

## Effectiveness of Educational Program for Health Promoting Lifestyle among Patients (Recipients) with Kidney Transplantation

Eman Sobhy Omran<sup>1</sup>, Marwa Mosaad Ali<sup>2</sup>, Samah Said Sabry<sup>3</sup> and Taisser Hamido Abosree<sup>4</sup>

(1) Lecturer of Medical-Surgical Nursing, Benha University, Egypt, (2) Assist. prof of Medical-Surgical Nursing, Benha University, Egypt, (3) Assist. prof of Community Health Nursing, Benha University, Egypt and (4) Lecturer of Community Health Nursing, Benha University, Egypt.

### Abstract

**Background:** Kidney transplantation is a life-saving alternative to dialysis for patients with advanced, irreversible renal failure, which extending the survival, improving the quality of life, and decreasing in the mortality associated with long-term dialysis. **Aim:** The aim of this study was to evaluate the effectiveness of educational programs for health-promoting lifestyle among patients (recipients) with kidney transplantation. **Research design:** A quasi-experimental design was utilized in the present study. **Setting:** This study was conducted at Out-Patients Clinic for follow-up kidney transplantation in Nasr City Health Insurance Hospital. **Sample:** Purposive sample of 106 patients (Intervention group 54 & control group 52). **Tools:** Three tools were utilized for data collection, (I) A structured interview questionnaire for patients, (II) A health-promoting lifestyle profile, and (III) The Kidney Transplant Patient's Quality of Life. **Results:** There was highly statistically significant difference in knowledge scores between the intervention and control group, as well as a significantly higher scores of health promoting lifestyle behavior, and quality of life of intervention compared to control group. It also showed a significant association between knowledge and health promoting lifestyle behavior as well as quality of life of patients with kidney transplantation after educational program implementation. **Conclusion:** The intervention group benefited from the educational program that increased their knowledge, encouraged healthy lifestyle behaviors, and improved their quality of life. **Recommendations:** Written, a simple booklet about health-promoting lifestyle behavior post-transplantation should be available for patients and their families (relatives) at the Out-Patients Clinic for follow-up kidney transplantation in Nasr City Health Insurance Hospital.

**Keywords:** Educational program, Health promoting lifestyle, Kidney transplantation, Recipient patients.

### Introduction

Kidney transplantation (KT) is the widely accepted treatment of choice for patients with End-Stage Renal Disease (ESRD), since it increases the quality of life while prolonging life expectancy and benefits from the lower mortality rate associated with

long-term dialysis. With end-stage renal disease, the kidneys are unable to properly maintain blood levels of certain kidney-regulated substances or efficiently remove waste from the body. Kidney transplantation is a surgical technique in which a patient with renal insufficiency receives an implanted healthy, working kidney from a living or brain-dead donor (Ndemera and Bhengu, 2017; WHO, 2022). A new kidney is

## **Effectiveness of Educational Program for Health Promoting Lifestyle among Patients (Recipients) with Kidney Transplantation**

surgically attached to a blood artery nearby and positioned on the left or right side of the lower abdomen during a kidney transplant. The kidney can easily link to the blood arteries and bladder when it is in this position. The new kidney's veins and arteries are joined to the patient's veins and arteries. The replacement kidney's ureter connects to the bladder, allowing urine to pass out the body **(Cleveland Clinic, 2020)**.

Patients with irreversible kidney failure of any age can find a life-saving alternative to dialysis in kidney transplantation. In 2019, 23,401 kidney transplants were performed in the US. Individuals in the 70s and occasionally even 80s may be candidates for transplant if they are healthy, capable of working independently, have strong social support, and have a long life expectancy. Kidney transplants are appropriate for patients with advanced irreversible kidney failure. KT Enhances the quality of life and function, not just make dialysis easier. Patients who also have diabetes can be transplant candidates. People with specific medical conditions, such as serious heart disease or cancer, should not use KT **(Hertl, 2020)**.

Making the best choices for the patient's promotion of a healthy lifestyle is assisted by the transplant team. Patients should follow the recommendations and visit the transplant team frequently. They should also take anti-rejection medication as prescribed by the transplant team, taking it at the right time and dose each day to prevent the body from rejecting the new kidney. Patients should also follow the recommendations to schedule laboratory tests and doctor visits to ensure the kidney is functioning properly. They should also increase physical activity with regular exercise and should consult the doctor before

beginning an exercise program (a dietitian can help choose the right healthy foods to adopt a healthy lifestyle, lose weight, and what is needed to achieve and maintain a healthy weight). Consult with dietitians and transplant teams to get a healthy weight loss diet and feel better **(The National Kidney Foundation, 2020)**.

Health education and promotion have traditionally put a heavy emphasis on lifestyle. According to the World Health Organization, a person's lifestyle is made up of certain patterns of behavior that are influenced by personality, environment, social network, and socioeconomic situation. By raising public awareness, modifying people's attitudes, and promoting healthy behaviors, it is possible to boost protective benefit of medication **(Kehren, 2022)**.

Health-Promoting Lifestyles (HPL) emphasize the promotion of life through a lifestyle made up of six components: Exercise, healthy eating, health responsibility, spiritual development, interpersonal interactions, and stress reduction. This way of life encourages satisfaction, self-improvement, and health and well-being. Ideally, health can be successfully maintained by kidney transplant drugs and lifestyle adjustments **(Merzkani et al, 2022)**.

After transplantation, it is possible for rejection, infections, cancer, cardiovascular disease, immunosuppressive therapy to fail, and psychological issues may happen. The nurse's role is crucial for enhancing the quality of life, avoiding complications, and implementing the necessary changes for treatment. Standard postoperative care for patients having kidney transplants is a complicated process that takes into account evaluation for rejection and infection prevention **(Hussein and Zatoon, 2019)**.

As the largest group of healthcare workers, nurses have the most interaction with patients compared to other healthcare providers. They have a deeper awareness of patients' educational needs and they are more able to follow up them and modify patients' lifestyle (Yadav & Chong, 2019).

Nurses are crucial to help patient to keep kidney survival with treatment, it is important that the nursing staff work to educate patients when return to the homes with enough knowledge, to keep the appropriate self-care skills and knowledge, this include the proper use medication to avoid side effects, addressing questions about adherence to the therapeutic regimen, since not following the therapy regimen increases the risk of graft loss. Understanding of the care for identification and prevention of signs and symptoms of infection or rejection, importance of balanced and healthy diet, exercise, skin care and precaution of immunosuppressive (Ibrahem, 2020).

Nurses should be able to apply an in-depth knowledge organ transplantation to assess, plan, implement, and evaluate interventions in the care of the transplant patient and analyze the biological, sociological and psychological effects of transplantation on the patient. This involves an ability to analyze the efficacy of nurse led therapeutic interventions and evaluation of quality assurance systems in the kidney transplantation setting (Gadalean et al., 2017)

### **Significance of the Study**

Kidney transplantation is a chief public health care in both developed and developing countries. Worldwide, the population treated with kidney replacement therapy is raising, representing 1.3 million patients who undergo dialysis and 400 000 patients who are alive with a kidney transplant. In Egypt Urology and

Nephrology Center at Mansoura reported that total number of renal transplantation was 2795 from year 1976 till 2016 with an average of 100 transplant patients annually. The rate of transplantation is 32 per 1000 dialysis patients per year that is much lower than North Europe 135 per 1000 dialysis patient According to Nasser City Health Insurance Hospital statistics the total number of renal transplant patients was 1650 from year 1990 till 2017( Ibrahim, 2020).

About 43 years ago, the first kidney transplant was placed in Egypt at the Mansoura Center for Urology and Nephrology in March 1976. Over time, the kidney transplantation procedure in Egypt has changed. From 1976 to 2011, around 10,000 transplants were carried out; however, from 2016 to 2019, the average yearly number of kidney transplants rose to 1,100 (Elrggal et al., 2020). Patients who had kidney transplants have a higher risk of complications and a lower quality of life if they do not promote a healthy lifestyle. Therefore, this study aimed to assess how well kidney transplant recipients responded to a lifestyle education program that promoted good health.

### **Aim of the Study**

The present study aimed to evaluate the effectiveness of educational program for health-promoting lifestyles among patients (recipients) with kidney transplantation. Through,

- Assessing knowledge among kidney transplant recipients
- Assessing the quality of life and health-promoting lifestyle behaviors among recipients of kidney transplants
- Creating and implementing a lifestyle program that promotes health depending on the needs of the patients.

**Effectiveness of Educational Program for Health Promoting Lifestyle among Patients  
(Recipients) with Kidney Transplantation**

- Evaluating the effect of educational program on patients' knowledge, healthy promoting lifestyle, and quality of life

**Research Hypotheses**

The following research hypotheses have been developed to achieve the study's aim:

**H1** – Mean score of knowledge among patients with kidney transplantation assigned to the intervention group may be significantly higher post-program than in the control group.

**H2** – Mean score of health-promoting lifestyle behavior among patients with kidney transplantation assigned to the intervention group may be significantly higher post-program than in the control group.

**H3**- Mean score of quality of life among patients with kidney transplantation assigned to the intervention group may be significantly higher post-program than in the control group.

**H4** – There may be a significant association between both knowledge and health-promoting lifestyle behavior with quality of life among patients with kidney transplantation on follow up period

**Subjects and Methods**

**Research design**

Quasi-experimental design (case-control) was utilized to conduct the current study.

**Research setting**

This study was conducted at Out-Patients Clinic for follow-up kidney transplantation in Nasr City Health Insurance Hospital that the clinic of follow-up receives a large number of kidney transplantation patients.

**Subjects**

Type: Purposive sample

Size: The sample size was calculated based on the previous year census report of admission at Outpatient's Clinic of kidney transplantation in Nasr City Health Insurance Hospital census, 2020. The total number of subjects involved in study comprised 198 patients who undergone kidney transplantation attending the study setting, utilizing the following formula (Yamane, 1967)

$$n = \frac{N}{1+N(e)^2}$$

Where:

n= sample size

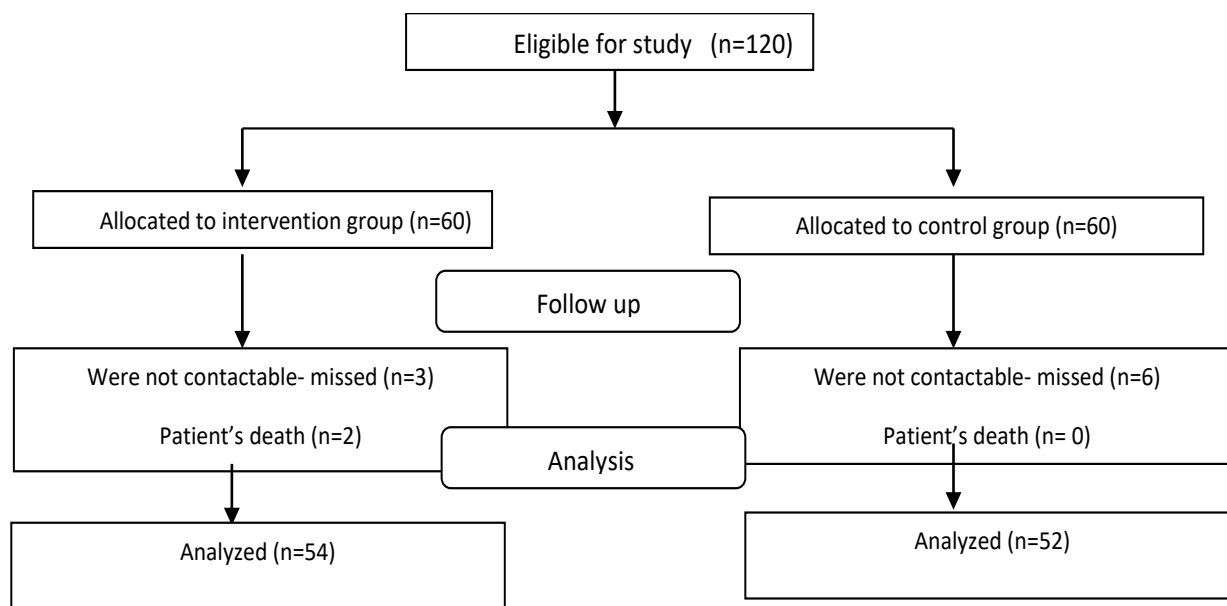
N= total population (198)

e= margin error (0.05)

A total of 132 patients were involved in the current study, excluding 10% (12) of total sample to reach finally to 120 patient. They were divided randomly into two equal groups. Group (1) control group included 60 patients they had ordinary nursing care. Group (2) intervention group included 60 patients they received the educational program, which reached at the end of the study period to 52 patients in the control group and 54 patients in the intervention group.

Inclusion criteria:

Patients were selected according to the following criteria: Kidney transplant patients aged 20-60 years, with normal renal function (no dialysis required) and more than 3 months post-transplant (post-transplant acute phase).



**Figure 1. Flow chart of study participants.**

### Tools of the research

Three tools were used for collecting the data.

#### **Tool I: A structured interview questionnaire (pre/post-test):**

It was developed by researchers using a literature review and was composed of three parts.

**First part:** Concerned about patients' socio-demographic data, which include age, sex, marital status, residence, level of education, current employment status, occupation, and income.

**Second part:** Patients' medical history (past & present) history such as presence of co-morbid disease, type of comorbidity, causes of renal failure and donor relationship.

**Third part:** Included knowledge about kidney transplantation adopted from **Warzyszyńska et al., (2020); Cunha & Lemos, (2020); Câmara et al. (2016)** and modified by researchers. It included questions about basic knowledge of kidney transplantation (definition, causes, risk factors), and care of

patients after kidney transplantation such as (rejection syndrome, nutrition, exercise, daily activity, rest and sleep, medication, infection control measures, sexual relation, follow up and coping after transplantation.

#### **Scoring system:**

All knowledge variables weighted by the items included in each multiple-choice questions (questions that imply don't know or incorrect answer get a score of 0, other correct answers get a score of 1. The scores of the items were summed-up and the total divided by the number of the items, giving a mean score. These scores were converted into a percent score, and means and standard deviations were computed. The total score was 65 points. The scores were distributed according to the importance of the items. Below 60% which equal <39 score was graded as unsatisfactory and 60% and above which equal  $\geq 39$  score was graded as satisfactory.

#### **Tool II: A health-promoting lifestyle profile (HPLP-II)**

It was adopted from **Meihan and Chung-Ngok, (2011)** and modified by researchers. It

## **Effectiveness of Educational Program for Health Promoting Lifestyle among Patients (Recipients) with Kidney Transplantation**

consisted of 52 items, incorporating 6 subscales of health response, physical activity, nutrition habits, spiritual status, personal relationships, and stress management.

Scoring system. HPL total scores ranged from 52 to 208 points, and the mean item score ranged from 1 to 4 points according to the 4-point Likert scale (1 = never; 2 = sometimes; 3 = often; and 4 = routinely). These scores were converted into a percent score, and means and standard deviations were computed. Higher score indicated better health behavior. Participant categorization was performed as follows: 52 to 104 points, inappropriate healthy lifestyle; 104 to 156 points, intermediate healthy lifestyle; and 156 to 208 points, proper healthy lifestyle.

### **Tool III: The Kidney Transplant Patients' Quality of Life (KTQ-25).**

It was adopted from **Laupacis et al., (1993)**, and modified by researchers. It is a disease-specific instrument to measure Quality Of life of renal recipients. The questionnaire had a total of 25 items, which were grouped into 5 dimensions: Physical symptoms (six items), fatigue (five items), uncertainty/fear (four items), appearance (four items), and emotional (six items).

Scoring system, were measured on a 7-point Likert scale. Scores for all subscales range from 1 (worst QOL) to 7 (best QOL). The cutoff point for KTQ-25 was 3.5. The average score was obtained by adding the scores for each item and dividing by the number of items.

### **Content Validity:**

The content validity had done through a panel of five experts in the medical and community nursing specialty for face and content validity, and their opinions requested via an assessment form for grading each item

as "essential," "useful but inadequate," or "unnecessary." According to the panel's assessment of the content's completeness, appropriateness, and sentence clarity, modifications were made.

### **Reliability:**

The researchers used reliability for tools to verify the internal consistency of the tools by administering the same tools to the same sample under identical circumstances. The reliability of tools tested using Cronbach's alpha, regarding its values for knowledge questionnaire sheet, health promoting lifestyle scale (HPLP-II), as well as the kidney transplant patients' Quality of Life, were as follows: 0.95, 0.71 and 0.93, respectively, where tools' reliability good.

### **Ethical consideration:**

This study conducted after primary approval obtained from the Ethics Committee, Faculty of Nursing, Benha University. Then official permission obtained from director of Nasr City Health Insurance Hospital. An explanation about the purpose of the study had given to participants. They informed that they could withdraw from the study at any time. After agreement for participation in the study, they were asked to sign a consent form. Moreover, participants reassured that all information gathered would be confidential and used only for the study.

### **Pilot study**

Pilot study was conducted on 10% (12 patients) of the total sample of patients (excluded from the study sample) in order to determine the time required to complete data collection, assess the study tools' clarity and appropriateness for finishing the questionnaires. According on the findings of the pilot study, the necessary adjustments were performed prior for data collection by

excluding unnecessary or redundant questions and making changes.

**Field of work:**

Once official permission to carry out the study obtained from relevant authorities after explaining its purpose. A structured interview conducted individually for patients eligible for the study (fulfilled the inclusion), in order to explain the purpose of the study, assure confidentiality, and to obtain informed consent. Data collection extended over 10 months from the beginning of March 2021 till the beginning of January 2022.

**The educational program for Health Promoting Lifestyle construction:**

The program comprised the following phases:

**Assessment phase:** The researchers created the program after doing a comprehensive review of relevant literature. Patients who undergone kidney transplantation were interviewed in groups before implementing the educational program in order to collect the baseline patients' data using all study tools. This interview took about 30 to 35 minutes.

**Development phase:** Based on the actual findings of the pre-program assessment, the program was created.

**An objective of the program:** Was to evaluate the effectiveness of educational program for health-promoting lifestyles among patients (recipients) with kidney transplantation

**Contents of program included:**

- Kidney transplantation basic knowledge (definition, causes, and risk factors).
- Care of patients after kidney transplantation (signs and symptoms of rejection, infection prevention, medication, diet, exercise, daily activity, rest and sleep, and sexual relation and follow up.
- Instruction to patient about how to cope after transplantation.

**Teaching methods:**

The same teaching methods and content were utilized by all patients which were (lecture, brainstorming, discussion, demonstration and re-demonstration).

**Teaching aids:** Appropriate teaching materials were developed especially for the sessions, such as booklet, and colored posters)

**Implementation phase:** The patient selected according to the allocated assessment times before and after the program and fulfilling the criteria. This program conducted through 4 sessions (three theoretical and one practical). The first session carried out during assessment phase, involved (basic knowledge about Kidney transplantation) and the second and third sessions involved (care of patients after kidney transplantation) while the fourth sessions involved (demonstration to patients coping after KT). The researchers scheduled with them the sessions, and patients divided into small groups, (which include 2-3 workers) according to patients' follow up periods. The duration of each session was about 30-35 minutes, including 10 minutes for discussion. The booklet was distributed for each patient

**Evaluation phase:** Immediately after implementation of educational program for patients undergone kidney transplantation, then after three and six months of program implementation.

**Statistical analysis:**

The collected data were tabulated and statistically analyzed using an IBM computer and the statistical package for social science (SPSS) advanced statistics, version 25 (SPSS Inc., Chicago, IL). Numerical data expressed as mean and standard deviation. Qualitative data expressed as frequency and percentage. Chi-square test used to examine difference between two groups regarding their qualitative variables. For quantitative data, a comparison

## Effectiveness of Educational Program for Health Promoting Lifestyle among Patients (Recipients) with Kidney Transplantation

between the two groups made using student t-test. Pearson method used to test the correlation between numerical variables. A p-value < 0.05 was considered significant, and <0.001 was considered highly significant.

### Results

**Table (1)** shows socio-demographic characteristics of patients with kidney transplantation, where, there was no significant statistical difference between both (control & intervention groups), regarding their mean age ( $37.56 \pm 8.70$  &  $37.19 \pm 8.83$ , respectively) and 61.5% & 68.5%, respectively of both groups were males as well as, 76.9% & 63.0%, respectively were married. Moreover 57.7% & 66.7%, respectively were residing in urban area, and 48.1% of them had secondary level of education. Besides, being employed among 67.3% & 75.9%, respectively, especially governmental occupation for 57.1% & 46.3%, respectively. 67.3% & 61.1% of patients in both control and intervention groups didn't have enough income.

**Table (2)** clarifies that there was no statistically significant difference between both (control & intervention groups) regarding their medical history, 63.5% & 68.5%, respectively) of them had comorbid diseases, especially hypertension among 57.7% & 64.8%, respectively with the leading cause of renal failure 32.7% & 33.3%, respectively of both groups was related to diabetes mellitus, moreover, 88.5% & 79.6%, respectively their donor was relative.

**Table (3)** reveals that, there was no significant statistical difference between both groups regarding their knowledge scores about kidney transplantation before program implementation, compared by a highly statistically significantly different in term of increased knowledge scores among intervention

group throughout the following study periods (immediate period, after three months and six months of program implementation).

**Figure (1)** illustrates the comparison of total knowledge level among both groups. Where there was no significant difference during preprogram in term of high unsatisfactory level among control and intervention groups with 98.1% & 96.3%, respectively then became highly statistically different throughout post program periods to be at 6 months period unsatisfactory among 90.4% of control group and satisfactory among 87.0% of intervention group.

**Table (4)** shows that, there was no significant statistical difference between both groups regarding health promoting lifestyle behavior before program implementation, compared by statistically significantly different after 3 and 6 months of program implementation in term of improvement in health promoting lifestyle behavior score among the intervention group which was reflected by higher score among the intervention group than in control group.

**Figure (2)** illustrates the ranking of dimensions for health promoting lifestyle behavior among both groups according to mean percent after 6 months post program, where health response and stress management were constituting the highest mean % among 88.9% & 85.1%, respectively of intervention group, while spiritual growth and personal relations were the highest mean percent among 61.1% & 58.3%, respectively of control group

**Table (5)** clarifies that, there was no significant statistical difference between both groups regarding their level of health promoting lifestyle behavior before program implementation, compared by a highly statistically significantly different after three



and six months of its implementation in term of improvement in behavior level of health promoting lifestyle among the intervention group compared to control group, where 44.4 % of intervention group had proper healthy lifestyle at 3 months period to be 92.6% during 6 months period post program

**Table (6)** shows that, there was no significant statistical difference between both groups regarding their quality of life before program implementation, compared by a highly statistically significantly different after three and six months of its implementation in term of improvement in quality of life score among the intervention group compared to control group, which was reflected by higher score among the intervention group than in control group.

**Figure (3)** illustrates the ranking of dimensions for quality of life among both studied groups according to mean percent after

6 months post program, where appearance and emotional dimensions were constituting the highest mean percent among 49.9% & 50.6%, respectively of intervention group, while among control group; Appearance, uncertainty and emotional dimensions were the highest mean percent among 77.8%, 77.9% & 78.6%, respectively of them.

**Table (7)** reveals that, there was highly statistically significant positive correlation between quality of life of kidney transplantation patient as well as both of health promoting lifestyle behavior and knowledge among studied patients after 6 months of program implementation, where the higher the level of promoting lifestyle behavior and knowledge the higher the quality of life score.

**Effectiveness of Educational Program for Health Promoting Lifestyle among Patients  
(Recipients) with Kidney Transplantation**

**Table (1): Distribution of both groups according to their socio-demographic characteristics, control group (n=52), and intervention group (n= 54).**

Socio-demographic characteristics	Control group (n=52)		Intervention group (n=54)		chi-square	p-value	
	No.	%	No.	%			
<b>Age</b>							
20 - < 40 years	39	75.0	41	75.9	0.012	FEP 1.000	
40 - 60 years	13	25.0	13	24.1			
<b>Mean ±SD</b>	37.56 ± 8.70		37.19 ± 8.83		t test = -0.219	0.827	
<b>Sex</b>							
Male	32	61.5	37	68.5	1.543	FEP 0.542	
Female	20	38.5	17	31.5			
<b>Marital status</b>							
Not married	12	23.1	20	37.0	2.450	FEP 0.141	
Married	40	76.9	34	63.0			
<b>Residence</b>							
Rural	22	42.3	18	33.3	0.908	FEP 0.423	
Urban	30	57.7	36	66.7			
<b>Level of education</b>							
Cannot read and write	13	25.0	10	18.5	0.955	0.812	
Primary	10	19.2	12	22.2			
Secondary	25	48.1	26	48.1			
University	4	7.7	6	11.1			
<b>Current employment status</b>							
Un employed	17	32.7	13	24.1	0.970	FEP 0.391	
Employed	35	67.3	41	75.9			
<b>Occupation</b>							
Governmental	20	57.1	19	46.3	1.257	0.739	
Private work	9	25.8	12	29.3			
Handwork	6	17.1	10	24.4			
<b>Income</b>							
Enough	17	32.7	21	38.9	0.442	FEP 0.548	
Not enough	35	67.3	33	61.1			

Not Significant >0.05

(FEP) p-value for Fisher exact for chi-square

**Table (2): Distribution of both groups according to their medical history, control group (n=52) and intervention group (n= 54).**

Medical history	Control group (n=52)		Intervention group (n=54)		chi-square	p-value
	No.	%	No.	%		
<b>Presence of comorbid disease</b>						
No	19	36.5	17	31.5	0.302	FEp 0.683
Yes	33	63.5	37	68.5		
<b>*Type of comorbidity*</b>	(n=33)		(n=37)			
Diabetes mellitus	22	42.3	29	53.7	4.653	0.325
Hypertension	30	57.7	35	64.8		
Hypothyroidism	7	13.5	5	9.3		
Asthma	5	9.6	7	12.9		
Arthritis	9	17.3	11	20.4		
<b>Causes of renal failure</b>						
Inflammation of kidney	12	23.1	15	27.8	5.700	0.337
Polycystic kidney disease	5	9.6	1	1.9		
Hypertension	11	21.1	7	13.0		
Diabetes mellitus	17	32.7	18	33.3		
Pain killers	3	5.8	6	11.1		
Systemic lupus	4	7.7	7	13.0		
<b>Donor relation</b>						
Foreign	6	11.5	11	20.4	1.535	FEp 0.291
Relative	46	88.5	43	79.6		

Not Significant >0.05

\*the answers are not exclusive

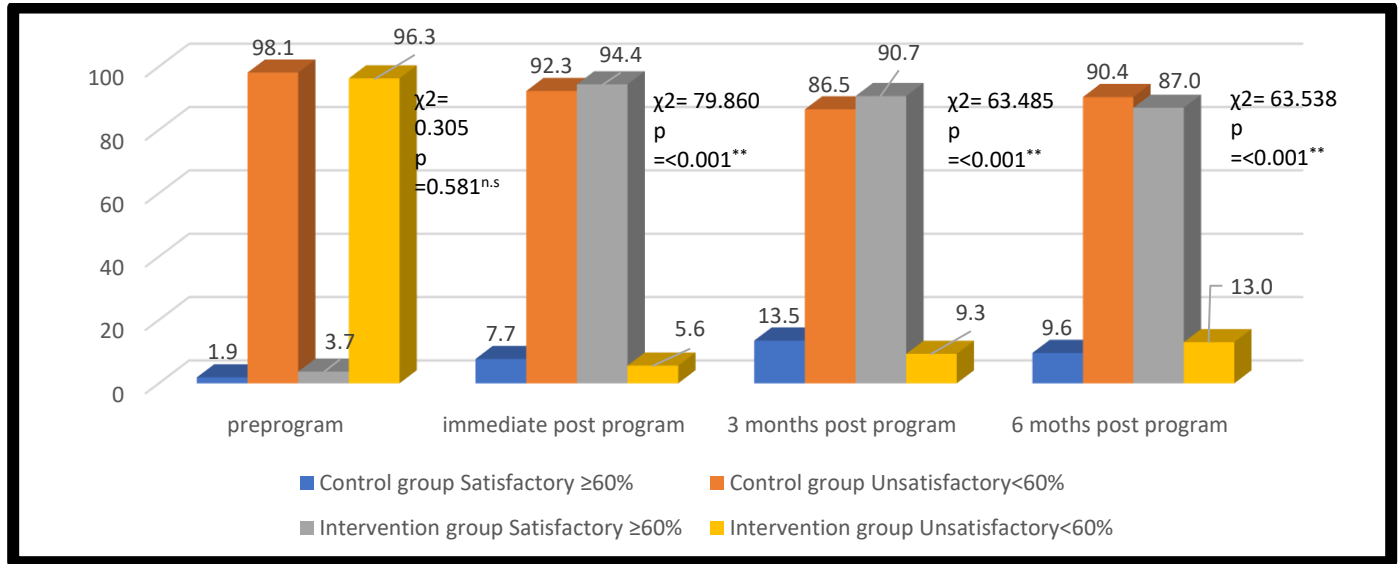
(FEp) p-value for Fisher exact for chi-square

## Effectiveness of Educational Program for Health Promoting Lifestyle among Patients (Recipients) with Kidney Transplantation

**Table (3): Comparison of knowledge scores between two groups throughout different study periods (pre, immediate, after three months, and six months) of program.**

Patients' Knowledge	Control group (n=52)				Intervention group (n=54)				Pre-program t-test	Immediate post t-test	After 3 months t-test	After six months t-test
	Pre-program	Immediate post program	After 3 months	After six months	Pre-program	Immediate post-program	After three months	After six months				
	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$				
<b>Kidney transplantation (Basic knowledge)</b>	1.88 ±0.55	2.33 ± 0.47	2.48 ± 0.78	2.35 ±0.59	1.85 ±0.45	4.59 ± 0.49	4.50 ± 0.50	4.19 ± 0.39	-0.336 (0.737)	24.036 (<0.001**)	15.891 (<0.001**)	18.961 (<0.001**)
<b>Rejection syndrome</b>	1.85± 0.36	2.00± 0.59	2.23± 0.88	2.11± 0.55	1.79± 0.40	4.79± 0.41	4.67± 0.58	4.39± 0.49	-0.664 (0.508)	28.373 (<0.001**)	16.901 (<0.001**)	22.495 (<0.001**)
<b>Nutrition</b>	2.46 ±0.50	2.67 ± 0.47	2.88 ± 0.89	2.79 ±0.94	2.59 ±0.49	6.39 ± 0.49	6.22± 0.63	5.98± 0.63	1.350 (0.180)	39.585 (<0.001**)	22.134 (<0.001**)	20.684 (<0.001**)
<b>Exercise</b>	2.06 ±0.78	2.50 ± 0.50	2.77 ± 0.94	2.69 ±0.96	1.78 ±0.74	6.39 ± 0.49	6.17 ± 0.61	5.79 ± 0.41	-1.894 (0.061)	40.160 (<0.001**)	22.165 (<0.001**)	21.803 (<0.001**)
<b>Daily activity</b>	2.73 ±0.45	2.67 ± 0.47	3.00 ± 1.33	2.81 ±1.10	2.59 ±0.49	9.00 ± 0.64	8.67 ± 0.48	7.98 ± 0.90	-1.504 (0.136)	57.426 (<0.001**)	29.450 (<0.001**)	26.494 (<0.001**)
<b>Rest and sleep</b>	1.73 ±0.45	1.85 ± 0.36	2.17 ± 0.79	2.11 ±0.68	1.59 ±0.49	4.61 ± 0.49	4.44 ± 0.60	4.22 ± 0.74	-1.504 (0.136)	32.779 (<0.001**)	16.731 (<0.001**)	15.242 (<0.001**)
<b>Medication</b>	1.73 ±0.45	2.17 ± 0.38	2.40 ± 0.77	2.27 ±0.45	1.59 ±0.49	4.41 ± 0.49	4.44 ± 0.50	4.20 ± 0.41	-1.504 (0.136)	25.915 (<0.001**)	16.174 (<0.001**)	23.300 (<0.001**)
<b>Infection control measures</b>	2.35 ±0.48	3.02 ± 0.83	3.44 ± 1.35	3.23±0.85	2.20 ±0.41	7.61 ± 0.49	7.56 ± 0.50	7.41 ± 0.49	-1.650 (0.102)	34.856 (<0.001**)	20.954 (<0.001**)	30.920 (<0.001**)
<b>Sexual relation</b>	1.19 ±0.39	1.65 ± 0.74	1.81± 0.86	1.79± 0.75	1.20 ±0.41	4.00 ± 0.00	3.83 ± 0.38	3.39 ± 0.49	0.146 (0.884)	23.369 (<0.001**)	15.749 (<0.001**)	13.039 (<0.001**)
<b>Follow up</b>	1.54 ±0.50	2.15 ± 0.69	2.35 ± 0.68	2.29 ±0.64	1.39 ±0.49	4.59 ± 0.49	4.39 ± 0.68	4.00 ± 0.64	-1.547 (0.125)	20.818 (<0.001**)	15.380 (<0.001**)	13.752 (<0.001**)
<b>Coping</b>	1.33 ±0.47	1.65 ± 0.48	1.77 ± 0.55	1.58 ±0.49	1.18 ±0.39	3.59 ± 0.49	1.77 ± 0.55	3.20 ± 0.41	-1.681 (0.096)	20.432 (<0.001**)	16.048 (<0.001**)	18.436 (<0.001**)
<b>The total score of knowledge</b>	20.85 ±3.35	24.67 ±1.68	27.31 ±8.20	26.02 ±5.27	19.78 ±2.68	59.98 ±1.28	58.27 ±1.64	54.76 ±1.60	-1.817 (0.072)	122.089 (<0.001**)	27.191 (<0.001**)	38.306 (<0.001**)

Not Significant at >0.05 (\*\*) Highly statistically significant at ≤0.001



**Figure (1): Comparison of total knowledge level between both studied groups throughout different study periods (pre, immediate, after three months and six months) of program, control group (n=52) and intervention group (n=54).**

**Effectiveness of Educational Program for Health Promoting Lifestyle among Patients  
(Recipients) with Kidney Transplantation**

**Table (4): Comparison of health-promoting lifestyle behavior scores between both studied groups throughout study periods (pre, after three months, and after six months) of program.**

Health-promoting lifestyle behavior	Control group (n=52)			Intervention group (n=54)			Pre-program t-test	After three months t-test	After six months t-test
	Pre-program	After three months	After six months	Pre-program	After three months	After six months			
	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$			
<b>Health response</b>	16.09 ± 3.86	16.67 ± 3.22	17.69 ± 2.46	15.96 ± 3.90	30.13 ± 3.08	32.02 ± 2.29	- 0.177 (0.86 0 <sup>n.s</sup> )	21.99 1 (<0.0 01**)	31.00 9 (<0.0 01**)
<b>Physical activity</b>	16.42 ± 2.95	17.08 ± 2.71	18.33 ± 2.08	15.61 ± 3.06	28.41 ± 3.33	30.07 ± 2.54	- 1.392 (0.16 7 <sup>n.s</sup> )	19.14 7 (<0.0 01**)	25.98 3 (<0.0 01**)
<b>Nutritional habits</b>	16.59 ± 0.79	17.37 ± 1.19	18.12 ± 1.18	16.43 ± 0.66	21.79 ± 0.88	22.39 ± 0.53	- 1.197 (0.23 4 <sup>n.s</sup> )	21.89 6 (<0.0 01**)	24.16 8 (<0.0 01**)
<b>Spiritual status</b>	20.06 ± 2.89	20.83 ± 2.02	21.98 ± 1.81	19.44 ± 2.49	25.22 ± 1.95	26.44 ± 1.11	- 1.174 (0.24 3 <sup>n.s</sup> )	11.41 1 (<0.0 01**)	15.37 2 (<0.0 01**)
<b>Personal relations</b>	19.06 ± 2.89	19.83 ± 2.02	20.98 ± 1.81	18.44 ± 2.49	24.22 ± 1.95	25.44 ± 1.11	- 1.174 (0.24 3 <sup>n.s</sup> )	11.41 1 (<0.0 01**)	15.37 2 (<0.0 01**)
<b>Stress management</b>	13.42 ± 4.02	15.69 ± 2.75	18.04 ± 1.86	13.46 ± 3.61	25.76 ± 2.43	27.24 ± 2.04	0.054 (0.95 7 <sup>n.s</sup> )	20.01 5 (<0.0 01**)	24.27 9 (<0.0 01**)
<b>Total</b>	101.65 ± 11.94	107.4 ± 8.03	115.13 ± 5.37	99.35 ± 10.43	155.54 ± 7.58	163.61 ± 4.52	- 1.058 (0.29 2 <sup>n.s</sup> )	31.70 6 (<0.0 01**)	50.35 9 (<0.0 01**)

Not Significant at >0.05 (\*) Statistically Significant at ≤0.05, (\*\*) Highly statistically significant at ≤0.001

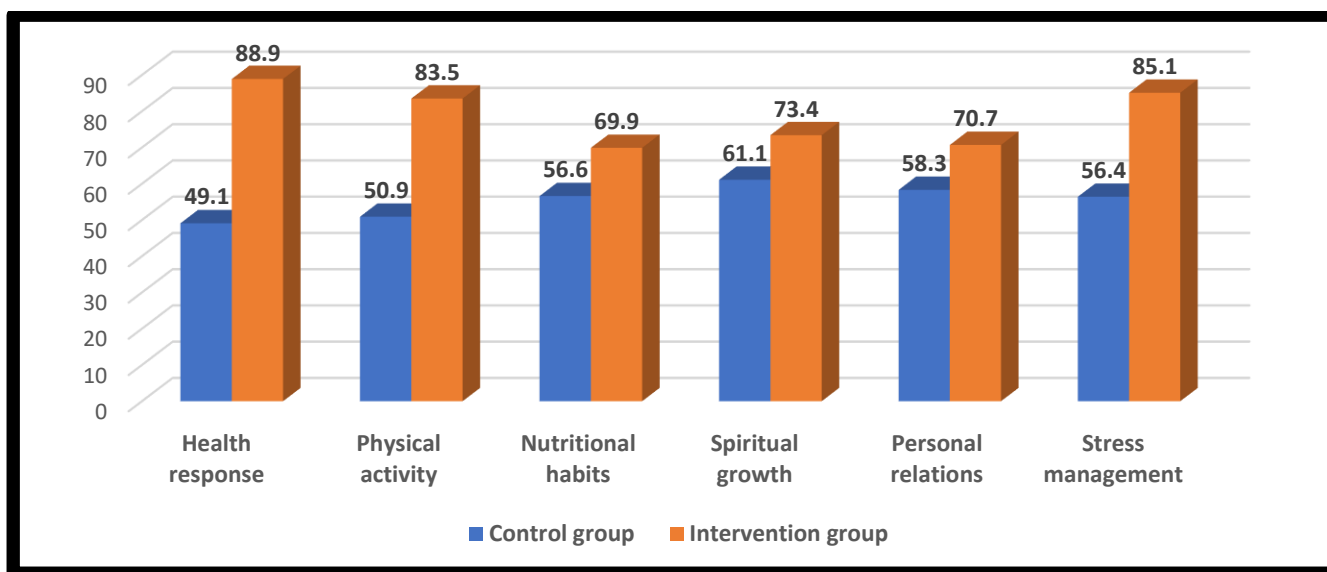


Figure (2): Ranking of dimensions for health promoting lifestyle behavior among both studied groups according to mean % after 6 months post program, control group (n=52) and intervention group (n=54).

Table (5): Comparison of health-promoting lifestyle behavior levels between both groups (pre-program, after three months, and after six months) of program, control group (n=52) and intervention group (n=54).

Health-promoting lifestyle behavior	Pre-program		3 months post program		6 months post program	
	Control group (n=52)	Intervention group (n=54)	Control group (n=52)	Intervention group (n=54)	Control group (n=52)	Intervention group (n=54)
	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)
Inappropriate healthy lifestyle (52-104)	25 (48.1)	33 (61.1)	19 (36.5)	0 (0.0)	1 (1.9)	0 (0.0)
Intermediate healthy lifestyle (105-156)	27 (51.9)	21 (38.9)	33 (63.5)	30 (55.6)	51 (98.1)	4 (7.4)
Proper healthy lifestyle (166-208)	0 (0.0)	0 (0.0)	0 (0.0)	24 (44.4)	0 (0.0)	50 (92.6)
X <sup>2</sup> (p-value)	1.816 FEp (0.242 <sup>n.s</sup> )		43.120 (<0.001 <sup>**</sup> )		91.158 (<0.001 <sup>**</sup> )	

Not Significant at >0.05 (\*\*) Highly statistically significant at ≤0.001 (FEp) p-value for Fisher exact for chi-square

**Effectiveness of Educational Program for Health Promoting Lifestyle among Patients  
(Recipients) with Kidney Transplantation**

**Table (6): Comparison of quality of life in kidney transplant patients (KTQ-25) between both Control and intervention throughout study periods (before, after three months, and after six months) of the program.**

KTQ-25	Control group (n=52)				Intervention group (n=54)				Pre-program t-test	After three months t-test	After six months t-test
	Pre-program	After three months	After six months	Mean % After 6 months	Pre-program	After three months	After six months	Mean % After 6 months			
	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$		$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$				
<b>Physical symptoms</b>	13.02 ± 2.51	17.81 ± 4.11	19.09 ± 3.76	<b>45.5</b> %	13.91 ± 3.15	30.31 ± 3.92	31.07 ± 2.93	<b>73.9</b> %	1.603 (0.112)	16.037 (0.001**)	18.332 (0.001**)
<b>Fatigue</b>	12.46 ± 2.40	14.77 ± 2.69	15.69 ± 2.36	<b>44.8</b> %	13.13 ± 3.39	23.44 ± 5.82	27.11 ± 3.61	<b>77.5</b> %	1.167 (0.246)	9.783 (0.001**)	19.220 (0.001**)
<b>Uncertainty/fear</b>	11.96 ± 2.16	13.87 ± 2.56	14.58 ± 2.23	<b>40.8</b> %	11.13 ± 2.32	20.89 ± 1.21	21.81 ± 1.55	<b>77.9</b> %	-1.908 (0.059)	18.176 (<0.001**)	19.416 (<0.001**)
<b>Appearance</b>	11.92 ± 2.13	13.98 ± 2.42	13.98 ± 2.42	<b>49.9</b> %	11.13 ± 2.32	21.78 ± 1.42	21.78 ± 1.42	<b>77.8</b> %	-1.830 (0.070)	20.303 (0.001**)	20.303 (0.001**)
<b>Emotional</b>	14.09 ± 1.99	20.31 ± 4.32	21.25 ± 3.87	<b>50.6</b> %	15.06 ± 3.11	32.39 ± 2.26	33.02 ± 1.95	<b>78.6</b> %	1.883 (0.063)	18.126 (0.001**)	19.888 (0.001**)
<b>Total</b>	63.46 ± 9.01	80.73 ± 8.81	84.59 ± 8.43		64.35 ± 11.33	128.81 ± 7.40	134.79 ± 4.77		0.447 (0.656 <sup>n.s</sup> )	30.458 (<0.001**)	37.908 (<0.001**)

Not Significant at >0.05 (\*\*) Highly statistically significant at ≤0.001



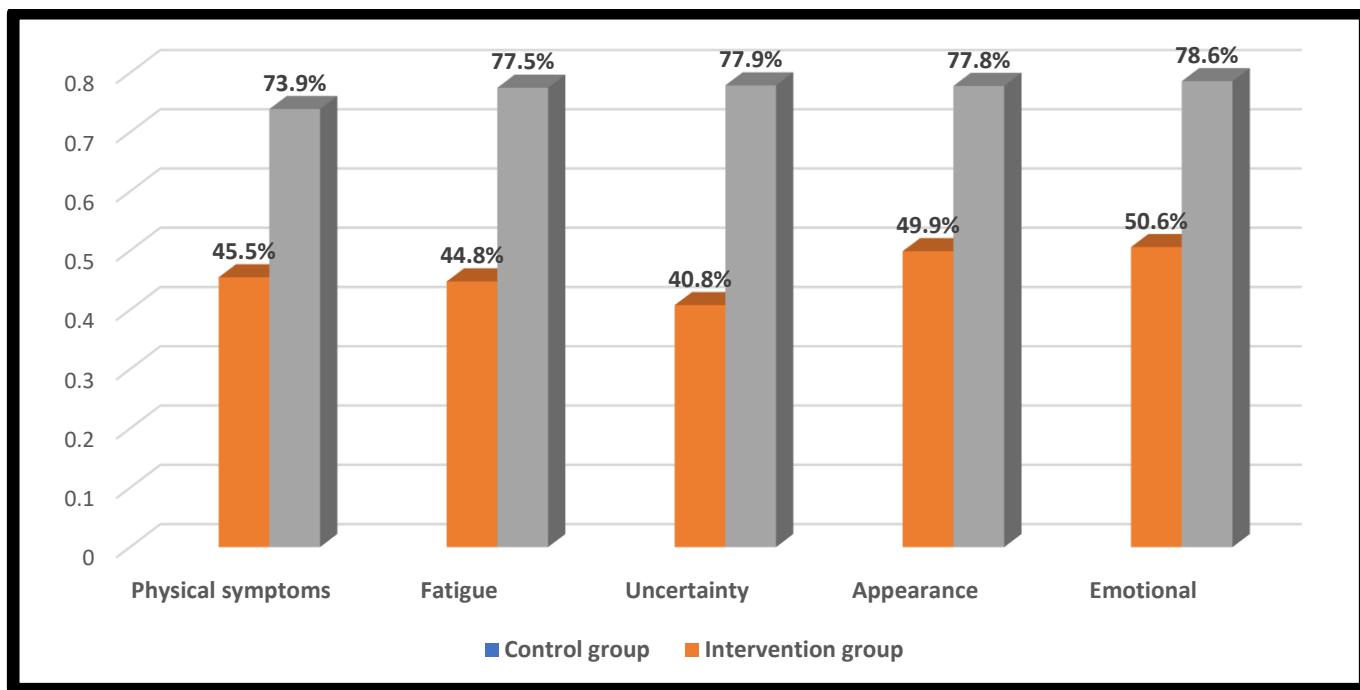


Figure (3): Ranking of dimensions for quality of life between both studied groups according to mean % after 6 months post program, control group (n=52) and intervention group (n=54).

Table (7): Correlation between quality of life of kidney transplantation patient, knowledge and health promoting lifestyle behavior – of the control group (n=52) and intervention group (n=54) after six months of the program.

Variables		Quality of life	
		r- test	p-value
Health-promoting lifestyle behavior	Intervention group	0.379	0.005*
	Control group	0.350	0.011*
Knowledge	Intervention group	0.537	<0.001**
	Control group	0.341	0.013*

(\*) Statistically significant at  $\leq 0.05$

(\*\*) Highly statistically significant at  $\leq 0.001$

## Effectiveness of Educational Program for Health Promoting Lifestyle among Patients (Recipients) with Kidney Transplantation

### Discussion

Kidney transplantation is a wonderful therapy option for people with ESRD. Dialysis or kidney transplantation is the only treatment option available to patients with stage 5 chronic kidney disease, and transplantation is the preferred method for enhancing the quality of life by avoiding dialysis, boosting exercise capacity, enhancing fluid restriction, improving sexual function and fertility, and enhancing general health. Since it is more effective than dialysis in terms of health economics, life expectancy, and cost-efficiency, providing proper support for kidney transplant recipients (**Kaballo, 2018**).

The present study aimed to evaluate the effectiveness of educational program for health promoting lifestyle among patients (recipients) with kidney transplantation. According to socio-demographic characteristics of the studied patients, the present study results showed that, there was no significant statistical difference between both (control & intervention groups), regarding their mean age of ( $37.56 \pm 8.70$  &  $37.19 \pm 8.83$ , respectively), around two thirds of both groups were males as well as, more than half of both groups were married. More than one third were residing in a rural area, and less than half of them had secondary level of education. Besides, more than two thirds of them being employed especially governmental occupation for more than two fifth. More than half of both group didn't have enough income.

This might be due to this suitable age for transplant with less complication than older. These findings were similar to that of **Aghakhani et al. (2020)**, who studied "Self-Care Education Program as a New Pathway Toward Improving Quality of Life in Kidney Transplant Patients, A Single-Blind,

Randomized, Controlled Trial", and reported that, no statistically significant differences between their 2 groups with regard to the variables of sex, marital status, family history of kidney failure, specific disease, education level, place of residence, income, occupation, and history of transplant rejection. With the mean age of patients was  $37.88 \pm 9.72$ ; and approximately three quarters 71.2% of the patients were male, and 75% were married. The subjects consisted of 58.7% male who were mostly married and nearly one third had primary education.

According to the groups' medical history, there was no statistically significant difference between both (control & intervention groups) regarding their medical history, with around two-thirds of them had comorbid diseases. More than half of them had hypertension, and around one third of both groups had diabetes mellitus as the leading cause of renal failure. These findings agreed with **Omar et al. (2016)**, who study "Effect of a Nursing Health Education Program on Kidney Recipients' Knowledge and Practice and reported that slightly more than half of the patients had chronic diseases (54.5%), mostly hypertension (50.6%) and diabetes (24.7%). This might be due to the chronic disease such as hypertension and diabetes are the leading causes of chronic renal disease which affect on kidney

The current study revealed that more than three quarters of patients their donor was relative. This might be due to availability of cadaveric donor didn't available in Egypt in addition to kidney transplantation is most successful when kidney came from related lived donor and it is the legal option in Egypt.

The finding of current study reveals that, there was no significant statistical difference

between both groups regarding their knowledge scores about kidney transplantation before program implementation, compared by a highly statistically significantly different in term of increased knowledge scores among intervention group throughout (immediate period, after three months and six months of program implementation). This might be due to the finding point to success of the program in achieving its objective of improving patients' knowledge, supporting the first research hypothesis. This finding agreed with **Omar et al. (2016)**, who reported that improvements in almost all areas of their patients' knowledge, this improvement continued and even increased at the follow-up phase.

Regarding to comparison of total knowledge level among both groups. Where there was no significant difference during preprogram in term of high unsatisfactory level among control and intervention groups with the most of them then became highly statistically different throughout post program periods to be at 6 months period unsatisfactory among most of control group and satisfactory among majority of intervention group. This result disagreed with **Low (2016)**, who study "a compilation of consumers' stories: The development of a video to enhance medication adherence in newly transplanted kidney recipients" and reported that few participants verbalized that adequate knowledge and insight on kidney transplantation through effective health education.

The finding of current study reveals that, there was no significant statistical difference between both groups regarding health promoting lifestyle behavior before program implementation, compared by statistically significantly different after 3 and 6 months of program implementation in term of improvement in health promoting lifestyle

behavior scores among the intervention group which was reflected by higher score among the intervention group than in control group, supporting the second research hypothesis. According to **Adhikari, et al. (2018)**, who conducted study on "Compliance of kidney transplant recipients to the recommended lifestyle measures following transplantation" and found that a large proportion, about 65%, of the kidney recipients was compliant with recommended lifestyle behavior and that compliance with lifestyle recommendations after renal transplantation in the Indian sociocultural setting remains suboptimal overall, though they may be satisfactory in some dimensions.

These finding agreed with **Amiri and colleagues (2018)**, who study "the effect of nurse empowerment educational program on patient safety culture patients who participated in a self-care education program and consulted with nurses and other health care providers about performing self-care behaviors, who reported that patients had better performance and safety outcomes.

The present study illustrates the ranking of dimensions for health promoting lifestyle behavior among both studied groups according to mean percent after 6 months post program, where majority of intervention group constituting the highest mean percent of health response and stress management, while more than half of control group constituting the highest mean percent of spiritual status and personal relations. These findings agreed with **Prihodova et al. (2014)**, who studied "Adherence in patients in the first year after kidney transplantation and its impact on graft loss and mortality" and stated that kidney transplantation patient was socially better after kidney transplantation compared with end stage kidney disease. This might be due to

## **Effectiveness of Educational Program for Health Promoting Lifestyle among Patients (Recipients) with Kidney Transplantation**

improve social and family relation can help kidney transplantation patient to overcome problem, maintain their health and improve their QOL.

The finding of current study reveals that, there was no significant statistical difference between both groups regarding their level of health promoting lifestyle behavior before program implementation, compared by a highly statistically significantly different after three and six months of its implementation in term of improvement in behavior level of health promoting lifestyle among the intervention group compared to control group, where less than one half of intervention group had proper healthy lifestyle at 3 months period to be most of them during 6 months period post program. This finding agreed with **Amiri and colleagues, (2018)** who reported that patients who participated in a self-care education program and consulted with nurses and other health care providers about performing self-care behaviors had better performance and safety outcomes. This might due to the knowledge scores had a stronger influence on their practice of the life style behavior score and this might be attributed to the fact that the information included in the program was focused on applied rather than theoretical knowledge

The finding of current study reveals that, there was no significant statistical difference between both groups regarding their quality of life before program implementation, compared by a highly statistically significantly different after three and six months of its implementation in term of improvement in quality of life score among the intervention group compared to control group, which was reflected by higher score among the intervention group than in control group,

supporting the third research hypothesis. This finding agreed with **Aghakhani et al. (2020)**, who showed a significant difference in mean score of QOL between kidney transplant patients who received a self-care education program and those who did not. Also this finding disagreed with **Omer et al. (2018)**, who reported that educational intervention has could not reveal any significant changes in patients' QoL scores either at the post or at the follow-up phases. This might be due to the positive effect of education program on the QOL of studied kidney transplant patients.

The finding of current study reveals that, the ranking of dimensions for quality of life among both studied groups after 6 months post program, where appearance and emotional dimensions were constituting the highest mean percent among (49.9% & 50.6%, respectively) of intervention group, while among control group; Appearance, uncertainty and emotional dimensions were the highest mean percent among (77.8%, 77.9% & 78.6%, respectively) of them. The current study agreed with **Iqbal et al. (2020)**, who studied the “quality of life is improved in renal transplant recipients versus that shown in patients with chronic kidney disease with or without Dialysis in Bangladesh” and reported that renal transplantation can improve quality of life. Transplant patients showed many quality of life scores similar to healthy individuals. Transplant recipients had higher quality of life scores, with some scores similar to healthy controls patients. This may be due to this domain is related to the improvement of organic functions that occur after kidney transplant.

The finding of current study reveals that, there was highly statistically significant positive correlation between quality of life of

kidney transplantation patient as well as both of health promoting lifestyle behavior and knowledge among studied patients after 6 months of program implementation, where the higher the level of promoting lifestyle behavior and knowledge the higher the quality of life score. This finding agreed with **Nyambura. (2021)**, who studied the “Adherence to post kidney transplant treatment and lifestyle changes among kidney recipients at Kenyatta national hospital, Nairobi city county’ and reported that improved quality of life after kidney transplantation influenced adherence to lifestyle changes. This might be due to education on health promotion behavior, as a low cost and simple method, can be positively influential on individuals' self-care, self-efficacy as well as their physical and mental health and the quality of life, supporting the fourth research hypothesis.

### **Conclusion**

Implementing educational program for patients after kidney transplantation was effective in improving knowledge, health promoting lifestyle behavior and quality of life among the studied subjects. Where, their mean scores were significantly increased after implementation of program. Revealing a significant correlation between both knowledge and health promoting lifestyle behavior with quality of life.

### **Recommendations**

- Health education program for kidney transplant recipients should be developed to increase their awareness of kidney transplantation and the value of living a healthy lifestyle to avoid complication

- Written, a simple booklet about health-promoting lifestyle behavior post-transplantation should be available for patients and their families (relatives) at the Out-Patients Clinic for follow-up kidney

transplantation in Nasr City Health Insurance Hospital.

- It is a critical to return for follow-up appointments to monitor the patients' condition and make sure they are maintaining a healthy lifestyle to prevent complications.

- Replication of the current study on larger probability sample is recommended to achieve generalizability and broader utilization of the designed program.

### **Acknowledgment**

We would like to extend our sincere thanks to all health personnel at outpatient follow clinics for kidney transplantation in Nasr City Health Insurance Hospital also, the patients participated in the study for their cooperation in the conduct the study.

### **References**

**Adhikari, U., Taraphder, A Hazra3, A. & Das. T. (2018)**. Compliance of kidney transplant recipients to the recommended lifestyle measures following transplantation. *Indian journal of Transplantation*; 12(1): 17-24

**Aghakhani, N., Maslakhak, M., Jalali, S. & Parizad, N. (2020)**. Self-Care Education Program as a New Pathway toward Improving Quality of Life in Kidney Transplant Patients: A Single-Blind, Randomized, Controlled Trial Article in *Experimental and clinical transplantation: official journal of the Middle East Society for Organ Transplantation*. Available at: [https:// www. Research gate.net/publication/344383239](https://www.researchgate.net/publication/344383239)

**Amiri, M., Khademian, Z. & Nikandish, R. (2018)**. The effect of nurse empowerment educational program on patient safety culture: a randomized controlled trial. *BMC Med Educ*; 18(1):158.

**Effectiveness of Educational Program for Health Promoting Lifestyle among Patients  
(Recipients) with Kidney Transplantation**

**Câmara, J., Queiroz, P., Santana, M. & Paiva, S. (2016).** Strategies implemented by nurses for learning kidney transplant immunosuppression. *Cienc. Cuid. Saude*; 15(2):282-7. DOI: 10.4025/ciencucuidsaude.v15i2.28502.

**Chiang, Y., Tyu Dai, Y. & Weng, L. (2010).** Self-efficacy, self-care behavior and quality of life of kidney transplantation recipient, longitudinal correlation design journal of *Advanced Nursing*; 66 (4): 828-38.

**Cleveland Clinic. (2020).** Kidney Transplant Procedure: Procedure Details. Available at <https://my.clevelandclinic.org/health/treatments/4350-kidney-transplant-procedure/procedure-details>. Accessed on 22/9/2020.

**Cunha, T. & Lemos, K. (2020).** Nursing care for kidney transplant phases: An integrative review. *Hrj*; 1(8):26-41. DOI: 10.51723/hrj.v1i8.143.

**Elrggal, M., Gendia, M., Zyada, R. & Mohamed, A (2020).** The journey of kidney transplantation in Egypt: *Nephrology Dialysis Transplantation*; 35, (3) :1841, <https://doi.org/10.1093/ndt/gfaa142>.

**Gadalean, f., Vieira, C., Tawakol, j. & Khan, T. (2017).** Nephrolog nurses in a new role: Diagnosis and intervention nephrology. *American Society of Registered nurse*; 31(4):390-395.

**Heldal, T. & Vasiliki, K. (2021).** Study Health related Quality of Life in older kidney Transplantaion Recipients, National Cohort study of short and longer –term outcomes; 3 (6): 974-983 <https://doi.org/10.1016/j.xkme.2021.05.007>

**Hertl, M. (2020).** Kidney Transplantation. Available at <https://www.merckmanuals.com/home/immune-disorders/transplantation/kidney-transplantation>. Accessed on 22/9/2020.

**Hussein, E. & Zatoon, H. (2019).** Nursing Intervention Program on Nurses' knowledge and practices post kidney transplantation. *Journal of Nursing and Health Science*; 8(2):21.

**Ibrahim, N. (2020).** Patients' knowledge and practices regarding Kidney transplantation, Master thesis, Faculty of Nursing, Benha University.

**Iqbal, M., Rahman, N., Alam, M., Nath, B., Waheed, S., Islam, K., Hossain, R., & Chowdhury, A. (2020).** Quality of Life Is Improved in Renal Transplant Recipients Versus That Shown in Patients With Chronic Kidney Disease With or Without Dialysis. *Official journal of the Middle East Society for organ transplantation*; 18(1): 64-67 doi: 10.6002/ect.TOND-TDTD2019.P11.

**Kaballo, M., Canney, M., OKelly, P., Williams, Y. & OSEAGHDHA, M., Conlon, J. (2018).** A comparative analysis of survival of patient on dialysis and after kidney transplantation. *Clinical Kidney Journal*; 11(3):389; 393

**Kehrren, H. (2022).** Lifestyle changes can be critical for kidney transplant patients long - term survival. Available at: <https://news.network.mayoclinic.org/discussion/mayo-clinic-qa-podcast-living-donor-climbs-mount-kilimanjaro-on-world-kidney-day/>. Accessed on 3-2022.

**Laupacis, A., Pus, N., Muirhead, N. & Wong, C. (1993).** Ferguson B, Keown P. Disease-specific questionnaire for patients with a renal transplant. *Nephron*; 64:226-31

**Low, J., Crawford, K., Manias, E. & Williams, A. (2016).** A compilation of consumers' stories: The development of a video to enhance medication adherence in newly transplanted kidney recipients. *J Adv Nurs* 72: 813-824.

**Merzkani, A., Andrew, J., Byron, H., Byron, H., Xiomara, M., Mark D. & Manish, j. (2022).** Death with function and graft failure after kidney transplantation: Risk factors at baseline suggest new approaches to management. Available at: [transplantation direct, IWW journals](https://www.ijw.com/journals).

**Meihan, L. & Chung-Ngok, W. (2011).** Validation of the psychometric properties of the health-promoting lifestyle profile in a sample of Taiwanese women. *Qual Life Res*; 20:523–8.

**Ndemera, H. & Bhengu, B. (2017).** Factors Contributing to Kidney Allograft Loss and Associated Consequences among Post Kidney Transplantation Patients. *Health Science Journal*; 11 (3):504.

**Nyambura, A. (2021).** Adherence to post kidney transplant treatment and lifestyle changes among kidney recipients at Kenyatta national hospital, Nairobi city county, Kenya. Master thesis. School of Nursing Kenyatta University. 73

**Omar, Y., Abd Allah, E., Abo El-Seoudand, A. & Moussa, M. (2016).** Effect of a Nursing Health Education Program on Kidney Recipients' Knowledge and Practice. *OSR Journal of Nursing and Health Science (IOSR-JNHS)*; 5(2): 2320–1940.

**Omar, Y., Abd Allah, E., Abo El-Seoudand, A. & Moussa, M. (2018).** Effect of a Nursing Health Education Program on Kidney Effect of health education program on coping, and quality of life of Kidney recipients Port Said *Scientific Journal of Nursing*; 5(1).260, 269

**Prihodova, L., Nagyova, I., Rosenberger, J., Majernikova, M. & Roland, R. (2014).** Adherence in patients in the first year after kidney transplantation and its impact on graft loss and mortality: A cross-sectional and prospective study. *J Advanced Nurs* 70: 2871-2883.]

**The National Kidney Foundation's. (2020).** Care After Kidney Transplant. Available at: <https://www.kidney.org/atoz/content/immunosuppression>. Accessed on 25/9/2020.

**Warzyszyńska, K., Zawistowski, M., Karpeta, E., Ostaszewska, A., Jonas, M. & Kosieradzki, M. (2020).** Early postoperative complications and outcomes of kidney transplantation in moderately obese patients. *Transplantation Proceedings*; 52(8):2318-23. DOI: 10.1016/j.transproceed.2020.02.110

**World Health Organization (WHO), (2022).** Global recommendations on physical activity for health. WHO Library Cataloguing-in publication Data: Available at: World Health Organization. ISBN9789241599979, Accessed on 4-22022.

**Yadav H. & Chong M. (2019).** Hand book of community health nursing, the effectiveness of outcome based education on the competencies of nursing students (2nd ed.), Oxford, Pp. 1454:159.

**Yamane, T. (1967).** Statistics an Introductory Analysis. (2<sup>nd</sup>ed.). New York Harper and Row CO. USA, 213.

## فعالية برنامج تعليمي لنمط الحياه المعزز للصحة لدى المرضى (المستقبلين) الذين أجريت لهم زراعة الكلى

إيمان صبحي عمران- مروة مسعد علي- سماح سعيد صبري- تيسير حميدو ابو سريع

زرع الكلى هو بديل منقذ للحياة لغسيل الكلى للمرضى الذين يعانون من فشل كلوي متقدم ، ويطيل البقاء على قيد الحياة ، ويحسن نوعية الحياة ، ويقلل من الوفيات المرتبطة بغسيل الكلى على المدى الطويل. لذلك هدفت هذه الدراسة الى تقييم فعالية برنامج تعليمي لنمط الحياه المعزز للصحة لدى المرضى (المستقبلين) الذين أجريت لهم زراعة الكلى. وقد أجريت هذه الدراسة بالعيادة الخارجية لمتابعة مرضى زراعة الكلى بمستشفى مدينة نصر للتأمين الصحى على 106 مريض (مجموعة التدخل 54 والمجموعة الضابطة 52). حيث خلصت الدراسة بأن مجموعة التدخل استفادت من البرنامج التعليمي الذي زاد من معلوماتهم وشجع نمط الحياة الصحي وحسن جودة حياتهم. كما أوصت الدراسة بتوفر كتيب مكتوب ومبسط عن سلوكيات نمط الحياة المعزز للصحة بعد زرع الكلى للمرضى وأسرههم (أقاربهم) بالعيادة الخارجية لمتابعة مرضى زراعة الكلى بمستشفى مدينة نصر للتأمين الصحى.