International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 10, 2020
ISSN: 1475-7192

Effectiveness of an Instructional Program Related to Dietary and Fluid Compliance among Patients Who Undergo Hemodialysis at Al-Hussein Teaching Hospital in Al-Nasiriyah City, Iraq

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Abstract

This current study aimed at evaluate the effectiveness of the instructional program on dietary and fluid complain among patient undergoing hemodialysis, assess patient's knowledge on dietary and fluid complain among patients undergoing hemodialysis, and to determine the relationship between the patient's demographic and clinical characteristics and effectiveness of instructional program. A quasi- experimental design study has been applied at hemodialysis units at Al-Hussein Teaching Hospital in Al-Nasiriyah City during the period from January 29th, 2019 to October 11th, 2020.The size of the sample is (60) patients divide into two groups, each one contains (30) patients as a control group and study group. The study group was exposed to the instructional program while the control group was not exposed to the instructional program. The present study showed that there are positive effect resulted from the instructional program as appeared in the study compared with the control group. The study concludes that the knowledge of patients treated in the hemodialysis unit was inadequate before implementation of the instructional program. After the implementation of the instructional program, there was an improvement in their knowledge toward fluid and dietary compliances.

Keyword: *Instructional program, Patients' knowledge, Fluid and diet compliance*

I. Introduction

Chronic kidney disease (CKD) is a time period that encompasses all ranges of reduced renal function, from damaged–at threat via mild, moderate, and excessive continual kidney failure. CKD is a international public fitness problem. In the United States, there's a growing occurrence and occurrence of kidney failure, with bad consequences and excessive prices (Arora, 2019).Chronic kidney disease is a non-communicable and

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preventive disease that may take months or years to yield life-altering signs and symptoms. The main etiologies of CKD include hypertension, chronic glomerulonephritis and diabetes mellitus (DM).

Symptoms of CKD do not appear during the early stages and usually become obvious to the individuals in later stages (Photharos et al., 2018).CKD is more prevalent in the elderly population. However, while younger patients with CKD usually experience, progressive loss of kidney function, 30% of patients over sixty five years of age with CKD have stable disease. Also, CKD is related to an increased risk of cardiovascular disease and end-stage renal disease (ESRD) (Stevens, Viswanathan, & Weiner, 2010).The prevalence of End Stage Renal Disease (ESRD) cases are 150 per million and about 9-13% of patients who are on dialysis die within one year. The all-cause mortality rate in hemodialysis patients is 6.3-8.2 times higher than the general population (Beerappa & Chandrababu, 2018).

Chronic renal failure affects approximately 75,000 people in the United States of America, kidney disease is the ninth leading cause of death in the United States, while 40 to 80 persons for every million in Europe have CRF (Mohsen, Mohammed, Riad, & Atia, 2013).The Kidney disease results goodness initiative (KDOQI) of the National Kidney Foundation (NKF) established a definition and classification of CKD in two thousand two. The KDOQI defines CKD as either kidney damage or a decreased glomerular filtration rate (GFR) lower than sixty ml/min/1.73 m2 for as a minimum three months (Arora, 2019).

Human adult can develop a chronic renal failure due to various diseases is a clinical picture characterized by a decreased glomerular filtration rate and irreversible impairment in renal functions. Treatment options for end-stage renal failure are included hemodialysis, peritoneal dialysis, and renal transplantation (Baser & Mollaoglu, 2019). Hemodialysis (HD) is a methodology that's used to achieve the extracorporeal removal of waste products such as creatinine and urea also free water from the blood when the kidneys are in a state of renal failure (Mersal, El-Sedawy, & Mersal, 2016).

Hemodialysis is a technique procedure that cleans and filters blood. It rids the body of harmful waster and extra salts and fluids. It also controls blood pressure and helps the body keep the proper balance of the chemical like potassium, sodium and chloride. Hemodialysis uses a dialyzer or a special filter to scrub the blood. The dialyzer is connected to a machine. During treatment, the blood travels through tubes into the dialysis filter, which filters out wastes and extra fluids. Then the newly cleaned blood flows throughanother set of tubes and back into the body (Mohsen, Mohammed, Riad, &Atia, 2013).

ESKD patients receiving hemodialysis are needed to restrict their fluid and salt intake as inadequate fluid control is associated with poor short-term (e.g. hypertension, painful cramps throughout dialysis and extended dialysis sessions) and long-term health outcomes (e.g. pulmonary oedema, cardiovascular risk and increased mortality) (Chou & Kalantar-Zadeh, 2017).Successful treatment of patients with chronic kidney disease requires the individual’s compliance with a complex and critically important therapeutic regimen (Lee & Molassiotis, 2002).Adherence to fluid restrictions, dietary and medication guidelines, additionally, attending at prescribed hemodialysis sessions of a hemodialysis regimen are essential for adequate management of end-stage renal disease. Non adherence to the prescribed regimen is a common problem in hemodialysis and is associated with increased morbidity and mortality (Naalweh et al., 2017).

II. Methodology

2.1. Ethical Consideration

After obtaining the approval of the University of Baghdad/ College of Nursing Council for the study, then obtained approval from the Ministry of Planning Department of Statistics Center. After that, approval was obtained from the Educational Research and Studies Center in Thi-qar Health Directorate.

2.2. Design and Setting of the study

A quasi-experimental design is carried out to assess the effectiveness of the instructional program on patients' compliance with fluid and diet in Al-Hussein Teaching Hospital in Al-Nasiriyah City, through the application of pre-test and post-test approach for the study and control groups, the study lasted from 29th of January, 2020 to the 11th of October, 2020.

2.3. An instrument of the study

For evaluating effectiveness of an instructional program related to dietary and fluid compliance among patients who undergo hemodialysis at Al-Hussein Teaching Hospital in Al-Nasiriyah City. The researcher has constructed the study instrument to attain the objectives of the study. The questionnaire format consists of (4) parts, which are: socio- demographic characteristics sheet, patients' clinical information, fluid and diet compliance scale by Cosar and Pakyuz (2015), and patients' compliance confidence scale by Lindberg, Wikstrfm, and Lindberg (2007).

2.4. The Instructional Program

The program was designed and presented in three sessions for study group, the component of the program was in Arabic language, and the time chosen for each session was 45-60 minutes. Sessions of the program were: general information about kidney and renal failure, general information about hemodialysis, and general information about fluid self-regulation

2.5. Statistical Analysis

The researchersare using the Statistical Package of Social Science (SPSS) version (24) to analyze the data and assess the result of the present study. The researcher used descriptive and inferential data analysis to obtain results.

III. Results and Discussions

The table (1) revealed that the majority 12 (40.0%) of patients in the study group are within the age group (more than 59 years) and 13 (43.3 %) of patients in the control group are within the same age group and 25 (41.7 %) of patients all study sample of in within the age group (59 years and more) with a total mean of age (36.5 years).Related to the gender the study group were equal 15(50.0%) for each other and while 16 (53.3 %) male and 14 (46.70 female in control group, In addition, as for total study sample gender were equal for each male and female 30 (50.0%).The majority of study sample regarding to the marital status were 20 (66.7%) were

in study married group , while in control group 19 (63.3%) also Married and overall study sample are 39 (65.0%) single.

This result is close to that by Baraz, Parvardeh, Mohammadi, and Broumand (2009) who noted that the age of their sample was ranged from 18 to 50, as well as with that by Baser and Mollaoglu (2019) who mentioned that male and female are equal and most of them were married.Concerning to the educational level, majority of patients in study group were 13 (43.3%) were not read and not write , while 15 (46.7%) in the control group were read and write, in addition for total study sample 28 (48.3%) were don't red and write.This result in line with that by Beerendrakumar, Ramamoorthy, and Haridasan (2018) who submitted that 48 percent of their sample was unable to read and write and 20 percent was able to read and write followed by the other classes.In relation to the profession of the head of the family, the most of patients in study groups 18 (26.7%) housewife, while equally percent for freeancers and housewife 8 (26.7 %) in the control group.. In addition total study sample 16 (26.7%) were housewife. Regarding to the family monthly income, the most of patients the majority of 18 (60%) of study group barely insufficient , while in control group 19 (63.3%) also barely insufficien In addition total study sample 37 (61.7%) have patients with barely insufficient monthly income.

Regarding to housing ownership**,** the most of patients in study group 15(50.0%) were owner, while 13 (43.3%) in the control group were shared. In addition, total study sample 28 (46.7%) were owner.This result seems to be like that conclude by Ozen, Cinar, Askin, Mut, and Turker (2019), Isarannavar and others (2017), Naser and Mohammed (2016) who mentioned that most of their sample were housewives, having free work, an adequate monthly income, and having their own house.Related to the Body Mass Index (BMI), the majority of study sample 17 (56.7%) in study sample were overweight, while in control group 17 (56.7%) also with overweight, then the total study sample were 34 (56.7%) were overweight.This finding agrees with that by Carreira and others (2015) who mentioned that the mean and standard deviation of BMI were (25.1± 5.1) kg/m2 for hemodialysis patients. On the other hand, this result disagrees with that by Anuja and Ashok (2020), Naser and Mohammed (2016) who stated that most of their sample were having a normal BMI.

The table (2), about the question (How many years ago did you suffer from kidney failure) the answer were equally between the three and four years 8 (26.7%) for every each other in study group, while in control group 8 (26.7%) answers with two years, in addition totol study sample were answers with four years 14 (23.3%). This result similar to that by Topbas and others (2015) who noted that the average duration of CKD was four years.Regarding the sessions of dialysis in one week, 70.0 percent of the patients were having three sessions/ week, and 15.0 percent of them had a one and two sessions/ week. This result similar to that by Borzou, Zonoori, Falahinia, and Soltanian (2016) who mentioned that 67.15 percent of their sample were having a three sessions/ week and only 32.85 percent of them had one or two sessions/ week.

About the complication during hemodialysis, 83.3 percent of patients experienced complication during the hemodialysis, and only 16.7 percent of them reported no complication. This result close to that by Valsaraj, Valsaraj, Bhat, Prabhu, and George (2014) who noted that more than half of their sample were having complications during hemodialysis. Concerning having any of the chronic diseases (diabetes, heart disease, and hypertension), 63.3 percent of patients had diabetes, 50.0 percent of them had heart diseases, and 71.7 percent of them had hypertension. This result agrees with that by Baser and Mollaoglu (2019), Beerendrakumar, Ramamoorthy, and Haridasan (2018), Howren and others (2015), and Hajira, Samiullah, and Chawla (2013) who

stated that 41.45 percent, 72.0 percent, 48.85 percent, 84.4 percent of patients suffers from chronic diseases respectively. Regarding the amount of fluid consumed by the patients during the day, 48.3 percent of them were consumed 501-1000 ml of fluids/ day which equates to three to six cups. This result is confirmed with that by Winters, Lindberg, and Sol (2013) who stated that 48.4 percent of their study sample consumed 501 to 1.000 ml/ day.

Table (3) shows that information of study groups were presented (L) in all items at pre-test, while were presented (H) in all items at post-test. That there are statistically significance significant differences between two periods (pre and post- tests) of study groups in all items of Patients knowledge toward fluid control scale for hemodialysis patients of the study group show which on significant differences, This reflects that which mean effectiveness of an instructional program related to dietary and fluid compliance among patients who undergo hemodialysis when analyzed by (t-test). This result in line with that by Alsaeedy and Abed (2019) as they noted that the knowledge of patients was changed after implementing the instructional program, also Mersal, El-Sedawy, and Mersal (2016) noted a significant change in knowledge after applying a nursing guideline on dietary and fluid compliance among patients undergoing hemodialysis. This change in knowledge occurred as a result of information acquisition by the patients during the period of the instructional program prepared by the student researcher.

Table (4) shows that information of control groups were presented (L) in all items at pre-test, while were presented (L) in all items at post-test. That there are non-statistically significance significant differences between two periods (pre and post- tests) of control groups in all items of Patients knowledge toward fluid control scale for hemodialysis patients of the control group show which on significant differences, This reflects that which meannon exposure to an instructional program related to dietary and fluid compliance among patients who undergo hemodialysis when analyzed by (t-test). This result in line with that by Alsaeedy and Abed (2019) as they noted that the knowledge of patients was not changed after implementing the instructional program, also Mersal, El-Sedawy, and Mersal (2016) noted that the knowledge after applying a nursing guideline on dietary and fluid compliance among patients undergoing hemodialysis was not changed in the control group. This result appears due to that the patients did not expose to the instructional program during the study period.

Table (5) shows that the pretest were approximately equal for the for control groups (M = 1.3) at pre and post period, while for pre and posttest , study group scores are higher (M = 2.69 versus M = 1.29).Also this table show statistically significant differences between pre and posttest for study group at $P < 0.05$, which mean effectiveness of an instructional program related to dietary and fluid among patients who undergo hemodialysis among the two period when analyzed by (t-test). This result agrees with that by Alsaeedy and Abed (2019), Baser and Mollaoglu (2019), and Mersal, El-Sedawy, and Mersal (2016) as they mentioned a significant difference between the study and control group after the instructional program was implemented. This change in knowledge occurred as a result of information acquisition by the patients during the period of the instructional program prepared by the student researcher.

Table (6) shows the distribution and categorization of confidence scale of compliance which revealed that low percent and frequency in all subscale at pre-test of study group and highly percent and frequency at all subscale at post-test of study group.

Table (7) shows the distribution and categorization of confidence scale of compliance of patients' dietary and fluid compliance who undergo hemodialysis which revealed that low percent and frequency in all subscale at pre-test and post-test of the control group.This result similar to that by Ozen, Cinar, Askin, Mut, and Turker (2019), Estridge, Morris, Kolcaba, and Winkelman (2018) and Lindberg and Fernandes (2010) who mentioned a high level of confidence after providing a program for patients.

Table (8) shows that the pretest were approximately equal for the for control groups (M = 2.00) at pre and post period, while for pre and posttest , study group scores are higher (M = 1.79 versus M = 4.09).Also this table show statistically significant differences between pre and posttest for study group at P < 0.05, which mean patients' confidence toward compliance related to dietary and fluid among patients who undergo hemodialysis among the two period when analyzed by (t-test). The emergence of this result because the patients acquired information that would raise their compliance with fluids and diet and thus an increase in the level of confidence.

Table (9) shows statistically significances differences between demographics variables (patients' age , patients' educational level and patients' body mass index) ,while there is non- statistically significances differences between demographics variables (patients' gender , patients' marital status and patients' monthly) and effectiveness of an instructional program related to dietary and fluid among patients who undergo hemodialysis, when analyzed by ANOVA.This result in line with that by Howren and others (2015), Tovazzi and Mazzoni (2012), Baraz and others (2009) who discovered a relationship between patients' compliance and their age, level of education, and BMI.

Table (10) show statistically significances differences between patients' clinical information's variables (duration of renal failure, complication during hemodialysis , suffering from heart disease and the amount of fluid consumper day) ,while there is non- statistically significances differences between the other clinical patients' information and effectiveness of an instructional program related to dietary and fluid among patients who undergo hemodialysis, when analyzed by ANOVA.This result agrees with that by Mina and others (2019), Lins, Leite, Godoy, Tavares, and Rocha (2018), and Howren, Cozad, and Christensen (2016) who mentioned a relationship between the compliance and amount of fluid intake, heart diseases, duration of renal diseases, and complication during hemodialysis.

IV. Conclusions

The current study concluded the following points:

1. The patients' knowledge in the study group was improved after implementing the program compared with the control group.

2. The instructional program was effective due to the differences between the control and study group after implementing the program.

3. The patients' level of confidence was increased after the instructional program.

4. There was a relationship between the compliance and patients' age, level of education, and BMI.

5. There was a relationship between the compliance and the duration of renal failure, heart disease, complications during hemodialysis, and the amount of fluid consumed/ day.

6. There was no relationship between compliance and patient gender, marital status, occupation, and family socioeconomic status.

7. There was no association between sessions of hemodialysis during the week, having diabetes or hypertension.

V. Recommendations

The current study was recommended the following points:

1. There is a need for the continuous instructional program regarding compliance for patients with CKD who undergo hemodialysis.

2. There is a need to discover the factors affecting patient compliance in our country.

3. There is a need to clarify non-compliance to fluid and diet for patients with renal failure who undergo hemodialysis.

4. Providing simple manual booklet to patients with renal failure to enhancing their compliance with diet, fluid, and treatment.

Table (1): Distribution of The Study Sample by Socio- Demographic Characteristics for (Study and Control Group) (N= 60 Patients) :

Basic Information	Groups	Study group		Control group		Total Sample		C.S
		F	%	F	%	F	%	
Age groups	18-28	4	13.3	3	10.0	7	11.7	C.C.=0.838 P=0.001 (N.S)
	29-38	2	6.7	4	13.3	6	10.0	
	39-48	5	16.7	7	23.3	12	20.0	
	49-58	7	23.3	3	10.0	10	16.7	
	59 years and more	12	40.0	13	43.3	25	41.7	
	Total	30	100.0	30	100.0	60	100.0	

	$\bar{x} \mp S.D.$	37, 0 ∓1.418		36.3∓1.382		36.5∓ 1.294		
Gender	Male	15	50.0	16	53.3	30	50.0	C.C.=0.683 P=0.001 (N.S)
	Female	15	50.0	14	46.7	30	50.0	
	Total	30	100.0	30	100.0	60	100.0	
Marital Status	Married	20	66.7	19	63.3	39	65.0	C.C.=0.357 P=0.0022 (N.S)
	Single	4	13.3	5	16.7	9	15.0	
	Divorced	0	00.0	00.0	00.0	0	00.0	
	Widow	6	20.00	6	20.0	12	20.0	
	Separated	0	0.00	0	0.00	0	0.00	
	Total	30	100.0	30	100.0	60	100.0	
Educational Level	Do not read and write	13	43.3	15	46.7	28	48.3	C.C.=0.887 P=0.018 (N.S)
	Read and write	11	36.7	9	30.0	20	31.7	
	Primary school	0	0.00	0	0.00	0.00	0.00	
	Intermediate school	4	13.3	4	13.3	8	13.3	
	Secondary school	0	0.00	0	0.00	0.00	0.00	
	Technical diploma	1	3.3	1	3.3	2	3.3	
	Bachelor's degree and above	1	3.3	1	3.3	2	3.3	
	Total	30	100.0	30	100.0	60	100.0	
The profession of the head of the	Government employee	5	16.7	3	10.0	8	13.3	

family	Freelancers	7	23.3	8	26.7	15	25.0	C.C.=0.873 P=0.0019 (N.S)
	Retired	5	16.7	6	20.0	11	18.3	
	Housewife	8	26.7	8	26.7	16	26.7	
	Student	0	0.00	0	0.00	0	0.00	
	does not work	5	16.7	5	16.7	10	16.7	
	Total	30	100.0	30	100.0	60	100.0	
The family's monthly income	Not Sufficient	7	23.3	7	23.3	14	23.3	C.C.=0.764 P=0.0015 (N.S)
	Barely Sufficient	18	60.0	19	63.3	37	61.7	
	Sufficient	5	16.7	4	13.3	9	15.0	
	Total	30	100.0	30	100.0	60	100.0	
Housing ownership	Owner	15	50.0	13	43.3	28	46.7	C.C.=0.534 P=0.020 (N.S)
	Rent	3	10.0	3	10.0	6	10.0	
	Shared	12	40.0	14	46.7	26	43.3	
	Total	30	100.0	30	100.0	60	100.0	
Body Mass Index (BMI)	Normal	4	13.3	4	13.3	8	13.3	C.C.=0.650 P=0.0023 (N.S)
	Over weight	17	56.7	17	56.7	34	56.7	
	Obese	5	16.7	5	16.7	10	16.7	
	Under weight	4	13.3	4	13.3	8	13.3	
	Total	30	100.0	30	100.0	60	100.0	

F=Frequency, %= Percent, $\bar{x} \mp S$. *D*= Arithmetic Mean and Standard Deviation, Sig. at P>0.05; Testing based on a contingency coefficient (C.C.) test.

Table (2): Distribution of the patient's clinical information:

Basic Information	Groups	Study group		Control group		Total Sample	
		F	%	F	%	F	%
How many years ago did you suffer from kidney failure.	One year	3	10.0	4	13.3	7	11.7
	Two years	1	3.3	8	26.7	9	15.0
	Three years	8	26.7	3	10.0	11	18.3
	Four years	8	26.7	6	20.0	14	23.3
	Five years	4	13.3	7	23.3	11	18.3
	Six years	3	10.0	2	6.7	5	8.3
	Seven years	1	3.3	0	0.00	1	1.7
	Eight years	1	3.3	0	0.00	1	1.7
	Nine years	1	3.3	0	0.00	1	1.7
	Total	30	100.0	60	100.0	60	100.0
How many sessions of dialysis during the week	1 session	2	6.7	7	23.3	9	15.0
	2 session	6	20.0	3	10.0	9	15.0
	3 session	22	73.3	20	66.7	42	70.0
	Total	30	100.0	30	100.0	60	100.0
Do you have complications during dialysis	Yes	25	83.3	25	83.3	50	83.3
	No	5	16.7	5	16.7	10	16.7
	Total	30	100.0	30	100.0	60	100.0
Do you suffer from	Yes	18	60.0	20	66.7	38	63.3
	No	12	40.0	10	33.3	22	36.7

diabetes?	Total	30	100.0	30	100.0	60	100.0
Do you suffer from heart diseases?	Yes	16	53.3	14	46.7	30	50.0
	No	14	46.7	16	53.3	30	50.0
	Total	30	100.0	30	100.0	60	100.0
Do you suffer from high blood pressure?	Yes	24	80.0	19	63.3	43	71.7
	No	6	20.0	11	36.7	17	28.3
	Total	30	100.0	30	100.0	60	100.0
The amount of fluid you consume per day	0-500ml (equivalent to 1-3 cups)	5	16.7	4	13.3	9	15.0
	501 - 1.000 ml (more than 3 to 6 cups)	13	43.3	16	53.3	29	48.3
	1.001 - 1.500ml (more than 6 cups to 9 cups)	7	23.3	9	30.0	16	26.7
	1.500.1 - 2,000ml (more than 9 cups to 12 cups)	5	16.7	1	3.3	6	10.0
	More than 2,000 ml (more than 12 cups)	0	0.00	0	0.00	0	0.00
	I don't know	0	0.00	0	0.00	0	0.00
	Total	30	100.0	30	100.0	60	100.0

F=Frequency, %= Percent

Table (3): Comparison Significant between the Two Period (Pre and Post Tests) Patients Knowledge toward Fluid control scale for hemodialysis Patients of the Study Group:

No.	Items Related To Patients knowledge	Pre – test			Post –test			P-value	Sig
		M.S.	S.D.	Eval.	M.S.	S.D.	Eval.		
1	Eating salty and spicy food increases fluid intake	1.37	0.718	L	2.70	0.651	H	0.019	S
2	Excess intake of fluid by dialysis patients causes swelling in the body (face, legs, and feet)	1.23	0.568	L	2.63	0.718	H	0.025	S
3	Some other foods also increase weight (fluid)	1.30	0.651	L	2.67	0.661	H	0.020	S
4	Taking in more than 2–3 L of fluid between two dialysis sessions is harmful	1.43	0.774	L	2.63	0.718	H	0.011	S
5	Excess water drinking causes shortness of breath in dialysis patients	1.27	0.583	L	2.67	0.661	H	0.020	S
6	The higher the fluid intake is between two dialysis sessions, the more comfortable that dialysis session is	1.33	0.711	L	2.67	0.606	H	0.016	S
7	Excess intake of fluid by dialysis patients lowers blood pressure	1.27	0.640	L	2.53	0.730	H	0.014	S
8	I use a measuring cup when taking fluid food	1.30	0.651	L	2.63	0.615	H	0.013	S
9	I consume food in brine such as cheese and olives after I keep them in water for a while (1 h)	1.30	0.651	L	2.70	0.596	H	0.020	S
10	I keep away from activities that cause me to drink much fluid	1.20	0.610	L	2.73	0.450	H	0.029	S
11	Fluid restriction prevents me from eating outside	1.33	0.711	L	2.77	0.430	H	0.015	S

12	I drink my beverages sip by sip over a long time	1.23	0.626	L	2.67	0.547	H	0.021	S
13	I keep a record of how much fluid I take in daily.	1.27	0.640	L	2.70	0.596	H	0.025	S
14	I rinse my mouth when I feel thirsty.	1.27	0.640	L	2.80	0.407	H	0.026	S
15	I chew gum to overcome my thirst	1.30	0.651	L	2.80	0.407	H	0.021	S
16	I take care not to put salt on my food	1.33	0.711	L	2.67	0.547	H	0.011	S
17	I avoid salty food such as pickles, chips, sunflower seeds, and crisps	1.30	0.651	L	2.80	0.407	H	0.021	S
18	I cannot restrict fluids when meeting with friends	1.20	0.484	L	2.67	0.547	H	0.049	S
19	I find it very difficult to comply with fluid restriction	1.27	0.640	L	2.80	0.407	H	0.026	S
20	There are times when I do not comply with fluid restriction	1.33	0.711	L	2.77	0.430	H	0.016	S
21	There are times when I exceed 2 L of fluid between two dialysis sessions	1.27	0.691	L	2.63	0.556	H	0.160	S
22	I have no idea how I can reduce my need for water	1.33	0.711	L	2.73	0.450	H	0.113	S
23	I feel more thirsty when I leave the dialysis session	1.30	0.651	L	2.67	0.661	H	0.241	S
24	Using a lot of drugs increases my intake of fluid	1.30	0.651	L	2.67	0.547	H	0.002	S

M.S. =Mean of score , S.D. = Standard, Eval.= Evaluation. , No.= Number of items, NS : Non Significant at $P \geq 0.05$, S : Significant at $P < 0.05$ s , Level of Evaluation: (1-1.67) = Low ; (1.68-2.33) = Moderate; (2.34-3.00) = High, M = Moderate, H= High

Table (4): Comparison Significant Between the Two Period (Pre and Post Tests) Patients Knowledge toward Fluid control scale for hemodialysis Patients of the Control Group:

No.	Items Related To Patients knowledge	Pre – test			Post –test			P-value	Sig
		M.S.	S.D.	Eval.	M.S.	S.D.	Eval.		
1	Eating salty and spicy food increases fluid intake	1.27	0.691	L	1.53	0.776	L	0.169	NS
2	Excess intake of fluid by dialysis patients causes swelling in the body (face, legs, and feet)	1.30	0.651	L	1.50	0.777	L	0.226	NS
3	Some other foods also increase weight (fluid)	1.40	0.770	L	1.47	0.776	L	0.083	NS
4	Taking in more than 2–3 L of fluid between two dialysis sessions is harmful	1.27	0.691	L	1.40	0.770	L	0.308	NS
5	Excess water drinking causes shortness of breath in dialysis patients	1.40	0.770	L	1.53	0.776	L	0.591	NS
6	The higher the fluid intake is between two dialysis sessions, the more comfortable that dialysis session is	1.40	0.770	L	1.43	0.728	L	0.314	NS
7	Excess intake of fluid by dialysis patients lowers blood pressure	1.37	0.718	L	1.37	0.718	L	0.083	NS
8	I use a measuring cup when taking fluid food	1.37	0.718	L	1.40	0.724	L	0.434	NS
9	I consume food in brine such as cheese and olives after I keep them in water for a while (1 h)	1.33	0.711	L	1.33	0.711	L	0.103	NS
10	I keep away from activities that cause me to drink much fluid	1.33	0.711	L	1.37	0.669	L	0.573	NS
11	Fluid restriction prevents me from eating outside.	1.30	0.651	L	1.33	0.711	L	0.563	NS

12	I drink my beverages sip by sip over a long time.	1.33	0.711	L	1.43	0.774	L	0.434	NS
13	I keep a record of how much fluid I take in daily	1.33	0.711	L	1.13	0.346	L	0.323	NS
14	I rinse my mouth when I feel thirsty	1.13	0.346	L	1.50	0.820	L	0.434	NS
15	I chew gum to overcome my thirst	1.50	0.820	L	1.43	0.774	L	0.225	NS
16	I take care not to put salt on my food	1.30	0.651	L	1.27	0.640	L	0.170	NS
17	I avoid salty food such as pickles, chips, sunflower seeds, and crisps	1.37	0.718	L	1.37	0.718	L	0.169	NS
18	I cannot restrict fluids when meeting with friends	1.40	0.770	L	1.40	0.770	L	0.560	NS
19	I find it very difficult to comply with fluid restriction	1.37	0.718	L	1.50	0.820	L	0.096	NS
20	There are times when I do not comply with fluid restriction	1.30	0.651	L	1.30	0.651	L	0.175	NS
21	There are times when I exceed 2 L of fluid between two dialysis sessions	1.33	0.711	L	1.43	0.774	L	0.083	NS
22	I have no idea how I can reduce my need for water	1.30	0.651	L	1.30	0.651	L	0.089	NS
23	I feel more thirsty when I leave the dialysis session	1.27	0.640	L	1.27	0.640		0.096	NS
24	Using a lot of drugs increases my intake of fluid	1.30	0.651	L	1.37	0.718	L	0.076	NS

M.S. =Mean of score , S.D. = Standard, Eval.= Evaluation. , No.= Number of items, NS : Non Significant at $P \geq 0.05$, S : Significant at $P < 0.05$ s , Level of Evaluation: (1-1.67) = Low ; (1.68-2.33) = Moderate; (2.34-3.00) = High, M = Moderate, H= High

Table (5): Effectiveness of an Instructional Program Related to Dietary and Fluid Compliance among Patients Who Undergo Hemodialysis at the Two Period (Pre,Post-test) of the Study and Control Group.

Period	Groups	*N*	Total Mean	*SD*	P-Value	Sig.
Pretest	Control	30	1.3514	0.69072	0.0723	NS
Posttest	Control	30	1.3819	0.67568		
Pretest	Study	30	1.2931	0.62796	0.001	S
Posttest	Study	30	2.6986	0.40996		

N=number, SD=standard deviation,, P = probability value. , NS : Non Significant at P ≥ 0.05 , S : Significant at P < 0.05, N=Number of sample.

Table (6): Distribution and Categorization of Confidence Scale into Subscale toward Patients' Dietary and Fluid Compliance who undergo hemodialysis for Study Group:

Sub Scale	MS	Level of Evaluation	Pre-Test		Post-Test	
			Frequency	Percent	Frequency	Percent
Physiological Factor	0-2	Not all Confident	20	66.7	1	3.3
	2.1-4	Slightly Confident	6	20.0	1	3.3
	4.1-6	SomewhatConfident	4	13.3	5	16.7
	6.1-8	Quite Confident	0	0.00	10	33.3
	8.1-10	ExtremelyConfident	0	0.00	13	43.3
		Total	30	100.0	30	100.0
	0-2	Not all Confident	11	36.7	0	0.00

Affective Factor	**2.1-4**	**Slightly Confident**	**11**	**36.7**	**2**	**6.7**
	4.1-6	**SomewhatConfident**	**5**	**16.7**	**5**	**16.7**
	6.1-8	**Quite Confident**	**2**	**6.7**	**8**	**26.7**
	8.1-10	**ExtremelyConfident**	**1**	**3.3**	**15**	**50.0**
		Total	**30**	**100.0**	**30**	**100.0**
Social Factor	**0-2**	**Not all Confident**	**21**	**70.0**	**2**	**6.7**
	2.1-4	**Slightly Confident**	**5**	**16.7**	**1**	**3.3**
	4.1-6	**SomewhatConfident**	**4**	**13.3**	**1**	**3.3**
	6.1-8	**Quite Confident**	**0**	**0.00**	**10**	**33.3**
	8.1-10	**ExtremelyConfident**	**0**	**0.00**	**16**	**53.3**
		Total	**30**	**100.0**	**30**	**100.0**
Environmental Factor	**0-2**	**Not all Confident**	**11**	**36.7**	**0**	**0.00**
	2.1-4	**Slightly Confident**	**10**	**33.3**	**0**	**0.00**
	4.1-6	**SomewhatConfident**	**6**	**20.0**	**3**	**10.0**
	6.1-8	**Quite Confident**	**2**	**6.7**	**6**	**20.0**
	8.1-10	**ExtremelyConfident**	**1**	**3.3**	**21**	**70.0**
		Total	**30**	**100.0**	**30**	**100.0**

Freq.=Frequencies, %=Percentages,Level of evaluation, Not all Confident=(0-2),Slightly Confident=(2.1-4), Somewhat Confident=(4.1-6),Quite Confident=(6.1-8),Extremely Confident=(8.1-10).

Table (7): Distribution and Categorization of Confidence Scale into Subscale toward Patients' Dietary and Fluid compliance who undergo hemodialysis for Control Group:

Sub Scale	MS	Level of Evaluation	Pre-Test		Post-Test	
			Frequency	Percent	Frequency	Percent
Physiological Factor	0-2	Not all Confident	16	53.3	15	50.0
	2.1-4	Slightly Confident	9	30.0	10	33.3
	4.1-6	SomewhatConfident	3	10.0	3	10.0
	6.1-8	Quite Confident	1	3.3	1	3.3
	8.1-10	ExtremelyConfident	1	3.3	1	3.3
		Total	30	100.0	30	100.0
Affective Factor	0-2	Not all Confident	24	80.0	23	76.7
	2.1-4	Slightly Confident	3	10.0	3	10.0
	4.1-6	SomewhatConfident	2	6.7	2	6.7
	6.1-8	Quite Confident			1	3.3
	8.1-10	ExtremelyConfident	1	3.3	1	3.3
		Total	30	100.0	30	100.0
Social Factor	0-2	Not all Confident	21	70.0	20	66.7
	2.1-4	Slightly Confident	1	3.3	1	3.3
	4.1-6	SomewhatConfident	3	10.0	3	10.0
	6.1-8	Quite Confident	3	10.0	3	10.0
	8.1-10	ExtremelyConfident	2	6.7	3	10.0
		Total	30	100.0	30	100.0
	0-2	Not all Confident	14	46.7	12	40.0

Environmental Factor	**2.1-4**	**Slightly Confident**	**7**	**23.3**	**7**	**23.3**
	4.1-6	**SomewhatConfident**	**3**	**10.0**	**3**	**10.0**
	6.1-8	**Quite Confident**	**2**	**6.7**	**4**	**13.3**
	8.1-10	**ExtremelyConfident**	**4**	**13.3**	**4**	**13.3**
		Total	**30**	**100.0**	**30**	**100.0**

Freq.=Frequencies, %=Percentages,Level of evaluation, Not all Confident=(0-2),Slightly Confident=(2.1-4), Somewhat Confident=(4.1-6),Quite Confident=(6.1-8),Extremely Confident=(8.1-10).

Table (8): Compliance ConfidenceRelated to Dietary and Fluid Compliance among Patients Who Undergo Hemodialysis at the Two Period (Pre,Post-test) of the Study and Control Group.

Period	Groups	*N*	Total Mean	*SD*	P-Value	Sig.
Pretest	**Control**	**30**	**2.0269**	**1.05593**	**0.963**	**NS**
Posttest	**Control**	**30**	**2.0290**	**1.04246**		
Pretest	**Study**	**30**	**1.79**	**.827**	**0.006**	**S**
Posttest	**Study**	**30**	**4.09**	**.805**		

N=number, SD=standard deviation,, P = probability value. , NS : Non Significant at $P \geq 0.05$, S : Significant at $P < 0.05$, N=Number of sample.

Table (9): ANOVA Statistical Associations of the Study Group between the Demographic Variables of Effectiveness of an Instructional Program Related to Dietary and Fluid among Patients Who Undergo Hemodialysis :

No	Demographic Variables Effectiveness of an Instructional Program	Statistics				
		Mean±S.D.	F	d.f	P. value	Sig
1	Patients' age	34.7∓1.224	2.164	29	0.007	S
2	Patients' Gender	1.47∓0.507	3.547	29	0.085	NS
3	Patients' Marital Status	1.57∓ 0.971	.360	29	0.956	NS
4	Patients' Educational Level	1.93∓1.048	1.978	29	0.006	S
5	Patients' Occupation	3.77∓1.633	1.859	29	0.117	NS
6	Family's socioeconomic status	1.60∓ 0.724	2.190	29	0.075	NS
7	Body Mass Index	2.03∓ 0.669	1.778	29	0.014	S

$\bar{x}$ ∓ S.D.=Arithmetic Mean ($\bar{x}$) and Std. Dev. (S.D.), F = Fisher test, d.f. = degree of freedom, P = probability value, , NS : Non Significant at $P \geq 0.05$, S : Significant at $P < 0.05$.

Table (10): ANOVA Statistical Associations of the Study Group between the Patients' Clinical Information of Effectiveness of an Instructional Program Related to Dietary and Fluid among Patients Who Undergo Hemodialysis

No	Variables Effectiveness of an Instructional Program	Statistics				
		Mean±S.D.	F	d.f	P. value	Sig
1	Duration of Renal Failure.	4.10±1.900	0.962	29	0.010	S
2	Sessions of Hemodialysis during Weeks	6.27±1.015	1.263	29	0.319	NS
3	Complication During Hemodialysis	1.17 ± 0.379	12.000	29	0.001	S

4	**Suffer from Diabetes Mellitus**	**1.40±0.498**	**1.873**	**29**	**0.114**	**NS**
5	**Suffer from Heart disease**	**1.47±0.507**	**3.547**	**29**	**0.009**	**S**
6	**Suffer from Hypertension**	**1.20±0.407**	**0.478**	**29**	**0.810**	**NS**
7	**The amount of fluid you consume per day**	**2.40±0.968**	**0.462**	**29**	**0.04**	**S**

$\bar{x} \mp S.D.$=Arithmetic Mean ($\bar{x}$) and Std. Dev. (S.D.), F = Fisher test, d.f. = degree of freedom, P = probability value, , NS : Non Significant at $P \geq 0.05$, S : Significant at $P < 0.05$.

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