

## Effectiveness of an Instructional Program on Knowledge of Patients Undergoing Hemodialysis Related to Fatigue at Habib Ibn Mudahir Al-Asadi Centre in Holy Karbala.

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### Abstract:

**Objectives:** To provide the hemodialysis patients with health instructions about fatigue management; and to find out the relationships between patients' knowledge and their physical aspects

**Methods:** A quasi-experimental design by application of two-group pre-test-post-test. The study was conducted at Imam Hussein Medical City/ Habib Ibn-Mudahir AL-Asadi centre, from (23<sup>st</sup> March, 2016 up to the 27<sup>th</sup> August, 2016). A non-probability sample consisted of (50) hemodialysis patients whose aged ( $\leq 60$ ) years. The instrument validity was determined through content validity, by a panel of experts. Reliability of the instrument was determined through pilot study. Analysis of data was performed through the application of descriptive statistics) and inferential statistics.

**Results:** that the mostly of the study samples were within age groups ( $\geq 55$ ) years old and accounted (44 %) for the study group, and (48 %) for the control group. The majority were male. The higher percentage of the patients were married. The higher percentage of the patients in the two samples were Don't read and write. The greater percentage of the study were don't work.

**Conclusion:** The study show that there was a statistically significant association at ( $P \leq 0.05$ ) between the patients' knowledge of the study group and (educational level, Duration of Hemodialysis therapy, and The number of dialysis sessions). the study recommended; Providing scientific booklet prepared and presented to hemodialysis patients as guidance for self-care (diet, exercise, laboratory tests monitoring, medication, and personal hygiene

**Keywords:** Effectiveness, Hemodialysis, Fatigue.

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### I. Introduction

Hemodialysis patients demonstration low levels of physical activity and functional ability while they suffer from general weakness, exercise intolerance, and muscle waste, all leading to generalized intelligence of fatigue<sup>(1)</sup>. Fatigue in end stage renal disease (ESRD) need to classify and assess fatigue in patients getting dialysis is vital to patient health and quality outcomes. Fatigue frequently is unrecognized and therefore under-treated<sup>(2)</sup>. Fatigue is classified into physical and mental, physical fatigue, also known as peripheral fatigue, results from repeated muscle actions, in contrast, mental fatigue represents a failure to complete mental tasks that require self-motivation and internal cues in the absence of demonstrable cognitive failure or motor weakness<sup>(3)</sup>. The need to identify and assess fatigue in patients receiving dialysis is vital to patient health and quality outcomes. Fatigue frequently is unrecognized and therefore undertreated. Physical exercise, epoetin use, and L-carnitine infusion have all been used successfully to alleviate fatigue in patients receiving hemodialysis. Physical exercise also can help with the physiological and functional deterioration that can result from aging, illness, and sedentary lifestyle, all of which can contribute to dialysis related fatigue<sup>(4)</sup>.

### II. Methodology

A quasi-experimental design (two-group pre-test-post-test design) was conducted to determine effectiveness of an instructional program on knowledge of patients undergoing hemodialysis related to fatigue with application of pre and post- test approach for the study group and control group to evaluating their knowledge. It was carried out in order to achieve the early stated objectives. The study began from 23<sup>st</sup> March 2016, to 23<sup>th</sup> November, 2016. The study was conducted in Holy Karbala Governorate / Karbala health directorate / Imam Hussein Medical City / Habib Ibn-Mudahir AL-Asadi centre for hemodialysis during morning in the time between first and second shift and the interview with patients took place in the classroom of Habib Ibn Mudahir AL-Asadi Centre in period (1<sup>st</sup> June to 21<sup>th</sup> August / 2016), after getting official permission from the hospital administrator. A non-probability (purposive) sample of (50) patients were selected based on the study criteria, and after obtaining a consent from them. Data Collection: The data were collected

through the utilization of the developed questionnaire and by means of structured interview method with the subjects who were individually interviewed in the specialist centers for hemodialysis by using the Arabic version of the questionnaire the time for interview of each sample was 30 to 45 minutes , The data collection was performed from 26<sup>th</sup> June /2016 to 21<sup>th</sup> August / 2016. Study Instrument: Through review of the related literature and studies, the constructed questionnaire is that is used as a mean of data collection. It consists of (2) major parts;

Part I: Is composed of socio-demographic characteristics & medical History.

Part II: Is composed of Five Sections about Patients' knowledge toward fatigue.

Validity and Reliability: The content validity of the instrument was established through a panel of (14) experts, the reliability of the items were based on the internal consistency of the checklist was assessed by calculating Cronbach s' Alpha which as= 0.903. Statistical analysis: The statistical data analysis approach by using (SPSS-ver.23) is used in order to analyze and evaluate the data of the study. A descriptive statistical data analysis approach used to describe the study variables: Frequencies and Percentages. Inferential statistical data analysis approach: used by application of the One Way ANOVA test.

### III. Results

**Table (1):** Distribution of the Demographical Characteristics of the sample

Variables	Groups	Study		Control		C.S. P - value
		Freq.	%	Freq.	%	
Age	15 – 24	2	8.0	0	0	t-test p=0.534 NS
	25 – 34	4	16.0	1	4.0	
	35 – 44	3	12.0	2	8.0	
	45 – 54	5	20.0	10	40.0	
	≥55	11	44.0	12	48.0	
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>25</b>	<b>100.0</b>	
	<b>Mean ± SD</b>	<b>48.08 ± 13.766</b>		<b>54.72 ± 6.828</b>		
Gender	Male	15	60.0	13	52.0	FEPT P = 0.849 NS
	Female	10	40.0	12	48.0	
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>25</b>	<b>100.0</b>	
Marital status	Single	4	16.0	1	4.0	t-test P = 0.708 NS
	Married	19	76.0	18	72.0	
	Widowed	2	8.0	6	24.0	
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>25</b>	<b>100.0</b>	
Residence	Urban	4	16.0	6	24.0	t-test P = 0.298 NS
	Suburban	5	20.0	7	28.0	
	Rural	16	64.0	12	48.0	
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>25</b>	<b>100.0</b>	
Education level	Illiterate	8	32.0	9	36.0	t-test P = 0.622 NS
	Read and Write	5	20.0	0	0	
	Primary school graduate	3	12.0	7	28.0	
	Intermediate school graduate	7	28.0	1	4.0	
	Secondary school graduate	0	0	5	20.0	
	Institute graduate	1	4.0	2	8.0	
	College graduate	1	4.0	1	4.0	
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>25</b>	<b>100.0</b>	

This table indicates that the mostly of the patients participating in the two samples were within age groups ( ≥ 55 years) (Mean ± SD 51.40 ± 10.297) and accounted (44 %) for the study group, and (48 %) for the control group. With regard to gender the majority were male and made proportion of (60%) of the study group, and (52%) of the control group. And the higher percentage of the patients in the study and the control groups) (76%) (72%) were married respectively. Related to residence the majority of the patients in the two samples (study and control groups) were (64%) (48%) living in the rural.

Concerning the level of education, the higher percentage of the patients in the two samples (study and control groups) are (32%) (36%) Don't read and write respectively. The monthly income was not enough for the majority of the patients in the two samples (study and control groups) (64%) (60%) respectively. In relation to the occupational status most of patients were not working ((36%) housewife, (28%) Unemployed, and (20%) retired ) in the study group and ( (40%) housewife, (16%) Unemployed, and (16%) retired) in the control group. Statistically ,there is no significant difference between study and control groups related to (age ,gender, marital status, residence, education level, occupational status, monthly income).

**Table (2):** Distribution of the Study Sample regarding the Medical History

Variables	Groups	Study		Control		C.S.
		Freq.	%	Freq.	%	
Duration of Hemodialysis therapy	1-2	13	52.0	12	48.0	t-test P = 0.870 NS
	3-4	9	36.0	10	40.0	
	5-6	1	4.0	1	4.0	
	7- 8	2	8.0	2	8.0	
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>25</b>	<b>100.0</b>	
The number of dialysis sessions	1-2	12	48.0	11	44.0	t-test P = 0.627 NS
	3-4	13	52.0	14	56.0	
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>25</b>	<b>100.0</b>	

This table revealed that the majority of the duration of hemodialysis therapy of patients in both groups are within the (1-2 years) that show (52%) of patients in the study group and (48% ) of patients in the control group. Concerning to majority of dialysis sessions' number of patients in both groups of the study were within the (3-4) sessions per week (52%) in the study group, (56%) in the control group. Statistically ,there is no significant difference between study and control groups related to ( hemodialysis period, and number of hemodialysis session per week).

**Table (3):** Comparison Significant of Patients' Knowledge Related to Fatigue Between The Pre-test and Post-tests for The Study Group.

Main Domains Related To Patients' Knowledge about:	Study pre *No=25			Study Post *No=25			P - value	C.S
	M.S	R.S	Ass.	M.S	R.S	Ass.		
1-Renal failure and hemodialysis and its effects on fatigue presents	1.52	50.6	L	2.68	89.3	H	0.000	HS
2- Concept, causes, types and clinical manifestations of fatigue	1.08	36	L	2.96	98.6	H	0.000	HS
3- Effects of healthy nutrition on fatigue	1.16	38.3	L	2.72	90.6	H	0.000	HS
4- Effects of exercise on fatigue	1.12	37.3	L	2.64	88	H	0.000	HS
5- Effects of Personal health on fatigue	1.20	40	L	2.60	86.6	H	0.000	HS

M.S. = Mean score, R.S = Relative Sufficiency, Ass.= assessment, C.S. = Comparison Significant, No.= Number of sample, HS = High Significant at P >0.05, L = low (R.S. = 66.66 - 77.77%), M = moderate (R.S. = 77.78%-88.89%), H = high (R.S. = 88.90% – 100%).

This table shows that the mean score and relative sufficiency of patients' knowledge in post-test were higher than their in pre-test of the study group in all items, that were also observed through the grades of relative sufficiency (low, moderate, high). The table show also there are high significant differences between pre-test and post-tests of the study group in overall main domains of patients' knowledge undergoing hemodialysis related to fatigue.

**Table (4):** Comparison Significant of Patients' Knowledge Related to Fatigue Between The Study and The Control Group at Post-test period.

Main Domains Related To Patients' Knowledge about:	Control Post *No=25			Study Post *No=25			P - value	C.S
	M.S	R.S	Ass.	M.S	R.S	Ass.		
1-Renal failure and hemodialysis and its effects on fatigue presents	1.48	49.3	L	2.68	89.3	H	0.000	HS
2- Concept, causes, types and clinical manifestations of fatigue	1.12	37.3	L	2.96	98.6	H	0.000	HS
3- Effects of healthy nutrition on fatigue	1.42	47.3	L	2.72	90.6	H	0.000	HS
4- Toward effects of exercise on fatigue	1.48	49.3	L	2.64	88	H	0.000	HS
5- Effects of Personal health on fatigue	1.60	53.3	L	2.60	86.6	H	0.000	HS

M.S. = Mean score, R.S = Relative Sufficiency, Ass.= assessment, C.S. = Comparison Significant, No.= Number of sample, HS = High Significant at P >0.05, L = low (R.S. = 66.66 - 77.77%), M = moderate (R.S. = 77.78%-88.89%), H = high (R.S. = 88.90% – 100%).

This table shows that the mean score and relative sufficiency of patients' knowledge for the study group in post-test were higher than their for the control group in the same in all items, that were also observed through the grades of relative sufficiency (low, moderate, high). Also this table shows that there are highly significant differences between study and control groups in overall main domains of patients' knowledge undergoing haemodialysis related to fatigue at post-test.

**Table (5):** The correlation among demographical and medical Characteristics and knowledge Improvement due to Applying of Instructional program.

Predicted variables	Pre-test M.S ± S.D	Post-Test M.S ± S.D.	P-value pre	P-value post	C.S
Age Groups	1.43 ± 0.194	2.58 ± 0.158	0.055	0.391	NS
Gender	1.43 ± 0.194	2.58 ± 0.158	0.845	0.2615	NS
Marital status	1.43 ± 0.194	2.58 ± 0.158	0.298	0.463	NS
Residence	1.43 ± 0.194	2.58 ± 0.158	0.097	0.048	S
level of Education	1.43 ± 0.194	2.58 ± 0.158	0.796	0.040	S
Occupation	1.43 ± 0.194	2.58 ± 0.158	0.487	0.513	NS
Monthly Income	1.43 ± 0.194	2.53 ± 0.158	0.920	0.087	NS
Duration of Hemodialysis therapy	1.43 ± 0.194	2.34 ± 0.158	0.870	0.050	S
The number of dialysis sessions	1.43 ± 0.194	2.34 ± 0.158	0.113	0.567	NS

**C.S:** correlation Significant

This table shows significant correlation among patients’ knowledge toward hemodialysis fatigue and their Residence, educational level, and Duration of Hemodialysis therapy in post-test for study group. While non-significant correlation between patients’ knowledge and their age, gender, marital status, occupation, monthly income, and number of dialysis sessions in pre &post-test of study group by P = probability < 0.05.

#### IV. Discussion

**Discussion of the Socio-Demographic Characteristics Related to the Hemodialysis fatigue of the study sample (Study and Control groups):** The results of the study at table (1) had shown that the mostly of the study sample at the age group (55 and more) years. And they are accounted for (23) patients with percent (44%) with age mean (51.4) years. This result agree with Amy et al. , that show the majority of study sample with mean age (52)<sup>(5)</sup>.and agree with Vajihe et al. , that show the majority of study sample with mean age (54)<sup>(6)</sup>. This might because of prevalence of diabetes type 2 and long standing uncontrolled hypertension among these age group ( researcher), this result supported by Alashek et al., who sated that diabetes and hypertensive nephropathy were more common causes of end stage renal disease (ESRD) in patients mean age (49) years<sup>(7)</sup>. Regarding to gender it is noticed that (56%) of the study sample are male and the remaining are female. This result is similar to study done by Mohamad et al., they reported that the study population consisted of (115) hemodialysis patients with hemodialysis fatigue more than half (67%) of them were male and (33%) female<sup>(8)</sup>, and this results is agree with a study done by Tsiamis who found that the highest percentage (73.9%) of the study sample are male patients<sup>(9)</sup>. According to the subjects marital status, the majority of the sample are married (37) and they accounted for (74%) of the total sample. As we know that the effect of the persons marital status, but in light of the Iraq culture, the marital status after disease may still continuing because the strong of sociocultural band in Iraq(researcher). This result is similar to a study done by Khasal who stated that the largest of hemodialysis patients proportion are married<sup>(10)</sup>.

In regarding to residency, the highest percentage of the study sample is living in rural area and this accounted (56%). This result agree with a study done by Mahdi who found that the highest percentage of the study sample is living in rural area<sup>(11)</sup>. Concerning to the educational levels, the greater number of them had low level of education, such as not read and write, they accounted (37%) from the other levels. This result agree with a study done by Vajihe et al. , who found that the highest percentage (42%) of the study sample is low level of education<sup>(6)</sup>. Regarding to occupation status, results indicated that a highest percentage of the study sample are (unemployed, no working, retired, and house wife), and the accounted (78%). This result agree with a study done by Vajihe et al. , who found that the highest percentage (42%) of the study sample is don’t work<sup>(6)</sup>. In regarding to monthly income, the majority of the study sample are within the insufficient monthly income, based on that and according to the diseases related cost of care statistics, individual as well, especially in our country as a developing one who that lives under the shadows of the global financial crisis. While in our country unfortunately there, is no available data regarding such important issue . This result agrees with study done by Mohamad et al., who stated that monthly income is not enough<sup>(8)</sup>.

**Discussion of the Distribution of the (50) Hemodialysis Patients According to the Medical Information:** Relative to the history of the duration of hemodialysis started, the results in table (2) indicated that the highest percent (50%) hemodialysis patients had renal failure and undergoing hemodialysis before one year ago. Relative to the number of hemodialysis per week, the results indicated that the majority of (54%) patients done hemodialysis (3-4) times per week. This result agrees with (National Kidney Foundation) reported that the, the hemodialysis is classically done 3 times per week for 4 hours<sup>(12)</sup>.

**Discussion of Comparison Significant of Patients' Knowledge Related to Fatigue Between The Pre-test and Post-tests for The Study Group.:** The instructional program was effective on study group at post-test through the high percent of the patients responses for knowledge concerning the hemodialysis fatigue and majority of patients responses for the study group at post program were have been passed compared with same group at post-test period. The study indicates that there are high significant differences between pre-test and post-tests of the study group in overall main domains of patients' knowledge undergoing hemodialysis related to fatigue at the p probability less than 0.01 level, that mean the effectiveness of instructional program on study group. this result is supported be study conducted by Mohamad, et al., the results specify increased total knowledge score for patients at post further than follow up tests and increased total score for studied patients at follow up test<sup>(8)</sup>. Mollaoglu et al. , support the present study by conducted experimental study which was done on 32 patients undergo hemodialysis between November 2009 and February 2010. By comparing data and score of individuals before to and following education about self-care, it was look that data and scores were little and high correspondingly, before to the education. Following education, patients' data and scores became higher correspondingly. All these findings were statistically significant<sup>(13)</sup>.

**Discussion of Comparison Significant of Patients' Knowledge Related to Fatigue Between The Study Group and The control Group at Post-tests period:** Table(4) shows that the mean score and relative sufficiency of patients' knowledge for the study group in post-test were higher than their for the control group in the same in all items, that were also observed through the grades of relative sufficiency (low, moderate, high). Also this table shows that there are highly significant differences between study and control groups in overall main domains of patients' knowledge undergoing haemodialysis related to fatigue at post-test. This result agree with a study was done by Lindberg et al., that showed the impact of a structured educational session on knowledge of patients who receiving hemodialysis<sup>(14)</sup>. Prior to starting dialysis, the patient study group received a general impression of one-on-one teaching from a registered nurse, a dietitian, and a social worker. The study group was compared with a control group who not expose to education instruction, the results show the strong statistical significance differences with ( $p < 0.001$ ) compared with control group. Education programs for CKD patients support to improve of patient's knowledge. The study group was compared with a control group who not expose to education instruction, the results show the strong statistical significance differences with ( $p < 0.001$ ) compared with control group. Education programs for CKD patients support to improve of patient's knowledge. Bai et al., who supported our study this study revealed that the patients are responsible for the application of science knowledge to self-care daily lives. This cooperation is essential to improve the effectiveness of full care. Can increase the capabilities of self-care for patients and work with each other<sup>(15)</sup>. Moureau added that education is an effective staff in reducing the incidence of complications, throughout the training on clean model, evaluate, clear and assess the patient. Education on the basics of aseptic technique is essential for all nurses, doctors and patients to establish a culture of safety in all health care facilities<sup>(16)</sup>.

**Correlation between Demographic data (Age, Gender, Marital status, Residence, Level of Education, monthly income, and Occupation) of the samples (Study and Control Groups) and their Knowledge improvement at (Post-test):** Related to the table (5), it revealed (no significant) correlation between age factor and patient's knowledge toward hemodialysis fatigue in pretest for study group and pre and post-test for control group. This finding disagrees with results obtained from study done by El-Rahim et al. , who found that there were significant correlation between patients' socio-demographic characteristics for age and total patients knowledge<sup>(17)</sup>. Concerning gender the results show that there is no significant relationship among gender factor and patient's knowledge toward hemodialysis fatigue in both study and control group for pre and posttest This finding is agrees with study of Green et al., which states that there is non-significant relation between the gender (Prevalence and Demographic and Clinical Associations of Health Literacy in Patients on Maintenance Hemodialysis)<sup>(18)</sup>. This finding is supported by Bayraktar et al., there is no significant correlation between gender in his study<sup>(19)</sup>. This might be because the simplicity of construction of instructional program for both gender and the urgent need for education for caring them hemodialysis fatigue at table (5). The present study shows that there is a significant correlation between the level of education and patient's knowledge toward hemodialysis fatigue in post-test of study group by P value  $< 0.05$  at table (5). This finding is supported by results obtained from study done by Bayraktar et al. , who stated that there is a significantly higher numbers ( $P < .001$ ) and were detected with higher educational levels, whereas no significance was detected in the hemodialysis control group<sup>(19)</sup>. This result also comes in agreement with Ford et al. , who reported that there is a significant relationship of the knowledge level of the experimental group were more ( $P < .05$ ) After 6 months, improvements in knowledge were significantly show high in the intervention group, than in the control group<sup>(20)</sup>.

## V. Conclusions

- 1: The study presented that patients with End Stage Renal Disease (ESRD) and undergo hemodialysis therapy were adults and the majority were males, with in age group ( $\leq 55$ ) years.
- 2: Most of the patients who participated in the study were within (1-2) category for years of having disease.
- 3: Most of the patients who participated in the study were within low level of education at Don't Read and Don't write category.
- 4: Regarding the pre knowledge assessment of patient's knowledge, it indicates an inadequate level of knowledge related to hemodialysis fatigue .
- 5: The Instructional program was found to be effective in knowledge improvement to the participant patients. The total percentage of the improvement's results by the effect of applying the suggested instructional program was (92%) high improve and (0%) low improve.
- 6: The study indicated that there no significant association between patients knowledge improvements effect resulted by the application of the instructional program and their age, gender, marital status, Residence, Occupation, and Monthly Income.

## VI. Recommendations

1. Establishing and increasing the specialized Habib Ibn Mudahir al Asadi Centre with equipment's to provide wide health services to hemodialysis patients and at risk of fatigue.
2. Carrying out additional studies on the application of educational programs about the patient's knowledge and practice of hemodialysis complication.
3. Providing scientific booklet prepared and presented to patients with End Stage Renal Disease (ESRD) as guidance for self-care (diet, exercise, blood urea, serum creatinine monitoring, medication, and personal hygiene).
4. Preparing a lecture for patients visiting the Habib Ibn Mudahir al Asadi Centre for treatment about the relationship of no adherence to self-care with the long-term complications.
5. Conducting further studies on a large sample to determine the impact of educational program to hemodialysis patients knowledge toward fatigue.
6. Conducting further studies on a large sample to determine the level of fatigue for hemodialysis patients.
7. Conducting further studies on a hemodialysis staff to assess their knowledge concerning fatigue.
8. Training care providers working in specialized hemodialysis centre with skill or developing adequate health education instruction.

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