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Patients Compliance In Limiting Liquid Intake And Nutrition Can Regulate Biological And Biochemical Value Of Blood In Patients Through Hemodialysis

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Abstract

Introduction: Intradialytic Weight Gain is one of the indicators to evaluate the biological value of weight change between the time of dialysis whose value is influenced by patient adherence to limit the intake of fluids and foods high in sodium, while potassium, sodium, albumin, urea, and creatinine is an indicator of blood biochemical values whose value is influenced by patient adherence to limit the intake of nutrients.
Objectives: Hospital hemodialysis unit Bekasi
Methods: The sample was selected using the technique of Non-Probability Sampling or non-random sampling with purposive sampling method, and came up with 73 respondents.
Results: Data collection was done through two types of data namely primary and secondary data. Primary data obtained from questionnaires A and B by the respondent directly and secondary data obtained from the results of direct measurements by researchers that IDWG and blood biochemistry values were obtained from the patient laboratory results. The results showed a significant relationship between the level of compliance in patients for limiting the intake of fluids and nutrients to the IDWG, potassium, sodium, albumin, urea and creatinine with P-Value successively ie, $p = 0.0005$; $p = 0.020$; $p = 0.008$; $p = 0.013$; $p = 0.002$; $p = 0.004$ with $\alpha = 0.05$.
Conclusion: this study can be used in planning interventions appropriate education, to prevent and decrease the physical deterioration of the condition of patients on dialysis due to less or no maximum to limit fluid intake and nutrition.
Keywords: Compliance, Hemodialysis, Biology and Biochemistry Values

Introduction

Intradialytic Weight Gain (IDWG) is one of the indicators to evaluate the biological value of weight change between the time of dialysis whose value is influenced by patient adherence to limit the intake of fluids and foods high in sodium, while potassium, sodium, albumin, urea, and creatinine is an indicator of blood biochemical values whose value is influenced by patient adherence to limit the intake of nutrients. Chronic renal failure patients undergoing hemodialysis therapy to control and limit the amount of fluid and nutrient intake that enters the body is very important so that patients with chronic renal failure still feel comfortable before, during, and after hemodialysis therapy.[1] Research on 151 patients undergoing hemodialysis including 146 patients from Clinica Vistahermosa and 5 patients from Perpetuo Socorro Hospital. The results showed that there was a significant relationship between the Kt / V value and dry weight on the compliance with hemodialysis patient fluid intake restrictions, namely 61% with IDWG ≤ 1kg and the remaining 73% with IDWG ≥ 1.3 kg.[2]

A related study with the title of non-adherence in patients on chronic hemodialysis in 456 patients.[3] Hemodialysis, namely 113 patients from the hemodialysis center in United Stated and 343 patients from the hemodialysis center in Germany showed that there was an increase in electrolyte values, IDWG, and decreased albumin and hemoglobin values. The results of the recapitulation of the biological and biochemical values of the patient's blood obtained by researchers for ± 2-3 weeks at the Bekasi City Hospital (2013), obtained data that until the end of March 2013 there was an increase in the biological and biochemical values of blood around 60% of all chronic kidney failure patients the ESRD stage undergoing hemodialysis therapy. There was an increase in the value of electrolytes such as potassium and sodium, which was about 40% of 90 dialysis patients with an average increase of 2-3 mEq / L in potassium and 4-5 mEq / L in sodium, an increase in urea and creatinine criteria of mild-moderate occurred around 50 % of 90 patients with a mean value of 145mg/dl in urea and 15 mg/dl in creatinine, a decrease in albumin to 2 g / dl and an increase in IDWG of about 2-3 kg between dialysis times.

The results of interviews obtained by researchers of 10 ESRD stage CRF patients who underwent hemodialysis at Bekasi City Regional Hospital, obtained conclusions from various patient statements, namely as follows: "Since the verdict by the doctor, I routinely undergo dialysis therapy 2x / week. At first, f, found it difficult to adapt to changes in my body's health condition, because I had experienced severe shortness of breath and my whole body was so swollen that it was difficult to get up and walk. I do not abstain from eating and drinking, if I drink just drink until my thirst is gone, if I eat, just eat what I want". Given the high incidence of changes in the biological and biochemical values of blood in patients undergoing hemodialysis, it is necessary to monitor the level of patient compliance in limiting fluid and nutritional intake. According to Niven, adherence is the level of behavior of sufferers in taking an action for treatment by following treatment suggestions recommended by health workers such as diet, healthy living habits, and prompt treatment.[3] There are 5 (five) factors that affect adherence, namely those related to socioeconomic, medical therapy, patients, health conditions, and healthcare/services.[3]

Treatment programs, patients, and health services are considered to be able to influence the level of patient compliance, especially adherence in limiting fluid and nutritional intake. Adherence to hemodialysis patients in limiting fluid and nutritional intake can be seen from laboratory results, namely by analyzing biological values which aim to determine the level of compliance in limiting fluid intake consisting of intradialytic weight gain (IDWG) and adequate dialysis (Kt / V), as well as analyzing blood biochemical values which aim to determine the level of adherence in limiting nutritional intake consisting of serum electrolytes (potassium, sodium), urea and creatinine, total protein (albumin) and hemoglobin.[3] Based on the above points, the researcher intends to examine the analysis of the relationship between the level of patient compliance in limiting fluid and nutritional intake to the biological and biochemical values of blood in patients undergoing hemodialysis in the hemodialysis unit of the Bekasi City Hospital.

Methods

The research design used in this study is descriptive correlation using a cross-sectional approach. This research was conducted in the hemodialysis unit Bekasi City Hospital, because it has a high prevalence, namely in 2012 to June 2013 as many as 3970 visits and chronic kidney failure with the ESRD stage ranks the third largest disease and an increase in patients following dialysis therapy such as hemodialysis, namely experiencing addition of 5-10 patients each year (until June-July 2013 90 patients routinely followed hemodialysis therapy). The sample was selected using the technique of Non-Probability Sampling or non-random sampling with purposive sampling method and came up with 73 respondents.

Results

Table 1. Distribution of Respondents Based on Variable Characteristics in the Hemodialysis Unit of the Bekasi City Hospital in 2013

Variable	Category	Frequency	
		n=73	%
Age	21-40 years old	14	19,2
	41-60 years old	48	65,8

	> 60 years old	11	15,1
Gender	Male	43	58,9
	Female	30	41,1
Last Education	PS	10	13,7
	JHS	23	31,5
	SHS	28	38,4
	College	12	16,4
Job Status	Work	17	23,3
	Does not work	56	76,7
Level of compliance	Obey	26	35,6
	Not obey	47	64,4
IDWG enhancement	Mild-moderate	30	41,1
	Weight	43	58,9
Potassium levels	Normal	33	45,2
	Hyperkalemia	40	54,8
Sodium Levels	Normal	34	46,6
	Hypernatremia	39	53,4
Albumin Levels	Normal	22	30,1
	Hipoalbumin	51	69,9
Increased levels of urea	Mild-moderate	37	50,7
	Weight	36	49,3
Increased creatinine levels	Mild-moderate	38	52,1
	Weight	35	47,9

Table 1. explains that the highest frequency of age groups is in the 41-60 years age group with 48 people (65.8%) and the least is the> 60 years group with 11 people (15.1%). Most of the sexes were male with 43 people and the rest were female with the percentage of 58.9% and 41.1%, respectively. The most recent education of respondents was the high school with a frequency of 28 people (38.4%) and the lowest was PS as many as 10 people (13.7%) with the respondents' occupational status as not working as many as 56 people (76.7). The highest level of compliance was disobedience with 47 people (64.4%) and the rest were obedient respondents. It was also explained that there were 30 people (41.1%) who experienced an increase in severe IDWG as many as 43 people (58.9 and 40 people (54.8%) with high potassium levels or hyperkalemia and 39 people (53.4%) who indicated that the most respondents were those with high sodium levels (hypernatremia), then 51 people (69.9%) had the most respondents with low albumin levels. (hypoalbumin), 37 people (50.7%) had increased levels of mild-moderate urea and creatinine levels who experienced mild-moderate and severe increases respectively, namely 38 people (52.1%) and 35 people (47.9%).

Table 2. Distribution of Respondents Based on Compliance Level and IDWG Value in the Hemodialysis Unit of the Bekasi City Hospital in 2013

Level of compliance	IDWG Value				Total		OR	95% CI	P-Value
	Mild-moderate		Weight						
	N	%	N	%	N	%			
Obey	19	73,1	7	26,9	26	100	8,883	2,962-26,649	0,0005
Not obey	11	23,4	36	76,6	47	100			
Total	30	41,1	43	58,9	73	100			

Table 2. explains that there are 19 people (73.1%) who adhere to limiting fluid and nutritional intake with an increase in mild to moderate IDWG and there are 36 people (76.6%) who have experienced an increase in severe IDWG. The statistical test results obtained P-Value = 0.0005 (P-Value 0.0005 <□ 0.05), which means that there is a relationship between the level of patient compliance in limiting fluid and nutritional intake with the IDWG value, with an OR = 8.83, meaning that the patient those who were not adherent in limiting their fluid and nutritional intake had an 8.88 times risk of having a weight IDWG value compared to patients who were adherent.

Table 3. Distribution of Respondents Based on Compliance Levels and Potassium Levels in the Hemodialysis Unit of the Bekasi City Hospital in 2013

Level of compliance	Potassium Levels				Total		OR	95% CI	P-Value
	Normal		Hyperkalemia						
	N	%	N	%	N	%			
Obey	17	65,4	9	34,6	26	100	3,660	1,335-10,032	0,020
Not obey	16	34,0	31	66,0	47	100			
Total	33	45,2	40	54,8	73	100			

Table 3. The results of the analysis of the relationship between the level of patient compliance in limiting fluid and nutritional intake to potassium levels showed that there were 17 people (65.4%) who complied with restricting fluid and nutritional intake with normal potassium levels and there were 9 people (34, 6%) were adherent with high potassium levels or hyperkalemia. There were 16 respondents (34.0%) with normal potassium levels and 31 people (66.0%) with high potassium levels or hyperkalemia, respondents who did not comply with restrictions on fluid and nutritional intake. The results of statistical tests obtained P-value = 0.020 (P-value 0.020 <□ 0.05), it can be concluded that there is a significant relationship between the level of patient compliance in limiting fluid and nutritional intake with potassium levels. From the analysis, it was obtained that the OR value = 3,660, meaning that patients who were not compliant in limiting fluid and nutritional intake had a 3.66 times more risk of having normal potassium levels compliant patients.

Tabel 4. Distribution of Respondents Based on Compliance Levels and Sodium Levels in the Hemodialysis Unit of the Bekasi City Hospital in 2013

Level of compliance	Sodium Levels				Total		OR	95% CI	P Value
	P-Value		Hypernatremia						
	N	%	N	%	N	%			
Obey	18	69,2	8	30,8	26	100	4,359	1,559-12,191	0,008
Not obey	16	34,0	31	66,0	47	100			
Total	34	46,6	39	53,4	73	100			

Table 4. The results of the analysis of the relationship between the level of patient compliance in limiting fluid and nutritional intake to sodium levels found that there were 18 people (69.2%) who complied with limiting fluid and nutritional intake with normal sodium levels and 8 people (30 8%) were adherent with high sodium levels or hypernatremia. There were 16 respondents (34.0%) with normal sodium levels and 31 people (66.0%) with high sodium levels or hypernatremia, respondents who did not comply with restrictions on fluid and nutritional intake. The results of statistical tests

obtained-value = 0.008P-value 0.008 <□ 0.05), it can be concluded that there is a significant relationship between the level of patient compliance in limiting fluid and nutritional intake with sodium levels. From the analysis, it was obtained that the OR value = 4.359, meaning that patients who were not compliant had a 4.35 times risk of having normal sodium levels than those who were compliant.

Table 5. Distribution of Respondents Based on Compliance Levels and Albumin Levels in the Hemodialysis Unit of the Bekasi City Hospital in 2013

Level of compliance	Albumin Levels				Total		OR	95% CI	P-Value
	Normal		Hipoalbumin						
	N	%	N	%	N	%			
Obey	15	57,7	11	42,3	26	100	3,977	1,438-11,002	0,013
Not obey	12	25,5	35	74,5	47	100			
Total	27	37,0	46	63,0	73	100			

Table 5. The results of the analysis of the relationship between the level of patient compliance in limiting fluid and nutritional intake to albumin levels found that there were 15 people (57.7%) who complied with restricting fluid and nutritional intake with normal albumin levels and respondents who did not comply with restrictions fluid and nutritional intake of 35 people (74.5%) with low albumin or hypoalbumin levels. The results of statistical tests obtained-value = 0.013 with OR = 3,977, meaning that patients who are not compliant in limiting fluid and nutritional intake are 3.97 times more likely to develop hypoalbumin than adherent patients.

Table 6. Distribution of Respondents Based on Compliance Levels and Ureum Levels in the Hemodialysis Unit of the Bekasi City Hospital in 2013

Level of compliance	Urea Levels				Total		OR	95% CI	P-Value
	Mild-moderate increase		Increased weight						
	N	%	N	%	N	%			
Obey	20	76,9	6	23,1	26	100	5,882	1,979-17,482	0,002
Not obey	17	36,2	30	63,8	47	100			
Total	37	50,7	36	49,3	73	100			

Table 6. The results of the analysis of the relationship between the level of patient compliance in limiting fluid and nutritional intake to urea levels, it was found that there were 20 people (76.9%) who complied with restricting fluid intake and those who were obedient to increasing levels of low-weight urea. Respondents who did not comply with limiting fluid and nutritional intake were 30 people (63.8%) with increased levels of heavy urea. The statistical test results obtained-Value = 0.002 (P-Value 0.002 <α 0.05), with OR = 5.882, meaning that patients who do not comply with limiting fluid and nutritional intake are at 5.88 times risk of experiencing an increase in heavy urea levels compared to patients who are not compliant.

Table 7. Distribution of Respondents Based on Compliance Levels and Creatinine Levels in the Hemodialysis Unit of the Bekasi City Hospital in 2013

	Creatinine Levels	Total	95% CI

Level of compliance	Mild-moderate increase		Increased weight				OR		P-Value
	N	%	N	%	N	%			
Obey	20	76,9	6	23,1	26	100	5,370	1,814-15,900	0,004
Not obey	18	38,3	29	61,7	47	100			
Total	38	52,1	35	47,9	73	100			

Table 7. The results of the analysis of the relationship between the level of patient compliance in limiting fluid and nutritional intake to creatinine levels found that there were 20 people (76.9%) who complied with limiting fluid and nutritional intake with an increase in mild-moderate creatinine levels and in respondents who 29 people (61.7%) did not comply with the restriction of fluid and nutritional intake with a severe increase in creatinine levels. The results of statistical tests obtained P-value = 0.004 (P-value 0.004 < α 0.05 with OR value = 5.370, meaning that patients who are not compliant in limiting fluid and nutritional intake are at 5.37 times risk of having a severe increase in creatinine levels than obedient patients.

Discussion

Respondent Characteristics and Compliance

The results showed that the characteristics of the most respondent age group were the 41-60 years age group as many as 48 people (65.8%) and the least respondent age group was the> 60 years age group as many as 11 people (15.1%). Suggests that increasing age causes a decrease in kidney function to perform filtering in the body.[4] Apart from the decline in organ function due to increasing age, this can also be caused by various diseases that arise in old age which cause complications in the urinary system.[4] This is in line with Young's, which explains that the age group of patients receiving dialysis increases for all adult age groups.[5] Young's statement supports the results of research conducted, which concluded that the average age of chronic kidney failure patients undergoing hemodialysis in the United States is 59 years old.[3]

A similar study, which concluded that the characteristics of the average age of patients undergoing hemodialysis at arifin Ahmad Pekanbaru Hospital were in the 41-60 year age group.[4] Age is an unmodifiable risk factor for chronic kidney failure and researchers in America have found that old age is one of the eight risk factors for developing CKD or chronic kidney failure.[5] The distribution of the sexes of the most respondents in the results of this study was male as many as 43 people (58.9%), while the respondents with female gender were 30 people (41.1%). Similar to several studies, where the largest number of respondents who underwent hemodialysis were men (62.5%) compared to women.[6] Basically, from some literature, it is explained that the incidence of chronic renal failure is not influenced by gender, where men and women have the same risk. However, this study shows that the majority of respondents are male than female. Of the 73 respondents, 43 of whom were male, there were 30 respondents, where men were more likely to have a smoking habit than women. A history of hypertension and a smoking lifestyle can lead to chronic kidney failure.[7]

The most recent education distribution of respondents in this study was the high school with some 28 people (38.4%) and the lowest was PS as many as 10 people (13.7%). The higher a person's level of education, the more likely he is to behave positively because the education obtained can determine the basics of understanding (understanding) and behavior in a person.[8] Similar to the results of a study, that most respondents who underwent hemodialysis in the United States had high school education.[9] The distribution of respondents who did not work was 56 people (76.7%) and the rest were respondents who were still actively working. Patients undergoing hemodialysis are more likely to experience changes in their ability to do activities, patients tend to feel weaker and less able to do activities as before being sick.[7] In addition, job status greatly affects financial ability. A study said that 2/3 of patients who received dialysis therapy never returned to activities or jobs like before being sick so that many patients lost their jobs.[10]

The results of the research for the compliance variable found that of the 73 respondents there

were only 26 people (35.6%) who were obedient and the remaining 47 people (64.4%) were not obedient.[11] Defines adherence as the level of patients carrying out treatment methods and behaviors suggested by health workers, especially nurses. Thus the level of patient compliance will determine the patient's attitude in limiting the intake of food and drink. The results of this study are also supported by the results of a study, that there were 81.4% of patients who were not adherent to following a nutritional diet and 74.6% of patients who were not adherent to following fluid restrictions.[12]

Dependent Variable

The results of the research related to the IDWG Value explained that the high number of respondents who did not comply would also be followed by changes in the biological and biochemical values of the blood. This status evaluation is important in assessing the extent of change between adherent and non-adherent patients. The earliest changes occurred in patients who were not adherent to following fluid restrictions, one of which was seen in the increase in the IDWG (intradialytic weight gain) value. Weight gain between the two dialysis times is usually associated with excess sodium and water loads.[13] That patients with chronic renal failure even though at the beginning of undergoing hemodialysis have been given health education about limiting fluid and nutritional intake, but in subsequent hemodialysis patients often come with complaints of shortness of breath due to weight gain.[14] Body more than 5% of dry body weight. In this study, from 73 respondents, the results showed that there were 30 people (41.1%) who experienced an increase in the IDWG in the mild-moderate category, and the remaining 43 people (58.9%) who experienced an increase in the IDWG in the severe category.

The increase in the potassium level also contributes to the condition of the patient's body. From the results of this study, there were 40 people (54.8%) with hyperkalemia. This increase in potassium levels is caused by a decrease in the ability of the kidneys to regulate the amount of fluid and electrolytes in the body, which is indicated by a decrease in the filtration function of the glomerular membrane so that the electrolyte balance in the body will be disturbed, causing hyperkalemia. Hyperkalemia in dialysis patients is also influenced by the length of dialysis time and repeated use of dialyzer membranes. The dialysis time suggested by Pernefri is 10-12 hours/week, the longer the dialysis is done (3-5 hours per dialysis), the lower the potassium level will be.[15] Repeated use of the dialyzer membrane and has gone through several sterilization processes will reduce the filtration ability of the membrane. Hyperkalemia conditions that are not well controlled, will gradually cause several complications in the body, especially in the ability to rhythm the heart. Which states that the intake of nutrients and fluids or administration of drugs containing high potassium must be limited because hyperkalemia conditions can lead to fatal heart arrhythmias.[16] A study, concluded that the average potassium level was 4.99 mEq / l, with a minimum level of 2.00 mEq / l and the highest level of 7.47 mEq / l. This suggests that patients on dialysis are more susceptible to hyperkalemia.[17]

Increased levels of sodium and water in the body usually coincide with weight gain between the two dialysis times.[5] The increase in sodium load is reflected in the results of this study, namely from 73 respondents there were 34 people (46.6%) with normal sodium levels and the remaining 39 people (53.4%) with high sodium levels or hypernatremia. The increase in sodium levels is caused by the decreased ability of the kidneys to filter and reabsorb fluids and electrolytes, resulting in sodium restriction in the body. The restriction of sodium in the body will also be followed by fluid restrictions so that there is excess fluid in the body. Hypernatremia of course will play a role in the occurrence of excess fluid in the body, causing edema and an increase in blood pressure.[18]

The decrease in albumin levels in dialysis patients is due to the decreased ability of the glomerular membrane to filter proteins. Protein, which should be reabsorbed into the body, will separate and come out along with urine (proteinuria). Hypoalbumin conditions in patients will cause an increase in the volume of fluid in the body due to an increase in plasma osmotic pressure. Increased plasma osmotic pressure will draw more fluid into the cell membrane so that the body experiences edema. In the results of this study, there were 51 people (69.9%) who experienced hypoalbumin. Hypoalbumin conditions in patients will result in edema and shortness of breath.[18]

The increase in urea and creatinine levels is caused by the decreased ability of the kidneys to dispose of the body's metabolic products. The filtration function of the glomerular membrane decreases, so that urea and creatinine are retained in the body and become toxins for the body. Repeated use of the dialysis membrane and the length of dialysis time also contributed to the increase in urea and creatinine levels. High levels of urea and creatinine will cause nausea, vomiting, and decreased appetite (anorexia). This condition causes inadequate protein intake in CKD patients undergoing

dialysis resulting in protein malnutrition.[19] Malnutrition in dialysis patients will increase morbidity and mortality.[19] The results of this study concluded that there were 37 people (50.7%) who experienced an increase in urea levels in the mild-moderate category and the rest experienced an increase in urea levels in the severe category and there were 38 people (52.1%) who experienced an increase in creatinine levels with the mild-moderate. This is similar to the results of research conducted by Martini (2010), which states that there are 30 people with chronic kidney disease who underwent dialysis (90.9%) with high urea levels and 31 people (93.9%) with high creatinine levels.

Relationship level of patient compliance in limiting fluid and nutritional intake to the value of IDWG in hemodialysis patients in the hemodialysis unit RSUD Kota Bekasi in 2013

The results showed that patients who did not adhere to the restriction of fluid and nutritional intake experienced the most severe increases in IDWG. Bodyweight between dialysis is an important parameter that must be monitored because too free fluid intake can cause circulatory burdens, edema, and fluid intoxication. Intradialytic weight gain (IDWG) is measured based on the dry weight of the patient and also from the measurement of the patient's clinical condition. Dry body weight is the weight achieved by HD patients after HD therapy, without edema, shortness of breath, normal blood pressure (systolic between 120-170 mmHg, diastolic between 80-100 mmHg).[20] IDWG that can be tolerated by the body is not more than 1.0-1.5 kg.[21]

It was concluded that dialysis patients experienced an average increase in IDWG of around 1.2-2.8 kg for both men and women.[22] In addition, concluded that restriction of nutritional intake also influences changes in IDWG.[22] A similar study, which concluded that patients who were not adherent experienced an increase in IDWG in the weight category (> 5 kg) as many as 14 people (58.3%). Thus, the increase in IDWG is caused by too free fluid intake, which is more than the normal rule (500 ml + urine output), and too free intake of high sodium foods such as salty foods, tauco, canned food, or preservatives so that the body experiences excess fluid and sodium load. . Such conditions cause shortness of breath due to pulmonary edema, anasarca edema, and ascites. That is what makes the patient's condition even worse.[6]

Relationship level of patient compliance in limiting fluid and nutritional intake to potassium levels in hemodialysis patients in the hemodialysis unit RSUD Kota Bekasi in 2013

From the results of this study, it was concluded that there were 17 people (65.4%) who complied with limiting fluid and nutritional intake with normal potassium levels and there were 9 people (34.6%) who complied with high potassium levels or hyperkalemia. There were 16 respondents (34.0%) with normal potassium levels and 31 people (66.0%) with high potassium levels or hyperkalemia, respondents who did not comply with restrictions on fluid and nutritional intake.

Conditions of excess fluid and sodium loads, as well as hypoalbumin and hyperkalemia conditions, will certainly worsen hypertension that occurs in dialysis patients. Potassium limitation is done because hyperkalemia conditions can result in fatal heart arrhythmias.[7] Therefore, the administration of drugs containing potassium and foods high in potassium such as bananas, orange mangoes, melons, high-potassium vegetables such as spinach, cassava leaves, papaya leaves, mustard greens, and tubers must be limited. A similar study, which confirmed that in patients who were not compliant there were changes in blood biochemical values, one of which was potassium by 81.4%. Thus, dialysis patient adherence is urgently needed in limiting potassium intake.[5]

Relationship level of patient compliance in limiting fluid and nutritional intake to sodium levels in hemodialysis patients in the hemodialysis unit RSUD Kota Bekasi in 2013

As explained above, that high sodium food intake is also involved in increasing IDWG. Foods high in sodium such as salty foods, tauco, canned or preserved foods such as corned beef, sausage, canned fish, and canned fruit will cause excess sodium load in the body.[15] Sodium retains body fluids so that in chronic kidney failure it will cause worsening fluid retention and in the end will result in an increased burden on the heart pump because of the excess fluid, which aggravates hypertension in patients.[19] Thus, dialysis patient adherence is urgently needed in reducing or even staying away from foods that contain lots of sodium.

The relationship between the level of patient compliance in limiting fluid and nutritional intake to albumin levels in hemodialysis patients in the hemodialysis unit RSUD Kota Bekasi in 2013

From the results of the study, it was found that there were 15 people (57.7%) who complied

with restricting fluid and nutritional intake with normal albumin levels and there were 11 people (42.3%) who complied with low albumin or hypoalbumin levels. There were 12 respondents (25.5%) with normal albumin levels and 35 people (74.5%) with low albumin or hypoalbumin levels.

In chronic renal failure, patients tend to experience proteinuria as a result of the failure of the kidneys to reabsorb proteins that the body needs. Proteinuria causes the hypoalbumin condition to get worse gradually, so that there is an increase in plasma osmotic pressure, causing edema in the body.[19] During the hemodialysis process, the patient's protein intake was adjusted slightly higher than it was before hemodialysis was performed. This is done to avoid intradialytic malnutrition because protein can be released through the dialyzer membrane during the hemodialysis process. The results of a research study concluded that there was a relationship between protein intake and albumin levels. Thus, dialysis patient adherence is very much needed in meeting the protein needs.[19]

Relationship level of patient compliance in limiting fluid and nutritional intake to urea levels in hemodialysis patients in the hemodialysis unit RSUD Kota Bekasi in 2013

Chronic kidney failure patients undergoing dialysis therapy are advised to reduce protein consumption because the higher protein consumption will make the kidneys work harder to excrete metabolic waste.[15] In connection with the condition of hypooalbumin and increasing levels of urea, it is necessary to comply with the regulation of protein intake so that there is no accumulation of harmful substances in the body. A similar study, who confirmed that from 52 respondents, the average urea level was 151.11 mg/dl with PS 63.29 mg / dl.[23]

The relationship between the level of patient compliance in limiting fluid and nutritional intake to creatinine levels in hemodialysis patients in the hemodialysis unit RSUD Kota Bekasi in 2013

From the results of this study, it was concluded that there were 20 people (76.9%) who complied with limiting fluid and nutritional intake with an increase in mild-moderate creatinine levels and there were 6 people (23.1%) who complied with an increase in severe creatinine levels. Among respondents who did not comply with limiting fluid and nutritional intake, there were 18 people (38.3%) with an increase in mild-moderate creatinine levels and as many as 29 people (61.7%) with an increase in severe creatinine levels.

High creatinine levels can be affected by a diet high in creatinine which comes from meat and low biological value foods such as nuts, seeds, tubers, tempeh, tofu, rice, corn, potatoes, sweet potatoes, spinach, cassava leaves, long beans, mustard greens.[19] Every 1 gram of meat eaten will produce 3.5 - 5.0 mg of creatine. The cooking process changes about 65% of creatine into creatinine which will be absorbed from the gastrointestinal tract.[19] Under normal conditions, creatinine is one of the body's metabolic wastes that must be excreted by the kidneys. In dialysis patients, this function is replaced by a dialyzer. An adequate hemodialysis process is also greatly influenced by the length of time dialysis and the use of repeated dialysis membranes so that both of these can affect the creatinine value. The results of a similar study, showing that from 52 respondents the average creatinine level was 12.62 mg/dl and PS 8.94 mg/dl. Therefore, it is very necessary for patient compliance in regulating the consumption of protein foods so that creatinine urea and albumin are well controlled.[23]

Conclusion

Characteristics of respondents include: most respondents age group 41-60 years as many as 48 people (65.8%), male gender 43 people (58.9%), most recent education is high school 28 people (38.4%), with the status of not working as many as 56 people (76.7%). For the level of adherence, many patients who were not adherent were 47 respondents (64.4%), with biological and biochemical values of blood, 43 respondents (58.9%) experienced an increase in severe IDWG with 40 respondents (54.8%) hyperkalemia 39 respondents (53.4%) hypernatremia, 51 respondents (69.9%) hypoalbumin, 37 respondents (50.7%) who experienced an increase in mild-moderate urea and 38 respondents (52.1%) who experienced a mild increase in creatinine. Patient adherence to limiting fluid and nutritional intake can regulate the biological and biochemical values of blood in patients undergoing hemodialysis (respectively for potassium, sodium, albumin, urea and creatinine with P Value respectively, namely $p = 0.0005$; $p = 0.020$; $p = 0.008$; $p = 0.013$; $p = 0.002$; $p = 0.004$).

Conflict of Interest Declaration

The author has no conflict of interest to declare

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