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Effect of patient education on coping, quality of life, knowledge and self efficacy of kidney recipient patients

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Abstract: Background: kidney transplantation is the best method of treatment for improvement of renal functions in patients with end-stage renal failure. The main aims of patient education following renal transplantation are to help patients acquire the required skills for daily living without problem and to help patients cope with physiological and psychosocial problems. Purpose: The aim was to evaluate effect of patient education on knowledge, coping strategies, quality of life and self efficacy of kidney recipient patients. Subjects and methods: Quazi Experimental design was utilized for conducting the study. Purposive sample of 50 patients undergoing kidney transplantation were included in the study at center Giza outpatient clinics for kidney (Prof. Dr. Mostafa Ayman) Cairo University, Cairo, Egypt. Data collected through; Patient's assessment and basic information, knowledge assessment sheet, self efficacy Scale, Brief Cope, Short Form Health Survey (SF-36). Results: All dimensions of HRQOL of patients were better after the education program, as compared with that of prior to the intervention. The mean score of self efficacy was improved post intervention. Also the patients had better knowledge and positive coping post intervention. Conclusions/Implications for Practice: patients' education program was enhance patients coping strategies, HRQOL, knowledge and self efficacy. Continuous education should be provided by the healthcare team for patients. An education consultant or education nurse should be trained to work in the transplantation unit.

Keywords: Patient Education, Coping Strategies, HRQOL, Knowledge, Self Efficacy, Kidney Transplantation

1. Introduction

The field of transplantation is rapidly advancing and offers a promising treatment for many individuals with end-stage organ disease. During the past decades, kidney transplantation has become a progressive and innovative field, and the number of kidney transplants continues to increase [1]. Kidney transplantation is the only form actually replaces all aspects of kidney function. It improves survival rates, quality of life and cost as compared to dialysis [2]. In Egypt, 1.200 kidney transplants using live donors are carried out every year, where the incidence of end-stage kidney disease is 200 people in every million [3]. Health related quality of life (HRQOoL) has recently become a major indicator of health and well-being of patients with kidney disease. HRQoL is often assessed to determine the effectiveness of health care and treatment provided, as well as resource allocation and development of health policies [2]. However, while transplantation is the treatment of choice for most patients, it may negatively impact a patient's HRQoL. Furthermore, patients live with chronic illness, worry about rejection, side effects of medications, economic burden, family relationships, and social functioning. Transplantation is a source of stress, which include postoperative pain and fear of transplant failure, which can persist for many years post-transplant. Understanding how patients are affected by and cope with these issues is essential, as it can help to inform clinical practice, thus ensuring that appropriate care and emotional support is provided to patients and their families [4]. Thus, helping renal transplant patients effectively cope with the negative impact of transplantation is an important issues for both healthcare professionals and patients [5,6].

Coping is the process in which the individual tries to manage the demands of this interaction between the person and their environment. Coping strategies fall under two broad categories of coping; emotion-focused and problem-focused.

Problem focused coping involves utilizing strategies that attempt to deal with the problem or situation itself. Emotion-focused coping focuses upon dealing with the emotions raised by the situation rather than with the situation itself [7,8].

The nurses must be able to help patients develop the skills to cope with the stresses experienced after renal transplantation. It is important to understand coping and HRQoL in renal transplant patients. With increased understanding of these phenomena, nurses may develop effective interventions to help renal transplant patients use adaptive coping strategies to improve their HRQOL [5].

Increasing national and international interest in patient education has emerged, and individuals are increasingly expected to exert more self-care. In the context of transplantation, the importance of knowledge concerning medication, signs of rejection, and how to prevent negative consequences of life-long immunosuppressive medication requires a patient education program. The major aims of patient education after transplantation are to help patients cope with health problems and successfully practice their self-management behavior [9]. Patient education is a major responsibility of nurses and plays a great role in, self efficacy improvement and converting patient from a dependent element to an independent and self sufficient person [10].

Self-efficacy is a widely used psychological construct reflecting a person's confidence in performing self-care activities for chronic disease. It was observed that patients with high self-efficacy have been shown to better practice self-management behaviors and leading to better HRQoL. However, few researches has been investigated the relation of self-efficacy and HRQoL in the renal recipient patients [11].

Kidney transplantation needs a lifelong treatment and care together with a follow up. Researchers have reported kidney transplantation to need constant care supervision [12]. Healthcare professionals deliver varied types of educational programs to renal recipient patients to improve coping strategies to better manage their health problems to improve health and well-being [5].

Nurses as educators, not only are responsible for fulfillment of KT patients' and their families' education but also should pay close attention to their educational needs in the society. KT is a complicated process that needs organized educational programs. Since the ultimate goal of KT patients' education is their adaptation with the imposed changes in their function, just passing information to KT clients is not education, but it is a process including regular and organized steps of investigation, assessment of educational needs, educational programming, educational program administration, and evaluation of educational program [13].

Aim of the Study

The study aimed at exploring the impact of patient education on coping strategies, quality of life, knowledge and self efficacy of kidney recipient patients through the following: 1) Assess patients' coping strategies, quality of life, knowledge and self efficacy pre intervention. 2) Develop and implement health education program for kidney recipient patients. 3) Evaluate health education program on kidney recipient patients' coping strategies, quality of life, knowledge and self efficacy.

Hypothesis: It was hypothesized that Patients education will improve patients' coping strategies, quality of life, knowledge and self efficacy.

2. Subject and Methods

2.1. Research Design

Quazi Experimental design was utilized to achieve the aim of this study. First, confirm that you have the correct template for your paper size. This template has been tailored for output on the A4 paper size.

2.2. Setting

The study was conducted at center Giza outpatient clinics for kidney (Prof. Dr. Mostafa Ayman) Cairo University, Giza, Egypt. The transplant center actively follows up approximately 500 recipients of a kidney transplant. Post transplant care at the transplant center is managed routinely by a nephrologist at the transplant center.

2.3. Participants

All the kidney recipient patients who participated in this study were attending the aforementioned center. Purposive sample of 10% of all patients were included in the study (50) patients. Men and women who undergoing kidney transplantation from three months to two-year post kidney transplantation, their age equal or more than 18 years and had a clinic appointment to follow up recruited in this study.

2.4. Tools of the Study

The data will be collected through the following tools

2.4.1. Basic Information and Clinical Data

The tool was designed by the researchers to collect information on participant age, sex, education of patients, work status, marital status and, also covered data related to Donor type , Transplantation causes, Duration of kidney transplantation.

2.4.2. Brief COPE

The Brief COPE by Craver [14] is the abbreviated version of the COPE inventory. Also had acceptable reliability and validity. The Brief COPE consists of 14 scales with 2 items each, assessing different coping dimensions: 1) active coping, 2) planning, 3) using instrumental support, 4) using emotional support, 5) venting, 6) behavioral disengagement, 7) self-distraction, 8) self-blame, 9) positive reframing, 10) humor, 11) denial, 12) acceptance, 13) religion, and 14) substance use. The scale modified by omitting the 2 items of Substance use and translated to Arabic according to WHO guidelines for translation. Ratings are made on a four-point Likert scale: 1=I did not do this at all, to 4=I did this a lot. For the current study, problem based and emotional based coping

styles were used.

2.4.3. Short form Health Survey (SF-36)

To measure health related quality of life of patients before and after implementation of health education program for patients after kidney transplantation. It is a self completed questionnaire covering all aspects of Health Related Quality of Life (HRQOL). It is a valid instrument for measuring HRQOL. The current study utilized the Arabic version of the SF-36 in order to evaluate the HRQoL of the patients. The questionnaire includes multi-item scales to assess the eight dimensions of wellness: physical functioning, role limitations due to physical health problems, bodily pain, general health perceptions, social functioning, vitality, energy or fatigue, and role limitations due to emotional problems. In addition, two summary scores are calculated using these eight scales: physical component summary (PCS) and mental component summary (MCS).

2.4.4. Knowledge Assessment Sheet

The tool was designed by the researchers to measure patients' knowledge toward basic knowledge, rejection syndrome, infection prevention, diet and medication related to kidney recipient patients. The responses to the questions were "yes", "no" or "don't know" was obtained from the 45 items. The scores were distributed according to the importance of the items. Below 60% was graded as unsatisfactory and 60% and above was graded as satisfactory.

2.4.5. Perceived Self-Efficacy

It is an eight-item scale that is measured by Likert scale ranging from strongly disagree (1) to strongly agree (5) by Smith et al [15] is a valid and reliable measure of perceived self-efficacy. It measures the degree of confident of effectively manage health outcomes. It was translated to Arabic according to WHO guidelines. Negatively-valenced items are reverse scored before summing across all eight items. The scores were below 60% was graded as unsatisfactory and 60% and above was graded as satisfactory.

2.4.6. Educational Guidelines

were designed by the researchers based on the needs of the patients to improve the patients' knowledge and coping strategies after kidney transplantation based on the related literature [16-17-18].

It was written in Arabic language. The guidelines were revised by a group of five experts in Community Health Nursing, Ain Shams University for the applicability. It included three parts. The first part: it included knowledge regarding kidney transplantation (as definition, causes, risk factors). The second part: it included knowledge regarding care of patients after kidney transplantation (as signs and symptoms of rejection, infection prevention, medication and side effect, diet, exercise and complications). Third part: it included instruction to patient about how to cope and coping strategies.

2.5. Pilot Study

The pilot study was carried out by 10% of patients (5 patients). No Changes or modifications were done. The patients included in the pilot study were included in the study.

2.6. Procedure

This study was conducted through four phases: assessment, planning, implementation and evaluation.

i. Assessment phase: This phase aimed at collecting data from patients under the study to identify the patients' knowledge, coping, and cognitive appraisal of health toward coping strategies and HRQoL of kidney recipient patient before educational program implementation.
ii. Planning (preparatory) phase: Based on the assessment phase, the program content and media (in the form of the program booklet, posters, and visual materials) were prepared by the researchers for patients under the study based on patients' learning needs.
iii. Implementation phase: Every patient was interviewed individually by the researchers at the out-patient clinic of Professor Doctor Mostafa Ayman at kidney Giza center, Cairo, Egypt. The education guideline sessions were planned and implemented according to each patient learning need. Each session lasted from 45-60 minutes. Personal communication was done with Professor Doctor Mostafa Ayman to explain the purpose of the study and gain their best possible cooperation.
iv. The collection of data and application of the program lasted over a period of nine months, started from June 2013 ended in January 2014. Data were collected two days / week from 9 am to 2 pm according the out-patient clinic visiting hours and the presence of the patients. the out-patient clinic of (Professor Doctor Mostafa Ayman at kidney Giza center, Giza, Egypt working on four days per week only Saturday, Sunday, Tuesday and Wednesday).
v. The Patients in the out-patient clinic who met the study criteria were included in the study after explaining the purpose of the study and obtaining consent.. Pre intervention, patient's assessment & clinical data sheet, knowledge interview questionnaire sheet. Educational guidelines was given for each patient. An instructional media was used booklet with different teaching methods. Researchers' telephone numbers and email address were given to the studied patients and patients' telephone number were taken to ensure contact and meeting them during follow up visits in outpatient clinics to complete data collection during follow up period.
vi. Evaluation phase: The effect of an educational guideline was measured through the post test of kidney recipient patients after one to three months after program implementation.

2.7. Ethical Consideration

A permission obtained from the Professor Doctor Mostafa Ayman Director of kidney Giza center Giza, Egypt, to conduct

the study. Consent obtained, clarifying the procedures and the purpose of the study to patients to participate in the study. They were informed about confidentiality of data, their right to refuse participation and to withdraw at any time without any consequences.

2.8. Data Collection and Analysis

Data entry and analysis were done using the Statistical Package for Social Science (SPSS) version 16. Data were presented in the tables and charts using actual numbers and percentages. Appropriate statistical methods were applied (percentage, chi-square (X2), correlation coefficient (r), T- test and F-test. Regarding P value, it was considered that: non-significant (NS) if P> 0.05, Significant (S) if P< 0.05, Highly Significant (HS) if P< 0.01.

3. Results

Table 1 shows that more than one third (38%) of patients their age was 40 years and above followed by nearly one forth (26%) of patients their age was 20 years and above. While the little percent (4%) of patients their age was 60 years and above. Mean of age for patients was 40.48±12.09 years old, 64% of them were male, 40 % of them were widowed and divorced and working in a governmental job. More than half (56%) of them had a secondary education. Also the majority of them (88%) their donor were non biological and more than half (54%) hypertension was the cause of kidney transplantation. Regarding the duration of kidney transplantation nearly two thirds of them their duration was more than 6 months.

Table (2) shows that highly statistically significant difference in pre-and post-health education program regarding to the mean score of all aspects of brief cope (p>0.000) . Also it shows improvement of all aspect of brief cope after patients education. Whereas the pre and post intervention mean score of problem focused was (42.66±11.52 and 54.06±6.78) respectively. While pre and post intervention mean score of emotional focused was (25.96±4.99 and 12.58±2.1) respectively.

Table (1). *Basic information of patients*

Parameter	N=50	%
age:		
20-	13	26
30-	8	16
40-	19	38
50-	8	16
60-	2	4
Mean of age:	40.48±12.09	
Gender		
Male	32	64
female	18	36
Marital status		
Single	11	22
Married	19	38
Divorced and widow	20	40
Educational level:		
Basic education	4	8
Secondary	28	56
Higher education	18	36
Job:		
Governmental	20	40
Nongovernmental	10	20
Retirement	2	4
Not working	18	36
Donor type:		
Biological	6	12
Non biological	44	88
Transplantation causes		
hypertension	27	54
Diabetes	24	48
Glomerulonephritis	15	30
Cystic kidney disease	8	16
Duration of kidney transplantation		
≤ 6 months	19	38
>6 months	31	62

Table (2). *Scores of Brief Cope for patients pre and post intervention phase*

Items	pre		post		T test	Sign
	Mean	SD	Mean	SD		
Self-distraction	4.84	1.88	6.40	1.65	-10.6-	*0.000
Active coping	4.38	1.75	6.58	1.71	-16.8-	*0.000
Denial	6.32	1.23	3.10	0.99	17.1	*0.000
Use of emotional support	4.72	1.86	6.96	1.52	-11.7-	*0.000
Use of instrumental support	4.96	1.51	7.04	1.15	-11.9-	*0.000
Behavioural disengagement	4.72	1.51	3.66	0.79	3.9	*0.000
Venting	5.38	1.75	3.22	0.91	10.5	*0.000
Positive reframing	4.06	1.67	6.64	1.28	-16.1-	*0.000
Planning	4.20	1.72	7.00	1.12	-14.0-	*0.000
Humor	4.08	1.06	5.16	0.81	-8.9-	*0.000
Acceptance	3.64	1.27	7.04	1.04	-23.8-	*0.000
Religion	7.20	0.72	7.64	0.56	-4.2-	*0.000
Self-blame	4.64	1.39	2.60	0.92	7.0	*0.000
Emotional focused	25.96	4.99	12.58	2.10	18.8	*0.000
Problem focused	42.66	11.52	54.06	6.78	-8.821-	*0.000

N.B. *highly significant

Table (3) shows that highly statistically significant difference in pre-and post-health education program regarding to the mean score of the most aspects of HRQOL (p>0.000) except role limitations due to physical health. It shows improvement of all aspect of HRQOL after patients education. Whereas the pre and post intervention mean score of PCS was (45.85±13.31 and 71.26±14.51) respectively. While pre and post intervention mean score of MCS was (33.85±13.47 and 65.1±9.5) respectively.

Table (3). *Mean Scores of HRQOL for patients pre and post intervention*

HRQOL Scale	Pre		Post		T test	P Sign
	Mean	SD	Mean	SD		
Physical functioning	46.2	23.4	75.5	24.2	-10.8-	*0.000
Role limitations due to PCS	64.0	48.4	80.0	40.4	-2.4-	*0.019
Role limitations due to MCS	40.6	49.1	76.0	37.5	-5.3-	*0.000
Energy/ fatigue	24.6	15.8	56.3	9.4	-13.9-	*0.000
Emotional well being	25.9	16.4	63.6	19.8	-11.2-	*0.000
Social functioning	44.2	12.4	64.5	10.8	-10.5-	*0.000
Pain	27.0	16.6	69.6	12.4	-15.4-	*0.000
General health	46.2	9.39	59.9	5.57	-10.5-	*0.000
Mean score of total PCS	45.8	13.3	71.2	14.5	-12.4-	*0.000
Mean score of total MCS	33.8	13.4	65.1	9.50	-14.5-	*0.000

Table (4). *knowledge difference for patients pre and post –intervention*

Item	Pre intervention Total=50		Post intervention Total=50		X^2	P-value
	NO.	%	No	%		
Basic knowledge:						
Satisfactory	37	74	50	100	14.943	0.000**
unsatisfactory	13	26	0	0		
Rejection syndrome:						
Satisfactory	30	60	49	98	21.760	0.000**
unsatisfactory	20	40	1	2		
Infection prevention						
Satisfactory	0	0	40	80	66,667	0.000**
unsatisfactory	50	100	10	20		
Diet :						
Satisfactory	44	88	50	100	6.383	0.013*
unsatisfactory	6	12	0	0		
Medication:						
Satisfactory	45	90	50	100	5.263	0.028*
unsatisfactory	5	10	0	0		
Score of total knowledge	25.88±3.97		28.54±1.90		t test -7.086-	0.000**

Table (4) shows that the majority of patients pre intervention had satisfactory knowledge regarding basic knowledge, diet and medication of kidney transplantation (74%, 88% and 90%) respectively. Also less than two thirds of them (60%) had satisfactory knowledge regarding rejection syndrome. While all patients had unsatisfactory knowledge regarding infection prevention. However all patients post intervention had satisfactory knowledge about kidney transplantation (p>0.000) except diet and medication knowledge. It shows that improvement in the knowledge of patients pre and post intervention regarding kidney transplantation whereas the mean score (25.88±3.97 and 28.54±1.90).

Figure 1 shows that improvement of self-efficacy score, whereas nearly three quarters (74%) of patients had a low scores of self-efficacy pre-intervention, mean score (19.46±5.80). While post-intervention, the majority (84%) of them had a high scores of self-efficacy, mean score (33.00±5.19) with highly statistically significant difference between pre and post intervention (p>0.000).

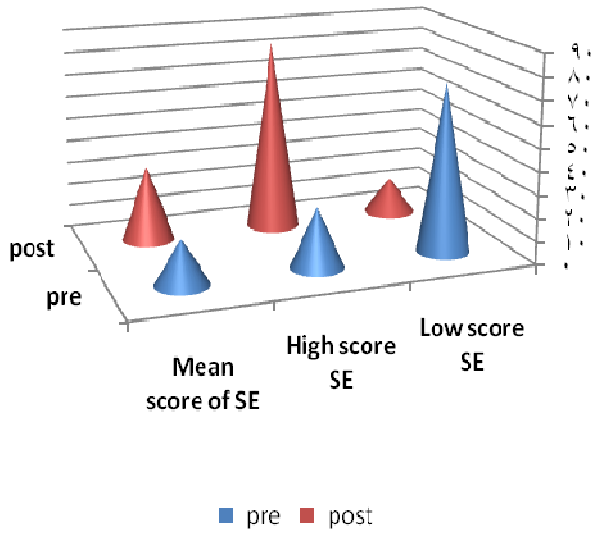

Figure 1. *Scores of self efficacy for patients pre and post intervention T test -18.528- (p>0.000)*

Table 5 shows that positive correlation between PCS and MCS post intervention (p> 0.000) respectively. Also it shows that significant correlation between physical health and total knowledge of kidney transplantation post intervention (p= 0.015) respectively. Also it shows that positive correlation between PCS and self post intervention (p= 0.029). Also it shows that significant correlation between physical health related quality of life and Problem focused coping post intervention.

Table (5). *Correlation Coefficients between variables Post intervention*

Items (n=50)	PCS pre (n=50)		PCS post (n=50)	
	R	p- value	R	p- value
MCS	0.394**	0.005	0.537**	0.000
Total Knowledge	0.299*	0.035	0.342*	0.015
Self efficacy	0.421**	0.002	0.308*	0.029
Problem focused	0.501**	0.000	0.294*	0.039
Emotional focused	0.002	0.989	-0.278-	0.051

Table (6) shows that the higher educated had less emotional focused coping and more problem focused coping with highly statistically significant differences (p 0.001and <0.000) postintervention respectively. Regarding HRQOL, the higher educated had better PCS and MCS with statistically significant difference (p value 0.002and 0. 0.009) respectively. Also the table shows that the higher educated more knowledgeable regarding kidney transplantation with statistically significant differences (P= 0.001).

Table (6). *Differences mean of studied variable according to educational level post intervention*

Items	education	N	Mean	SD.	F	sig
self efficacy	Secondary and	32	31.31	5.5	11.36	0.001**
	high	18	36.00	2.7		
emotional focused	Secondary and	32	13.28	1.9	12.16	0.001**
	high	18	11.33	1.7		
Problem focused	Secondary and	32	51.46	6.5	17.3	0.000**
	high	18	58.66	4.3		
PCS	Secondary and	32	67.50	16.	6.66	0.002*
	high	18	77.95	5.8		
MCS	Secondary and	32	62.53	10.	7.30	0.009*
	high	18	69.65	6.5		
Total Knowledge	Secondary and	32	27.87	1.8	13.56	0.001**
	High	18	29.72	1.2		

4. Discussion

This study aimed at exploring the impact of patient education on coping strategies, quality of life, knowledge and self efficacy of kidney recipient patients

The results of the present study illustrated that the mean age of patients was 40.48±12.09 years old. Nearly two thirds of them were male and not married. More than half of them had a secondary education and the most cause of kidney transplantation was hypertension. This was in accordance with [19] who found that the mean age of the sample group was 41.24 ± 13.93 years old. The subjects consisted of 58.7% male who were mostly married and nearly one third had primary education and hypertension is the most causes of ESRD.

Regarding coping strategies, this result indicate that improvement in the mean score of problem focused and emotional focused coping pre and post intervention with highly statistically significant difference.

Unfortunately, very few literature is available regarding the provision of information related to the coping style of the kidney transplant patient [20] .

Nilsson et al [21] found that organ transplant recipients seem to use more positive than negative coping in relation to the perceived threat of the risk of graft rejection, and the measured coping appear to be independent of demographic and clinical variables. While Gill and Lowes [22] and Ouellette et al [23] many recipients use emotion-focused coping mechanisms, such as avoidance and denial, to deal with the prospect of graft failure as it helps to minimize anxiety in situations where individuals feel they have little control [7]. However, the use of emotion-focused coping styles may actually compound the eventual impact of graft failure because recipients have not properly anticipated transplant failure or considered how they would cope with it, if and when it occurs [24].

Regarding HRQoL this results shows that promotion of most aspects of HRQOL post intervention with highly statistically significant difference between pre and post intervention of health education.

In accordance to Lakdizaji et al [25] who stated that educational interventions had significant impact of consistent on promotion of quality of life in patients with heart failure. Ongoing education improved the physical and emotional dimensions of QOL as well as total QOL in these patients. With regard to the impact of chronic diseases on social health, ongoing educational programs are necessary for consistent promotion of self-care behaviors, controlling symptoms and prevention of complications.

In the same line Aziz Fini. et al [26] emphasized that teaching health-promotion strategies to patients improved quality of life, enhanced self efficacy, confidence of care continuation, coping with disease and decreased symptoms. Also the authors added that education on health promotion strategy, 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.

According to Urstad et al [27] who indicated that a tailored educational program in the post transplant phase seems effective in increasing renal recipients' levels of knowledge, and that this may continue to be significant after six months. Participants in the experimental group were also more compliant compared with the control group. Furthermore, scores on self-efficacy and mental scores of quality of life were higher in the experimental group after six months post intervention, which might be explained by the patients' adaptation to the home setting.

Ustard [28] stated that tailored patient education intervention proved to increase patients' insights in post-transplant aspects and their compliance to graft observation. In the longer term, beneficial effects were also found in terms of patients' self-efficacy and mental quality of life.

Finally Curcani and Tan [29] found that there was a significant difference between pre-education and post-education mean scores of all the subscales of the quality of life and global quality of life, and there was an increase in the scores after the patient education.

Regarding patient' knowledge, this results showed that the majority of patients pre intervention had satisfactory knowledge regarding basic knowledge, diet and medication of kidney transplantation. Also less than two thirds of them had satisfactory knowledge regarding rejection syndrome. While all patients had unsatisfactory knowledge regarding infection prevention. However all patients post intervention had satisfactory knowledge about kidney transplantation in all items with statistically significant differences between pre and post intervention.

Also this result supported by Urstad [28] who stated that, the highest knowledge scores were found in relation to medication with 72.5% correct answers, 58% correct answers were given in relation to rejection, and 52% correct answers were given concerning lifestyle. Also the author added the patient education intervention was increased renal recipients' knowledge significantly in both the short and longer term.

Murphy [6] and Luk [30] emphasized that, in order to reduce rejection episodes, graft loss, and the negative consequences of immunosuppressive medication, renal recipients need to acquire knowledge in relation to medication regime, graft surveillance, and the benefit of specific lifestyle

behavior. Also our finding supported by Mersal [31] who found that pre-counseling knowledge deficit related to organ transplantation, bone marrow transplantation, diet exercise and infection prevention. Also the author indicated that all patients had satisfactory knowledge after counseling and after one year follow-up. Also Haspeslagh et al [20] concluded that patients indicated a need for more concrete and practical information, not only during their hospital stay, but also in the long term after receiving a transplant. Nurses should be trained to provide education on all aspects of self-management and should implement strategies to support patients in acquiring self- management skills.

Finally Osborne et al [9] stated that knowledge has a valuable impact on outcomes such as self-efficacy, behavioral changes, and quality of life. Hence, the assumption is that despite several factors making this outcome chain complex, knowledge regarding important aspects concerning life post-transplant is an essential first step toward enhanced coping and quality of life.

Regarding self efficacy the results of the present study illustrated that highly statistically significant difference in pre-and post-patients' education program. This result of the current study is supported with Aziz Fini et al [26] who demonstrated that education on health-promotion strategies improve self-care, self-efficacy in patients undergoing bone marrow transplantation. Also Moattari et al [32] found that empowerment programs that focus on increasing awareness, knowledge, skills, motivation, self-esteem and the creation of self-efficacy in self-control and preventive behaviors will lead to increases in self-care self-efficacy and quality of life.

Also this result supported by Urstad et al [27] and Soltannezhad et al [33] who indicate that a tailored educational program and educating health promotion strategies in the post transplant phase seems effective in increasing renal recipients' levels scores on self-efficacy in the experimental group.

Our result shows that patient who had better PSC had better MCS with highly significant difference, and patient who had better PSC was more knowledgeable regarding kidney transplantation with significant difference pre and post intervention . Also it shows that patient who had better PSC had more self efficacy with highly significant difference pre intervention and significant difference post intervention. Also it shows that patient who had better PSC coping positively by problem focused coping with highly significant difference pre intervention and significant difference post intervention. While it shows that patient who had worse PSC coping negatively by emotional focused coping post intervention.

In the same study by Liu [5] who found that patients who had negative coping had worse MCS and PCS while positive coping had no statistically significant relationships with either PCS or MCS. Also self-efficacy was significantly related to physical and mental HRQOL.

Graven et al [34] added that problem-focused coping strategies was improve psychological well-being, enhanced self-care, and improved health-related quality of life. Whereas, the use of emotion-focused coping strategies was found to be associated psychological distress, decreased health-related quality of life, and increased mortality.

Our findings shows that pre and post intervention the higher educated had less emotional focused coping and more problem focused coping with highly statistically significant differences. Regarding HRQOL, the higher educated had better PCS and MCS with statistically significant difference. Also the results shows that the higher educated more knowledgeable regarding kidney transplantation highly statistically significant differences.

In the same line Atashpeikar et al [35] added that there was a significant correlation between educational status and self-care ability so that individual with higher education had higher self-care ability than illiterates. The patients who have higher educational level can better recognize their self-care needs and confront with them; therefore, it can explain the superiority of educated patients. Higher education and higher income levels were associated better HRQoL [36] .

5. Conclusion

All dimensions of HRQoL of patients were better after the education program, as compared with that of prior to the intervention. The mean score of self efficacy was improved post intervention. Also the patients had better knowledge and positive coping by using problem focused coping strategies post intervention. Patients' education program was enhance patients HRQOL, knowledge, self efficacy, and coping strategies. Our result showed that patient with better PSC had better MCS, more knowledgeable regarding kidney transplantation, had more self efficacy and coping positively by problem focused coping with statistically significant difference pre and post intervention.

Recommendations

Continuous education should be provided by the healthcare team for patients. An education training team or education nurse should be trained to work in the transplantation outpatient. Also it was be recommended that periodic refreshment trainings for patients and their family about rejection signs and symptoms, infection prevention, immunosuppressive therapy, how to cope with chronic diseases, and life style modification.

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