Impact of Health Education Program upon Knowledge of Patients with End-Stage Renal Failure

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المستخلص

الهدف: تحديد تأثير البرنامج التثقيفي الصحي على معارف مرضى الفشل الكلوي النهائي من خلال نهج المتابعة لكل شهرين بعد تنفيذ البرنامج ولمدة ستة أشهر متتالية.

المنهجية: تمّ اعتماد تصميم المتابعة الطويلة وأستعمال أسلوب التوقيت المتعدد في تحليل البيانات وتطبيق نهج الاختبار القبلي والاختبار البعدي للمجموعة الاختبارية والمجموعة الضابطة. وقد أجريت الدراسة في مستشفى الشهيد غازي الحريري التعليمي للجراحات التخصصية/مركز أمراض وزرع الكلى ومستشفى الخيال الخاص لأمراض وزرع الكلى للمدّة من ٢٩ آب ٢٠١٠ ولغاية ٢٨ شباط ٢٠١١. ولتحقيق أهداف الدراسة، اختيرت عيّنة غرضيّة "غير إحتمالية" مكونة من (٤٠) مريض مصاب بالفشل الكلوي النهائي في مُدّة ما قبل العملية. قسّمت العيّنة إلى مجموعتين متساويتين؛ المجموعة الاختبارية والمجموعة الضابطة، وجمعت البيانات الخاصة بالدراسة من خلال استعمال استمارة الاختبار المتعلقة بمعارف مرضى الفشل الكلوي النهائي. وقد تمّ بناؤها وتصميمها من قبل الباحث لأغراض الدراسة الحالية. تمّ تحقيق ثبات أدوات القياس من خلال إستعمال معامل ارتباط بيرسون والذي كانت نتيجته (٠،٨٢). أمّا مصداقية أدوات القياس فقد تحققت من خلال عرضها على مجموعة من الخبراء لغرض مراجعتها وتقويم درجة مصداقيتها. قام الباحث بإستعمال الإحصاء الوصفي (التوزيع التكراري والنسبة المئوية) والإحصاء الاستنتاجي (الاختبار التائي واختبار تحليل التباين) لغرض تحليل بيانات الدراسة.

النتائج: أشارت نتائج الدراسَة إلى أنّ المجموعة الاختبارية من مرضى الفشل الكلوي النهائي استفادت من تنفيذ البرنامج التثقيفي الصحي ومع ذلك تحسنت معارفهم بشكلٍ كافٍ.

التوصيات: أوصت الدراسة بإمكانية اعتبار البرنامج وسيلة فعالة في تطوير معارف مرضى الفشل الكلوي النهائي حول العناية الطبية والتمريضية بعد عملية غرس الكلية.

Abstract:

Objective(s): To determine the impact of health education program toward their end-stage renal failure (ESRF) patients' knowledge through a follow-up approach each two months post program implementation for six months.

Methodology: "Follow-up" longitudinal design by using time series approach of data analysis and the application of pre-post tests approach for the study group and the control group. The study is conducted in Al-Shahid Ghazi Hariri Teaching Hospital for Surgical Specialties/Centre for Disease and Renal Transplant, and Al-Khayal private Hospital for renal disease and transplantation during the period from August, 29th, 2010 through February, 28th, 2011. To achieve the objectives of the study, purposive "non-probability" sample of (40) ESRF patients was taken before operation. The sample is divided equally into study and control groups. Data were collected through the use of questionnaire which is related to ESRF patients' knowledge test, which were developed for the purpose of the study. Instrument validity was determined through content validity, by a panel of experts. Reliability of the instrument was determined through the use of Pearson correlation coefficient for the test-retest approach, which is (0.82). Analysis of data is performed through the application of descriptive statistics (frequency, percentage) and inferential statistics (t-test and one way analysis of variance).

Results: The results of the study indicate that the study group of ESRF patients benefited from the implementation of health education program. However, their knowledge were adequately improved and developed.

Recommendation: The study recommends the health education program could be considered as an effective way in the development of knowledge ESRF patients on medical and nursing care after the operation of renal transplantation.

Keywords: Renal transplantation, End-stage renal failure, Health education program, knowledge

Introduction:

Renal Transplantation (RT) is the preferred treatment for patients with end stage renal disease. RT offers better quality of life and greater life expectancy than dialysis [(1)].

Patients choose renal transplantation for a variety of reasons, such as the desire to avoid dialysis or to improve their sense of wellbeing, and the wish to lead a more normal life [(2)].

Renal transplantation is not a complete cure for all the problems of renal failure. This is because it is necessary to take immunosuppressive drugs to keep the transplant working, and these have side effects [(1)]. The immunosuppressant drugs have a side effect involve of all body systems of the recipients in a variety of problems. So the recipient must follow-up after the renal transplant.

Before the renal transplantation the recipient must know something about the operation of renal transplantation and it complications that may occur after the renal transplantation, the probability of rejection, signs and symptoms of rejection, causes that lead to rejection, drugs used after the renal transplantation and its side effects of drugs and how to identify of side effects of drugs and limit them.

Knowledge for renal transplantation recipients is very important for renal transplantation recipients. These recipients must be fully informed about all aspects of their renal transplantation. Everyone is well aware of the impact of complete knowledge and information about the medications, environmental insults, infections after transplantation, complications after transplantation, nutrition, and activities of daily life [(3)].

The special position of the nurse makes her/him in a closer contact with the patient and major role for nursing include more comprehensive assessment of renal function, early detection of complications related to the surgical procedure, assessment of the immunosuppressed patient (side effects of immunosuppressive drugs), and assessment of graft function by detecting signs and symptoms of renal rejection. Timely detection of complications after RT is essential to achieving good graft and patient outcomes. Early complications run the gamut from those typically encountered in post-surgical patients to technical complications specific to the surgical procedures of RT [(4)].

The nurse plays an important role in teaching and advising the recipient about all aspects of recipient needs such as frequent consultations and visits, immunosuppressant drugs and its side effect, signs and symptoms of rejection, protection the graph from rejection by avoiding contact with infected personal, changes in nutritional and life-style. It is for these reasons that the researcher has prepared this research to determine the impact of health education program toward their end stage renal failure patients' knowledge through a follow-up approach each two months post program implementation for six months.

Methodology:

"Follow-up" longitudinal design by using time series approach of data analysis and the application of pre-post tests approach for the study group and the control group. The study was conducted in Al-Shahid Ghazi Hariri Teaching Hospital for Surgical Specialties /Centre for Disease and Renal Transplant, and Al-Khayal Private Hospital for Renal Disease and Transplant. During the period from 29th Aug. 2010 up to the 28th Feb. 2011.

The sample of the study non-probability (a purposive sample) consisted of (40) end stage renal failure patients before operation. The sample was divided into two groups; (20) end stage renal failure patients (study group) were exposed to the education program and (20) end stage renal failure patients (control group) were

not exposed to the program. The two groups had proximately the same demographic characteristics include: both of them with end stage renal failure, both of them having decision for renal transplant and both of them able to read and write. To assessment needs of patients' knowledge toward renal transplantation prior to operation the data were collected from (80) patients with end stage renal failure having decision for renal transplant before operation, (20) patients from Al-Shahid Ghazi Hariri Teaching Hospital for Surgical Specialties / Centre for Disease and Renal Transplant, and (60) patients from Al-Khayal Private Hospital for Renal Disease and Transplant. An open end format was used. The results of assessment indicated that the majority of end stage renal failure patients had inadequate knowledge about RT. An education program was designed according to the result of patients' needs assessment. The education program concentrated on four major topics and it was implemented through four sessions such sessions presented important knowledge relative to patients' knowledge about RT. Each session was designed and scheduled for approximately (60) minutes and they were presented in Al-Khayal Private Hospital for Renal Disease and Transplant from 29th Aug. 2010 to 1st Sep. 2010.These sessions were comprised of the following topics:

Topic (1): Introduction to the operation of renal transplant.

Topic (2): Standards and tests requirements for recipient's renal transplant and the necessary measures before and after the operation of renal transplant.

Topic (3): Drugs of renal transplant and side effects of it and complications occurring after the operation of renal transplant.

Topic (4): Follow-up and dietary pattern after the operation.

The researcher constructed the questionnaire and was used as mean of data collection. It was comprised of two major parts include: patients' demographic characteristics and questionnaire to evaluate patient's knowledge about renal transplant. Appropriate statistical methods were used in order to analyze the data which included:

1. Descriptive data analysis (frequency, percentages and means)

Data analysis concentrated on the calculation of the relative frequencies and percentage that represent demographic characteristics of end stage renal failure patient's age, gender, marital status, level of education, income, and occupation.

2. Inferential data analysis

2.1. Pearson's coefficient correlation re-tests for determining the reliability of the pilot study.

2.2. Correlation paired t-test was performed for the determination of the significant differences between the pre and post-test scores of the study and the control group relative to the patients' knowledge [(5)].

2.3. One–way analysis of variance was performed for the determination of the effectiveness of the education program upon patients' knowledge when a follow-up approach was applied for such determination, as well as a repeated measure designed was applied [(6)].

Results:

Table 1. Distribution of demographic data in study and control groups

List	Variables	Study group		Control group	
1.	**Age* (years)**	**Frequency**	**Percent**	**Frequency**	**Percent**
1.1.	Less than 20	1	5	0	0
1.2.	20- 29	4	20	7	35
1.3.	30- 39	5	25	6	30
1.4.	40 - 49	6	30	4	20
1.5.	50- 59	3	15	3	15
1.6.	60 and more	1	5	0	0
	Total	20	100	20	100
2.	Gender	**Frequency**	**Percent**	**Frequency**	**Percent**
2.1.	Male	10	50	13	65
2.2.	Female	10	50	7	35
	Total	20	100	20	100
3.	Marital status	**Frequency**	**Percent**	**Frequency**	**Percent**
3.1.	Single	3	15	1	5
3.2.	Married	17	85	18	90
3.3.	Divorced	0	0	1	5
	Total	20	100	20	100
4.	Level of education	**Frequency**	**Percent**	**Frequency**	**Percent**
4.1.	Able to read and write	4	20	5	25
4.2.	Primary School graduate	2	10	2	10
4.3.	Intermediate School graduate	3	15	3	15
4.4.	High School graduate	7	35	6	30
4.5.	Institute and College graduate	4	20	4	20
	Total	20	100	20	100
5.	Occupation	**Frequency**	**Percent**	**Frequency**	**Percent**
5.1.	Student	0	0	1	5
5.2.	Government employee	7	35	5	25
5.3.	Retired	1	5	4	20
5.4.	Self-employee	6	30	5	25
5.5.	Other	6	30	5	25
	Total	20	100	20	100
6.	Income	**Frequency**	**Percent**	**Frequency**	**Percent**
6.1.	Adequate	3	15	6	30
6.2.	Not adequate	17	85	14	70
	Total	20	100	20	100

Table 1. (Continued**)**

7.	Do you have knowledge about the operation of renal transplantation?	**Frequency**	**Percent**	**Frequency**	**Percent**
7.1.	Yes	9	45	9	45
7.2.	No	11	55	11	55
	Total	20	100	20	100
8.	What are the sources of your knowledge on the operation of renal transplantation?	**Frequency**	**Percent**	**Frequency**	**Percent**
8.1.	Physician	6	30	5	25
8.2.	Reading	0	0	1	5
8.3.	Experience	3	15	3	15
	Total	9	45	9	45

*Mean of age in study group = 38.45 and Mean of age in control group = 35.75

This table reveals that the majority (30%) of ESRF patients in the study group were (40-49) years old. While, same percentage (5%) was (less than 20) years old and (60 years old and more). While, in the control group (35%) of ESRF patients were (20-29) years old and (15%) were (50-59) years old. (50%) of ESRF patients were male and (50%) were female in the study group while (65%) of ESRF patients were male and (35%) were female in the control group. (85%) of ESRF patients were married and (15%) were single in the study group while (90%) of ESRF patients were married and the similar percentage (5%) were single and divorced in the control group. (35%) of ESRF patients were high school graduates and (10%) were primary school graduates in the study group while (30%) of ESRF patients were high school graduates and (10%) were primary school graduates in the control group. Concerning the occupation most of ESRF patients (35%) were government employees and (5%) were retired in the study group, while in the control group (25%) were government employees, self-employee or have other occupations and (5%) were students. In relation to income (85%) of ESRF patients were not adequate and (15%) were adequate in the study group while (70%) of ESRF patients were not adequate and (30%) were adequate in the control group. (55%) of ESRF patients in both groups didn't have any knowledge about the operation of RT. (30%) from (9) in the study group and (25%) from (9) in the control group obtained their knowledge about the operation of RT from the physician.

Table 2. The comparative differences between the study group and the control group of end stage renal failure patients' knowledge related to pre-test

Variables	Study group	Control group	t-observed	P≤ 0.01
Knowledge	$\bar{X}$	$\bar{X}$	1.67	NS
	63.550	61.000		
t-critical =2.71 df=38				

df=degree of freedom; NS= Non-significant; P= level of probability; x=Mean

This table indicates that there is no significant difference between the study and the control groups of patients' knowledge, related to the pre-test at (P≤ 0.01).

Table 3. The comparative differences between the study groups of end stage renal failure patients' knowledge related to the score of pre-test and post-test

Variables	Study group		t-observed	P≤ 0.01
	Pre-test	Post-test		
Knowledge	$\bar{X}$	$\bar{X}$	21.511	HS
	63.550	93.150		
t-critical = 2.71		df= 38		

df=degree of freedom; NS= Non-significant; P= level of probability; x̄=Mean

This table indicates that there is a highly significant difference between the study group of end stage renal failure patients' knowledge, related to pre and post-test in the study group at (P≤ 0.01).

Table 4. The comparative differences between the control group related to end stage renal failure patients' knowledge score of pre-test and post-test

Variables	Control group		t-observed	P≤ 0.01
	Pre-test	Post-test		
Knowledge	$\bar{X}$	$\bar{X}$	0.862	NS
	61.000	62.450		
t-critical =2.71		df=38		

df=degree of freedom; NS= Non-significant; P= level of probability; x̄=Mean

This table shows that there is no significant difference between the control group of end stage renal failure patients' knowledge, related to pre and post-test in the control group at (P≤ 0.01).

Table 5. The comparative differences between the control group and the study group of end stage renal failure patients' knowledge related to post-test

Variables	Control group	Study group	t-observed	P≤ 0.01
Knowledge	$\bar{X}$	$\bar{X}$	19.843	HS
	62.450	93.150		
t-critical = 2.71		df= 38		

df=degree of freedom; NS= Non-significant; P= level of probability; x̄=Mean

The data in this table show that there are highly significant differences between the control and the study groups of end stage renal failure patients' knowledge, related to post-test at (P≤ 0.01).

Table 6. The comparative differences between end stage renal failure patients' knowledge related to score of pre-test and follow-up (1) in the study group

Variables	Study group		t-observed	P≤ 0.01
	Pre-test	Follow-up (1)		
	$\bar{X}$	$\bar{X}$		
Knowledge	63.55	92.65	21.236	HS
t-critical = 2.71 df= 38				

df=degree of freedom; NS= Non-significant; P= level of probability; x̄=Mean

The findings show that there are highly significant differences between the study group end stage renal failure patients' knowledge related to the pre-test and follow-up (1) at (P≤ 0.01).

Table 7. The comparative differences between end stage renal failure patients' knowledge relative to score of pre-test and follow-up (2) in the study group

Variables	Study group		t-observed	P≤ 0.01
	Pre-test	Follow-up (2)		
	$\bar{X}$	$\bar{X}$		
Knowledge	63.55	91.8	19.590	S
t-critical = 2.71 df= 38				

df=degree of freedom; NS= Non-significant; P= level of probability; x̄=Mean

The above table shows that there is a significant difference between the study group end stage renal failure patients' knowledge related to the pre-test and follow-up (2) at (P≤ 0.01).

Table 8. The comparative differences between end stage renal failure patients' knowledge related to score of pre-test and follow-up (3) in the study group

Variables	Study Group		t-observed	p≤ 0.01
	Pre-test	Follow-up (3)		
	$\bar{x}$	$\bar{x}$		
Knowledge	63.55	90.25	18.102	S
t-critical = 2.71 df= 38				

df=degree of freedom; NS= Non-significant; P= level of probability; x̄=Mean

The above table indicates that there is a significant difference between the study group end stage renal failure patients' knowledge related to the pre-test and follow-up (3) at (P≤ 0.01).

Table 9. The comparative differences between end stage renal failure patients' knowledge related to score of pre-test and follow-up (1) in the control group

Variables	Control Group		t-observed	p≤ 0.01
	Pre-test	Follow-up (3)		
	$\bar{x}$	$\bar{x}$		
Knowledge	61	64.2	2. 00	NS
t-critical = 2.71		df= 38		

df=degree of freedom; NS= Non-significant; P= level of probability; $\bar{x}$=Mean

The findings indicates that there are no significant differences between the control group end stage renal failure patients' knowledge related to the pre-test and follow-up (1) at (P≤ 0.01).

Table 10. The comparative differences between end stage renal failure patients' knowledge relative to score of pre-test and follow-up (2) in the control group

Variables	Control Group		t-observed	p≤ 0.01
	Pre-test	Follow-up (2)		
	$\bar{x}$	$\bar{x}$		
Knowledge	61	66.5	3. 07	S
t-critical = 2.71		df= 38		

df=degree of freedom; NS= Non-significant; P= level of probability; $\bar{x}$=Mean

The above table shows that there is a significant difference between the control group end stage renal failure patients' knowledge related to the pre-test and follow-up (2) at (P≤ 0.01).

Table 11. The comparative differences between end stage renal failure patients' knowledge related to score of pre-test and follow-up (3) in the control group

Variables	Control Group		t-observed	p≤ 0.01
	Pre-test	Follow-up (3)		
	$\bar{x}$	$\bar{x}$		
Knowledge	61	69.2	3. 866	S
t-critical = 2.71		df= 38		

df=degree of freedom; NS= Non-significant; P= level of probability; $\bar{x}$=Mean

The above table indicates that there is a significant difference between the control group end stage renal failure patients' knowledge related to the pre-test and follow-up (3) at (P≤ 0.01).

Table 12. Comparison between the study and the control groups with regard to end stage renal failure patients' knowledge during the follow-ups

Group	2 Months		4 Months		6 Months	
	$\bar{x}$	t-observed	$\bar{x}$	t-observed	$\bar{x}$	t-observed
Study group	92.65	19.635	91.8	14.748	90.25	8.381
Control group	64.2		66.5		67.4	
t-critical = 2.71		df= 38		P≤ 0.01		

df=degree of freedom; NS= Non-significant; P= level of probability; $\bar{x}$=Mean

The above table shows that there is a significant difference between the control and the study groups' knowledge during the follow-ups at 2, 4, and 6 months after implementing the education program at (P≤ 0.01).

Table 13. Analysis of variance for the difference between pre–post-test and follow-up (3) of the control group related to end stage renal failure patients' knowledge

Source of variance	Sum of squares	df	Mean squares	F
Between groups	450.433	2	225.216	3.624
Within groups	3541.75	57	62.135	
Total	3992.183	59		
F-critical = 4.98			P≤ 0.01	

df= degree of freedom; F= F-test; P= level of probability

The findings in this table indicate that there are no significant difference between the pre-post- test and follow-up (3) of the control group related to end stage renal failure patients' knowledge at (P≤ 0.01).

Table 14. Analysis of variance for the difference between pre-post-test and follow-up (3) of the study group related to end stage renal failure patients' knowledge

Source of variance	Sum of squares	df	Mean squares	F
Between groups	10649.733	2	5324.866	281.752
Within groups	1077.25	57	18.899	
Total	11726.183	59		
F-critical = 4.98			P≤ 0.01	

df= degree of freedom; F= F-test; P= level of probability

The above table shows that there is a significant difference between the pre-post-test and follow-up (3) of the study group related to end stage renal failure patients' knowledge at (P≤ 0.01).

Discussion:

Through the data analysis distribution of demographic variables in table (1) reports that most of the end stage renal failure patients are (40-49) years old and this account for (30%) of the study group while end stage renal failure patients in the control group are (20-29) years old and this account for (35%). In the study

group the mean age is (38.45 years) while in the control group the mean age is (35.75 years).

This result is similar to the results obtained from studies that indicate the majority of end stage renal failure patients ages are middle adulthood [7 and 8]. The researcher emphasizes that the people in this age group are more active and reproductive so they need most care and support to return to society and their family.

Regarding gender of end stage renal failure patients a similar percentage of males and females are present in the study group, while most of the end stage renal failure patients in the control group are males. This result is in agreement with the study that indicates that males and females have equal chance to injure with ESRF [9].

Concerning the marital status most of the end stage renal failure patients are married in the study group and in the control group. Based on the findings the researcher suggests that the married persons are highly exposed to problems of urinary system such as urinary tract infection which lead to ESRF.

With regard to the level of education of end stage renal failure patients, it is demonstrated that most of the patients are high school graduate in the study group and (30%) in the control group. This finding is similar to the results obtained from some studies that refer the most of patients with ESRF from high school graduate [10].

This finding indicates that the end stage renal failure patients have an acceptable level of education to participate in health education program to improve their knowledge about caring for RT.

In relation to occupation the majority of end stage renal failure patients in the study group are government employees, while a similar percentage are government employees, self-employee and other occupations (25%) in the control group. This result is consistent with the study which indicate that the majority of end stage renal failure patients are employees (50%) [11].

The majority of end stage renal failure patients in this study have not adequate monthly income in the study group and the control group. The researcher refers to the finding of the present study reveals that the economic status has a high impact on health status for end stage renal failure patients stable especially after RT by provide immunosuppressant drugs to prevent renal rejection.

Highly percentage of end stage renal failure patients in the study and the control groups don't have knowledge concerning RT. This result is in agreement with a study which indicates that the majority of end stage renal failure patients don't have knowledge concerning RT [12].

This finding indicates that the majority of end stage renal failure patients have knowledge deficit about RT. For this reason, the researcher reveals that there is a critical need to health education program to these patients in order to improve their knowledge toward RT.

In relation to the sources of knowledge on the operation of RT the majority of patients obtained their knowledge on the operation of RT from the physician in both groups. Based on the results the researcher emphasizes that the sources of knowledge on the operation of RT for end stage renal failure patients depended on the needs of end stage renal failure patients to identify the quality of life after RT. As well as there is critical need that the nurse must be playing an important role in health education for patients.

Table (2) indicates that there are no significant differences between the control and the study groups of patients' knowledge, related to the pre-test at ($P \leq 0.01$). This means that both groups have insufficient knowledge concerning RT.

This result is supported by study which indicates that the end stage renal failure patients have a limited knowledge about RT. Based on the results the researcher emphasizes the importance of health education program for end stage renal failure patients to help them

maintain a new renal graft and a better quality of life after RT[13].

After implementing the education program on the study group, a highly significant difference is found between the study group of end stage renal failure patients' knowledge, related to the pre and post-test at (P≤ 0.01) table (3).This means that the health education program is effective in improving the knowledge of end stage renal failure patients in the study group.

While table (4) shows that there are no significant changes experienced by the control group regardless of the time consumed between the pre and the post-test at (P≤ 0.01). This means that end stage renal failure patients did not acquired knowledge concerning RT, Therefore, the researcher asserts to supply end stage renal failure patients with knowledge concerning RT in order to maintain a safe life free from complications.

Table (5) shows that the study group has a significant knowledge at (P≤ 0.01) after the education program when they are compared with the control group in the post-test. This result is in agreement with the study which evaluated the early effect of an education program on end stage renal failure patients and which showed that (158) end stage renal failure patients are divided into a study and a control group and the study group received the intervention subject knowledge about increasing the ability to predict end stage renal failure patients who are most likely to be non-adherent to their immunosuppressant therapy. The study indicates that knowledge scores of the intervention group are higher than that of the control group and suggested that the program helped end stage renal failure patients acquire greater knowledge concerning caring for patients after RT[14].

This means that the importance of health education program to improve knowledge of end stage renal failure patients concerning RT is to decrease or prevent complications after RT.

The finding of table (6) reveals that there are highly significant differences between the pre-test and follow-up (1) of the study group. While the findings of the tables (7 and 8) indicate that there are significant difference between the pre-test and follow-up (2) and follow-up (3) respectively. The education program for end stage renal failure patients is evaluated through a follow-up at 2 months and 6 months after its implementation, significant changes are associated with end stage renal failure patients' knowledge as a result of such a program [15].

This means that end stage renal failure patients who undergo the education program acquire better information that definitely contribute to better knowledge.

There are no significant differences between the pre-test and follow-up (1) in the control group. This finding indicates that end stage renal failure patients who do not undergo the education program have not acquired knowledge during the follow-up (1) period table (9).

While tables (10 and 11) show that there are significant differences between the pre-test and follow-up (2) and follow-up (3) respectively in the control group. The researcher explain this result that the end stage renal failure patients who did not undergo the education program have acquired little knowledge during the follow-up (2) and follow-up (3) period from the physician, nurse, or by visiting clinic or RT center or by asking patients after RT, and getting information about RT by reading books, magazines and by making use of the internet through this period.

Table (12) indicates significant differences between the study and the control groups concerning end stage renal failure patients' knowledge after a period of 2, 4, and 6 months of program implementation. This result is in agreement with the study which indicates that the end stage renal failure patients become more cognitive about caring for RT after the education program [16].

The researcher explain these results that end stage renal failure patients have acquired knowledge concerning RT during the follow-up (1), (2), and (3) periods because of the effect of the health education program on the study

group and it also indicates slow increase in the level of end stage renal failure patients' knowledge in the control group through talking to the physician, nurse, visiting the clinic or RT center, asking patients after RT, and reading books, magazines, and making use of the internet through this period.

Table (13) reveals that there are no significant differences between the pre and post-test with the follow-up (3) in the control group. This means that end stage renal failure patients in the control group have not acquired knowledge because they did not undergo the health education program during the pre-test, post-test and the follow-up (3).

While table (14) shows that there are significant differences between the pre-test and post-test with follow-up (3) in the study group. This result is similar to the study which shows that there are significant differences between the pre-test and post-test with follow-up (3) in the study group[17]. This means that end stage renal failure patients in the study group have acquired knowledge because they underwent the health education program during the pre-test, post-test and the follow-up (3).

Conclusion:

The study concluded that the knowledge of patients with ESRF toward RT is very poor and the health educational program for these patients is necessary in different age groups, educational level, occupational, and considered as an effective mean for the reinforcement of improvement of ESRF patients' knowledge regarding RT.

Recommendations:

1. Increasing health education of end stage renal failure patients about RT through T.V., radio, newspapers, and medical magazines …etc.
2. Increasing the number of the centers of RT and all nephrology units in the general Hospitals which must involve an increased health education about the operation.

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