences.*

CONFLICT OF INTEREST: NONE DECLARED.

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