

Research Article

Effects of a Hemodialysis Diet Education Program on Hemodialysis Patients

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Abstract. The burden of chronic disease on health care services worldwide is growing and the increased development of educational interventions which help patients to better manage their conditions is evident internationally. It has been recognized that poor adherence to treatments and guidelines can be a serious risk to the health and wellbeing of patients. Adherence to fluid restrictions, dietary and medication guidelines as well as attendance at prescribed hemodialysis sessions are essential for adequate management of chronic kidney disease. The aim of this study was to identify the effects of a repeated hemodialysis diet education program on the diet of hemodialysis patients. This eight-week quasi-experimental design study involved adult patients who were undergoing chronic hemodialysis treatment for at least three months at the Nephrology Unit of Permata Bekasi Hospital. Adolescent participants were registered in each group, so that a total of 20 participants were registered. The experimental group received diet education four times. Data were analyzed by t-test. There was a statistically significant difference between the groups in dietary knowledge at the time of assessment, and there was also a difference in the mean intradialysis weight gain in the intervention and control groups. Repeated health education had an effect on the fluid diet of hemodialysis patients with a p-value < 0.05. Due to the resulting improvement in dietary knowledge and self-care adherence, the repeated education program implemented in this study could be used to prevent complications in patients undergoing hemodialysis.

Keywords: hemodialysis, diet, knowledge, compliance

1. Introduction

The prevalence of ESRD in 30 countries was found that 30% had a prevalence 1,000–1,300 per million population, and 45% of countries report a prevalence of 600–1000 patients per million population. In the United States, the prevalence of ESRD occupies 9th position of the 15 leading causes of death that occur. Based on [1], it was recorded that 87.3% of individuals in the United States did renal replacement therapy with hemodialysis. USRDS also stated that the country with the highest prevalence is Taiwan, which is 3138 per million population. While the lowest prevalence is Indonesia at 66 per million population. According to the [2] chronic HD patients seen a consistent increase in the number of new patients and active patients undergoing routine HD by

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132142 greater than years 2017. While in West Java Province alone, 33828 patients already in the ESRD stage and have also done hemodialysis routine.

There are serious complications associated with end-stage renal failure, such as increased blood pressure or decreased levels of proteins such as albumin (Alb) and Blood Urea Nitrogen (BUN) in the blood. Therefore, the application of self-care diet for hemodialysis patients is very important to maintain and optimize the lives of hemodialysis patients. [3].

Adherence to dietary control and fluid restriction is a factor which is very important in determining the level of health and well-being of patients with chronic hemodialysis. Among all the management that must adhered to in hemodialysis therapy, fluid restriction is the most difficult to done, can make patients stressed and depressed especially if they taking drugs that make mucous membranes dry, such as diuretic, causing thirst so that the patient tries to drink. Several studies have been conducted on hemodialysis patients demonstrated that excessive fluid consumption is detrimental to survival alive because it can lead to interdialytic weight gain or Interdialytic Weight Gain (IDWG) greater than 5.7% of body weight dry, had a 35% higher risk of death.

2. Methods and Design

This type of research is quantitative research and the design used is a “Quasi Experimental Pre-Posttest with Control Group” provided is health education.

3. Sample

The research sample was adult patients who underwent chronic hemodialysis for at least 3 months at the Nephrology Unit of Permata Bekasi Hospital. The sample size was calculated using power analysis, assuming for 5% interval, 80% test power, and an effect size of 0.50 for program strength [4]. The total sample size was estimated at 10 for each group. In order to prepare for potential dropouts, a total of 10 participants were recruited for each group, bringing a total of 19 participants. Convenience sampling technique was used to select respondents.

We approached the chief hemodialysis nurse, to whom we introduced the study objectives, inclusion and exclusion criteria, potential benefits, and efforts to be taken to protect subjects. The head nurse then informed the eligible participants about the study prior to data collection. Participants were recruited during their clinical visit

for hemodialysis. Subjects who agreed to participate were randomly allocated to the intervention and control groups.

4. Procedure

Subjects were approached during their dialysis session, the total number of patients given the education program was 10 patients. The research objectives are explained to patients to ask for consent to become respondents, participating patients were given a consent form to sign. The repeated education program was conducted four times a week for 8 weeks. Each session is 15 minutes long. We monitored the patient's knowledge of the fluid diet program. The control group was not given repeated education.

5. Questionnaire for Data Collection

In this study, the instrument used to measure knowledge of the hemodialysis diet was the tool developed by Lee (In Cronbach's study it was 0.84, and in this study, Cronbach's was 0.88) which was modified by the researcher with a total of 20 treatment questions. Self-Hemodialysis Diet which is Relevant to Self-Care Implementation in Performance Measurement It was measured by items. The questionnaire used in this study was a 5-point Likert scale, 1 'not at all' 'Do', 2 points, 'sometimes', 3 points, 'half', 4 points, 'often', 5 points, Total score consists of 20 points, and the higher the score, the higher the level of care performance providing health education about the diet of hemodialysis patients.

6. Data Analysis

The data were analyzed by SPSS/WIN version 23. Descriptive statistics were used to explain the demographic information of the respondents, as well as other research variables. chi-square test was used to find the relationship between variables. The p value < .05 was considered significant.

7. Results

Of the 19 participants who participated in the study, 10 were placed in the intervention group and 9 were placed in the control group. respondents are women (57.9%), age 35-60 years (63.2%), and duration of hemodialysis less than 12 months (52.6%).

TABLE 1: Frequency distribution of the characteristics of respondents who were given repeated health education on the fluid diet of hemodialysis patients at Permata Bekasi Hospital in 2021 (n=19)

Characteristics	Group			
	Intervention	%	Control	%
Gender				
Male	8	42.1	9	47.4
Female	11	57.9	10	52.6
Age				
35-60 year	12	63.2	12	63.2
>60 year	7	36.8	7	36.8
The duration of HD				
<12 month	10	52.6	11	57.9
>12 month	9	47.4	8	42.1

TABLE 2: The results of the normality test of repeated health education on the fluid diet of hemodialysis patients with pre-test and post-test measurements at Permata Bekasi Hospital in 2021 (n=19)

Measurement	Category	Shapiro-Wilk Sig
Pre Test	Education	0.128
	Repeat Health	
Post Test	Education	0.278
	Repeat Health	

Baseline measurement variables on health education influence method repeated on the fluid diet of hemodialysis patients has a test value of 0.327 because the P value > 0.05 (greater than the alpha value), then H0 is accepted, it means that the baseline measurement variable spreads out following the distribution univariat normal

The results of the analysis of the diet conditions of hemodialysis patients after receiving repeated health education in the fluid diet intervention group. In the intervention group After getting the post-test education health there is an increase in understanding of the patient’s fluid diet hemodialysis was 68.4%. And in the control group after getting a post test of health education does not increase Significant significance for

TABLE 3: Analysis of intradialysis weight changes before and after repeated health education (n=19)

Variab	Group Type	Category Repetitive Education	Frek		Mean		Mean differenc	SD differenc	P Value
			Before	After	Before	After			
Liquid diet	Intervention	Pre tes	5	4	1.84	0.39	1.55	0.478	0.002
		Post tes	14	15					
	Control	Pre tes	9	8	1.98	1.07	0.91	0.535	
		Post tes	10	12					

understanding the patient's fluid diet is 42.1% of the average analysis results show that in the group interventions that received repeated health education on diet hemodialysis patient fluids there is an increased understanding of the fluid diet of hemodialysis patients is 0.39 with p value < 0.002. While in the control group there was no significant increase significant effect on the understanding of the patient's fluid diet repeated health education was 1.07% with p value > 0.108. Based on the data above, it can be concluded that in the post-control intervention group there was an increase in understanding of diet hemodialysis patient fluids.

8. Discussion

This study was to determine the effect of the hemodialysis diet education program on knowledge of the hemodialysis diet, self-care diet, and physiological indicators of patients undergoing hemodialysis. In this study, after being given repeated hemodialysis diet education programs to the subjects, the experimental group's level of knowledge on hemodialysis diet increased immediately after the intervention compared to before the training, and the increase in the level of knowledge continued up to 6 months after the intervention. This is in agreement with the study of Ford et al [5], who analyzed the effect of general hemodialysis patients after 20 minutes once a month for a total of 6 sessions, and the study of Na [6], which was conducted on hemodialysis patients with hyperphosphatemia, the results were similar. This shows similar results to the study [7] which used forgetting time to confirm that the effect lasted for 6 and 14 weeks, respectively.

Based on these results, in the case of elderly patients, the number of times of education increased compared to general patients, or repeated learning through individual counseling was re-educated and depending on the forgetting point. have been turned into memories. In addition, this study did not show any difference with previous studies [6] which had 8 or more exercise sessions, and it was proven that the hemodialysis diet exercise program was repeated according to the forgetting time. effective. Therefore, it is estimated that the repeated hemodialysis diet education program in this study helps the introduction of knowledge maintenance education and time is needed.

The subject's hemodialysis diet self-care performance was higher after the intervention than before participation, and the self-care performance continued until 6 months after the intervention. This is similar to the research of Suk et al [8] who studied the educational effect of periodic videos. Through individual education in the hemodialysis diet education program, the degree of correspondence between

knowledge of the hemodialysis diet and self-nursing performance during the training period was measured using a 24-hour recall method to discuss the subject's dietary experiences through conversations with the subject's eating diary and counseling. to finish it. Moreover, it is estimated that diet self-care is practiced as dietary knowledge is maintained for 6 months. The reports that there is a correlation between knowledge regarding hemodialysis and implementation of patient role behaviors seem to support this study.

In this study, there was no difference between the two groups before and after training in the amount of weight gain between the dialysis subjects. This is consistent with the research of [8] who provided individual education, who conducted video education, and the research of. In elderly hemodialysis patients, intensive education about restriction of water intake is important because weight gain between dialysis can lead to pulmonary edema and congestive cardiomyopathy. It can be called an educational effect, but the control group and the experimental group seem to show a downward trend. compared to before education. It is estimated that the reason can be predicted by [9] that the duration of this study is from March to August, showing differences according to sweat, loss of sensitivity, and season according to climatic factors. Therefore, it is necessary to find an intervention method related to seasonal water intake restriction for sustainable management of elderly hemodialysis patients.

Blood BUN levels showed a significant difference between the groups, and the experimental group showed lower blood BUN levels than the control group at 6 months after the intervention. That is, hemodialysis patients must maintain adequate protein intake by limiting phosphorus intake. Most protein foods have a high phosphorus content, so it seems that the experimental group, the research subject, experienced a decrease in line with the dietary restriction of phosphorus intake. Another thing to note is that although the blood Albumin concentration decreased significantly over time, the experimental group's blood Albumin concentration was maintained within the normal range of 4.0 g/dL or higher, indicating a good nutritional status. This indicates that serum Alb levels are an indicator of nutritional status in patients with end-stage renal disease, and low albumin levels in hemodialysis patients act as a major predictor of mortality and hospitalization rates. clinical significance when compared with studies [4] which showed rapid improvement and reports [4] that the Albumin concentration of those aged 60 years or older who started hemodialysis for the first time was 3.15 g/dL.

9. Conclusion

In conclusion, this study shows that the Repeated Hemodialysis Diet Education Program can play an important role in reducing physiological problems such as (weight gain between dialysis, blood BUN, blood Alb, blood sodium (Na), blood potassium (K), blood phosphorus (P) and improve quality of life, but further large-scale studies and longer intervention periods are needed to validate our results and contribute to better patient outcomes such as quality of life and death. Nurses must provide a Repeated Hemodialysis Diet Education Program, and educate and empower patients during the hemodialysis diet education according to the developed protocol.

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Conflict of Interest

We declare no conflict of interest.

References

- [1] USRDS. 2017 Annual data report. 2017. Available from: <https://adr.usrds.org>
- [2] Indonesia Renal Registry. 11th report of Indonesia renal registry. 2018. Available from: https://www.indonesianrenalregistry.org/data/IRR_2018.pdf
- [3] Sangsuk K. Effects of a repeated hemodialysis diet education program for older adults.
- [4] Fauzi A, Triaswati R. The effect of intradialytic stretching training on restless legs syndrome and sleep quality in hemodialysis patients. *Korean Journal of Adult Nursing*. 2021;33:37–43.
- [5] Ford JC, Pope JF, Hunt AE, et al. The effect of diet education on the laboratory values and knowledge of hemodialysis patients with hyperphosphatemia. *Journal of Renal Nutrition*. 2004;14:36–44.
- [6] Kim Y-J, Yoo Y-S. Effects of individualized education on knowledge, compliance, and physiologic parameters in hemodialysis patients. *Korean Journal of Adult Nursing*. 2006;18:367–376.

- [7] Umayah E. The relationship between education level, knowledge and family support with compliance with fluid intake restrictions in chronic kidney failure patients undergoing outpatient hemodialysis at Sukoharjo Hospital.
- [8] Suk YM, Park JW, Jeon MJ, et al. Effect of periodic video education on knowledge about hemodialysis, patient role behavior and the physiologic index in patients with hemodialysis. *Journal of Korean Biological Nursing Science*. 2013;15:122–132.
- [9] Yeun Y-R. Systematic review of research on adherence among hemodialysis patients in Korea. *Journal of the Korea Academia-Industrial cooperation Society*. 2012;13:5993–6000.