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Effectiveness of Nutritional instructional Program on Knowledge among Hemodialysis Patients in Kirkuk General Hospital

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Abstract

Objective: To assess effectiveness of nutritional instructional program on knowledge among hemodialysis patients in Kirkuk General Hospital.

Methodology: A descriptive study was conducted at Kirkuk General Hospital in Kirkuk city. The research was carried out over a period from 4th September 2022, to 1st May 2023. The sample, consisting of 30 patients, was divided into two groups: the study group, exposed to the nutritional educational program, and the control group not exposed to the program. The effectiveness of the nutritional educational program was measured using a 48-item questionnaire, the data were analyzed by SPSS ver. 22.

Results: The study found that the educational program had a positive and significant effect on patients' knowledge of nutrition, with a significant improvement observed in the study group between pre- and post-tests across all main domains. Regarding the demographic characteristics of the sample, the majority (73.3%), and highest proportion of the sample (56.27%) was in the age group of (50-59) years. The majority of the sample were married (86.7%), and the majority had a primary school education (40%). In terms of the duration of hemodialysis therapy, the majority (46.7%) had been receiving treatment for 3-5 years.

Keywords: *Hemodialysis, Nutrition, Program, Patient.*

Introduction

Chronic renal failure (CRF) is an irreversible, gradual loss of kidney function that results in uremia, metabolic acidosis, anemia, electrolyte abnormalities, and endocrine problems (1). End-stage renal disease is a chronic illness that necessitates lifelong treatment that includes renal replacement therapy, education, and dietary and hydration restrictions. It is a terrible consequence of chronic renal failure. As a result, it has a significant impact on the affected patients' QOL, morbidity, and death (2). The food of a hemodialysis patient is an important element of maintaining biochemical equilibrium. PEW syndrome is still a major risk for hemodialysis patients. Muscle mass loss caused by increasing protein catabolism is linked to death. (3) Patients with compromised renal function necessitate careful diet coordination with their existing physiological situation. Protein: Protein-energy malnutrition, as shown by dietary intake and protein status biomarkers, is a serious problem for dialysis patients, and it is regarded as one of the most significant predictors of overall malnutrition (4). Protein levels rise when the patient is on dialysis to compensate for dialysate losses. High biological value proteins (eggs, meat, and dairy products, for example) are sometimes prescribed because they are more easily converted

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to body protein than low biological value proteins. (5) Energy: To reach and maintain goal body weight, consume 25 to 35 kcal/kg/day. (6). Sodium and potassium: Sodium intake should be kept at 2–3 g/day in order to manage hypertension and body fluid retention. Because dialysis removes extra sodium from the body, sodium intake is not as strictly monitored for dialysis patients as it is for CKD patients who are not yet on dialysis. With changes depending on serum potassium levels as indicated, intake is limited to 2 to 3 g/day to minimize potassium buildup, which can lead to cardiac issues (7). When serum phosphorus levels reach 5.5 mg/dL or when parathyroid hormone levels are increased, dietary phosphorus intake is limited to 800 to 1000 mg/day. (8). Calcium intake should not exceed 2 g/day, which includes calcium obtained from food, nutritional supplements, and drugs such as binders (9). Fluid: consumption is restricted to 1000 mL per day plus an amount equivalent to urine output (7).

Methodology:

A quasi-experimental design (pre-post test) study had been used through the study. the study is conducted at Kirkuk general hospital (hemodialysis unit). A random sampling approach is used to generate accurate data and a representative sample 30 patients. The sample is split into two groups: the study group (15 patients) receives nutrition instruction program, while the control group (15 patients) does not get nutrition education program. The educational program is based on a knowledge evaluation of the patients. The program's material is examined by experts in various fields and revisions to the program's content are made based on these experts' opinions and suggestions. They all agreed that the program is well-designed to increase patients' nutrition awareness. To assess the effect of an education program on patients' knowledge of nutrition the researcher created a questionnaire style that consists of the two parts: demographic characteristics of the patients and patients' knowledge toward nutrition. A pre-test is administered before to the implementation of the designed program to assess the patient's knowledge, the identical sentence is used as a post-test, which is applied after the program is implemented.

Results

Table 1: Distribution of the studied groups according to Socio-Demographical Characteristics variables (SDCv.)

SDCv.	Groups	Study		C.S. (*) P-value
	Classes	No.	%	
Gender	Male	11	73.3	C.C.=0.203 P=0.256 (NS)
	Female	4	26.7	
Age Groups	< 40	0	0.00	C.C.=0.394 P=0.137 (NS)
	40 _ 49	4	26.7	
	50 _ 59	10	66.7	
	60<	1	6.7	
	Mean ± SD	56.27 ± 8.90		
Residence	Urban	7	46.7	C.C.=0.198 P=0.269 (NS)
	Rural	8	53.3	
Marital Status	Married	13	86.7	C.C.=0.464 P=0.016 (S)
	Single	0	0.00	
	Divorce/Widower	2	13.3	
Level of education	Illiterate	4	26.7	C.C.=0.297 P=0.406 (NS)
	Primary school	6	40	
	Secondary school	1	6.7	
	Institute, college and more	4	26.7	

Occupation	Student	1	6.7	C.C.=0.507 P=0.034 (S)
	Employee	4	26.7	
	Retired	4	26.7	
	Housewife	2	13.3	
	Unemployed	4	26.7	
Duration of Hemodialysis Therapy in years	1 _ 2	4	26.7	C.C.=0.393 P=0.064 (NS)
	3 _ 5	7	46.7	
	6 >	4	26.7	
	Mean ± SD	4.20 ± 2.24		

(*) S: Sig. at P<0.05;NS: Non Sig. at P>0.05; Testing based on a contingency coefficient (C.C.) test

Table 2: Descriptive Statistics of the studied groups according to the Patients' knowledge toward protein that found in Hemodialysis patient's foods

The Patients' knowledge toward Renal Failure Disease items	**Periods**	**No.**	**Study**					
			MS	**SD**	**RS%**	**Ass.**	**P-value**	**C.S. (*)**
1. Protein is essential for repair and maintenance of body tissue and also helps in wounds healing.	**Pre**	**15**	**1.33**	**0.90**	**66.5**	**M**	**0.023**	**S**
	Post	**15**	**2.00**	**0.00**	**100**	**H**		
2. One of the symptoms of high blood urea is loss of appetite	**Pre**	**15**	**1.20**	**0.94**	**60.0**	**M**	**0.141**	**NS**
	Post	**15**	**1.67**	**0.62**	**83.5**	**H**		
3. The daily recommended dietary protein intake for ESRD Patient is 1.2 to 1.5 g/kg.	**Pre**	**15**	**0.40**	**0.51**	**20.0**	**L**	**0.001**	**HS**
	Post	**15**	**1.67**	**0.49**	**83.5**	**H**		
4. 50% of the daily protein intake is preferably from animal sources	**Pre**	**15**	**0.33**	**0.72**	**16.5**	**L**	**0.008**	**HS**
	Post	**15**	**1.53**	**0.74**	**76.5**	**H**		
5. Dairy products such as milk are a rich source of protein	**Pre**	**15**	**1.13**	**0.99**	**56.5**	**M**	**0.011**	**S**
	Post	**15**	**2.00**	**0.00**	**100**	**H**		
6. Protein deficiency for long time causes muscle weakness	**Pre**	**15**	**1.20**	**0.86**	**60.0**	**M**	**0.010**	**HS**
	Post	**15**	**2.00**	**0.00**	**100**	**H**		
7. Lentils and beans are rich in protein	**Pre**	**15**	**1.07**	**0.88**	**53.5**	**M**	**0.006**	**HS**
	Post	**15**	**2.00**	**0.00**	**100**	**H**		
8. Rice, pasta and bread are low protein foods	**Pre**	**15**	**0.87**	**0.99**	**43.5**	**M**	**0.018**	**S**
	Post	**15**	**1.67**	**0.62**	**83.5**	**H**		

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05; Testing based on repeated Measurement (Wilcoxon Signed Ranks) test

Evaluation Intervals Scoring Scales of Relative Sufficiency Coefficient (RS%): [L: Low (0.00 – 33.33)]; [M: Moderate (33.34 – 66.66)]; [H: High (66.67 – 100)

Table 3: Descriptive Statistics of the studied groups according to the Patients' knowledge toward minerals and fluid for Hemodialysis patients

Patients' knowledge toward minerals and fluid for Hemodialysis patients	Periods	No.	Study					
			MS	SD	RS%	Ass.	P-value	C.S. (*)
1. Phosphorous helps maintain healthy muscles and bones	Pre	15	1.00	0.93	50.0	M	0.012	S
	Post	15	1.80	0.41	90.0	H		
2. A dialysis patient needs 800 to 1000 mg/day of phosphorous	Pre	15	0.47	0.52	23.5	L	0.008	HS
	Post	15	1.33	0.72	66.5	M		
3. Phosphorus is found in meat and fish	Pre	15	0.73	0.80	36.5	M	0.003	HS
	Post	15	1.87	0.35	93.5	H		
4. Writing "sodium phosphate" on the label of canned products indicates the presence of phosphorus	Pre	15	0.73	0.80	36.5	M	0.004	HS
	Post	15	1.80	0.41	90.0	H		
5. Phosphorus is low in fresh fruits and fresh Vegetables	Pre	15	0.40	0.63	20.0	L	0.002	HS
	Post	15	1.73	0.59	86.5	H		
6. Fluid restricted to 1000 mL per day plus an amount equivalent to urine output.	Pre	15	0.53	0.83	26.5	L	0.001	HS
	Post	15	2.00	0.00	100	H		
7. Avoid pickles and olives to reduce thirst	Pre	15	1.40	0.91	70	H	0.034	S
	Post	15	2.00	0.00	100	H		
8. Sodium is part of table salt	Pre	15	1.67	0.72	83.5	H	0.102	NS
	Post	15	2.00	0.00	100	H		
9. The diet should contain (2-3) gram of sodium per day	Pre	15	0.53	0.83	26.5	L	0.002	HS
	Post	15	1.80	0.41	90	H		
10. Hot dogs and sausage are high in sodium	Pre	15	0.87	0.74	43.5	M	0.002	HS
	Post	15	1.87	0.35	93.5	H		
11. Fresh meat is low in sodium	Pre	15	0.47	0.74	23.5	L	0.002	HS
	Post	15	1.80	0.56	90.0	H		
12. To reduce the sodium in canned foods, they should be rinsed with water for a minute	Pre	15	1.07	0.88	53.5	M	0.009	HS
	Post	15	1.93	0.26	96.5	H		
13. Potassium is an element that helps the heart and muscles function properly	Pre	15	0.73	0.88	36.5	M	0.011	S
	Post	15	1.87	0.52	93.5	H		
14. A Hemodialysis patient needs 2-3 grams per day of potassium	Pre	15	0.47	0.64	23.5	L	0.003	HS
	Post	15	1.53	0.74	76.5	H		
15. Bananas and kiwi are a rich food source of potassium	Pre	15	0.47	0.74	23.5	L	0.001	HS
	Post	15	2.00	0.00	100	H		

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05; Testing based on repeated Measurement (Wilcoxon Signed Ranks) test

Evaluation Intervals Scoring Scales of Relative Sufficiency Coefficient (RS%): [L: Low (0.00 – 33.33)]; [M: Moderate (33.34 – 66.66)]; [H: High (66.67 – 100)

Discussion

In this study, we assessed patients' knowledge on hemodialysis nutrition, educated them, and then evaluated the influence of education on their knowledge, according to demographic data in table 1, the majority of the sample consisted of males 11 (73.3%) and most of the participants were in the age group of 50-59 years 10(66.7%) with a mean age of 56.27 years. These findings are consistent with the study conducted by (10) in Egypt, where the majority of participants were male and within the age group of 51-60 years. Similarly, (11) in Duhok in Iraq reported that the majority of participants were male (73.3%) and within the age group of 49-58 years. In regards to marital status, our study showed that the majority of the sample was married, accounting for 13(86.7%). These results are in agreement with a study performed by (12) in Al-Nasiriyha in Iraq, which reported the highest percentage of 33(82.5%) of the study group being married. Relative to their level of education, our study showed that the highest percentage of patients had only completed primary school, accounting for 6(40%) participants. This result is supported by a study conducted by (13) in Iran, which revealed that the majority of participants also had only completed primary school. This result indicates that a majority of hemodialysis patients have a low level of education, which negatively impacts their knowledge about appropriate dietary habits. In term of duration of hemodialysis our study showed that the majority of the sample 7(46.7%) having 3 - 5 years of duration of hemodialysis therapy. our results are consistent with the study conducted by (14) in Sudan, which revealed that 40% of the patient's received hemodialysis for three years and more. In table 2 our study showed that a statistically significant improvement in patients' knowledge about protein in all items after providing them with the nutrition program. This study results are consistent with the study conducted by (12) which reported There is an increase in patients' knowledge about protein after giving them the nutrition program. the findings of this study are corroborated by the findings of a study done by (15), who stated that there was a considerable improvement in several elements of their nutrition after the education intervention. Data analysis on patients' dietary practices revealed a significant difference in the post-test score for weekly average protein consumption. In table 3 our study presented that after receiving the nutrition program, patients' understanding of minerals and fluids greatly enhanced in all categories except point eight, which did not demonstrate a significant rise. This study's findings are congruent with those of (12) who found that giving patients with a nutrition program increased their awareness of minerals and fluids. This study results are supported by study conducted by (14), which found a considerable improvement in patients' understanding of fluid limitations following the implementation of an educational program.

Conclusion:

The majority of samples for both groups (study & control) revealed the highest percentage of participants (hemodialysis patients) were male at age between (50 - 59) years. The study reveals that the majority of patients' have unsatisfactory knowledge toward nutrition before implementation of the educational program. The effectiveness of the education program demonstrated a high significant of knowledge for the study group toward nutrition after application of an educational program.

Author Contributions:

Design: Alaa Abdullah Mohammed

Collection and assembly of data: Alaa Abdullah Mohammed

Statistical expertise: Salah Mohammad Salih Hassan

Analysis and interpretation of data: Alaa Abdullah Mohammed

Drafting of the article: Alaa Abdullah Mohammed

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