

## Nursing Intervention Program on Nurses' Knowledge and Practices Post Kidney Transplantation

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**Abstract: Background:** Kidney transplants have become common surgical procedures that are associated with high success rates. Nevertheless the detection, accurate diagnosis and timely management of the perioperative surgical complications sometimes require multidisciplinary team approach for some of the complications may result in significant morbidity, risk of graft loss and/or mortality of the recipient. This study aimed to evaluate the nurses' knowledge and practices post kidney transplantation: Setting at Special Ain-Shams hospital for kidney transplantation unit. Material and methods: a quasi-experimental (pre/post and follow up-test design) was utilized. A convenient sample of (40) nurses who provide direct care for kidney transplantation patients. Data was obtained using three main tools; kidney transplantation nurses' knowledge assessment tool, kidney transplantation nurses' practice checklist tool. The intervention was delivered throughout ten weeks. Each week involved three sessions. Every session lasts about forty to sixty minutes. Nurses were divided into 8 groups, 5 nurses each. Results revealed that the mean knowledge and practice scores of nurses are increased immediately after implementation of the program with a significant statistical difference. This increased level slightly decreased following follow up of program implementation. In addition, a positive correlation was found between nurse's knowledge and practice scores after program implementation. Conclusion educational intervention has a positive effect in developing critical care nursing performance for caring of kidney transplantation patients and improving nurse's knowledge and practice can favorable affect the outcome of kidney transplantation patients. Recommendations: There is a need for continued and written standards training programs regarding kidney transplantation patients and should be available.

**Keywords:** Nursing, Knowledge, Practices, kidney transplantation, Educational, Intervention

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Date of Submission: 15-04-2019

Date of acceptance: 27-04-2019

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### I. Introduction

Kidney transplant is the leading treatment method for patients with recent renal failure in terms of quality of life, cost, and survival. After transplant, rejection, infection, cardiovascular diseases, malignancies, immunosuppressive therapy failure, and psychological problems may occur. Post-transplant nursing care is as important as pre transplant nursing care in terms of enhancing quality of life, preventing complications, and providing necessary changes to treatment. In this report, we presented ways to increase quality of care after transplant and outlined standardized nursing care to reduce work and time loads by ensuring integrative and systematic approaches of nurses. (Demet., et al., 2018)<sup>(3)</sup>.

Kidney serves the body as a natural filter of the blood and removes waste products of metabolism. The care for the client undergoing renal transplantation is complex and specialized standard post-operative nursing intervention are applicable with the added consideration of assessing for signs of rejection and prevention of infection. (Chan., 2014)<sup>(20)</sup>, (Hentry., 2013)<sup>(19)</sup>. Kidney transplantation was first used successfully as a means of treating renal failure during the middle of the 20th century. A small number of nurses in the few hospitals that experimented with transplant viewed the new treatment as an exciting work opportunity. (Hoffart., 2014)<sup>(5)</sup>.

A successful kidney transplant offers enhanced quality and duration of life and is more effective regarding the medical outcome, patient satisfaction and cost-effectiveness than long term dialysis treatment in patients with end stage chronic kidney disease (CKD). (Kaufman.,2015)<sup>(10)</sup>. Kidney transplant operations should be attempted only after a period of study and preparation. Therefore, careful pre-transplant evaluation and teaching were necessary to prepare the patient for surgery and postoperative course, and also to provide a greater chance of long-term success. The patient undergoing kidney transplantation requires aggressive medical care and expert nurses for educating the patient and family, meeting care needs, and for close monitoring and management. (El-Gharabawy et al., 2011)<sup>(4)</sup>.

Medical-Surgical Nursing practice requires complex combinations of knowledge, performance, skills and attitudes, a holistic definition of competence. This could facilitate greater acceptance of the concept and development of competency standards. The Standards of Care gives an overview of how the nurse will collect and analyze the data, identify the problems, and plan of care. Implementation of the plan, coordination of the care using all resources available, and reinforcing with teaching and health promotion covers the general nephrology nurse standards. (Ibrahim et al., 2014)<sup>(8)</sup>.

Knowledge of the nurse of post-operative care of kidney transplantation was of crucial importance and had an impact on nurse's practice. The main goal of care was to maintain homeostasis until the transplanted kidney functioning well. Furthermore, there were several complications related to transplanting such as rejection, infection and those related to immunosuppressive. So, the success of the kidney transplant depends on the maintenance of functioning graft (Nakashima et al., 2012)<sup>(12)</sup>.

The nurses who will gain more information about post kidney transplantation patients. Therefore, strengthening and integrating universal precaution with the routine services through the provision of training and preparing and introducing health-care workers, prevention standard of practice, protocol, rules, regulation and opportunities to promote the desired team spirit at all health facility levels were recommended. (Hussen and Shehata, 2016)<sup>(7)</sup>, (Hussen., et al., 2009)<sup>(6)</sup>.

The post-operative nursing care of kidney transplantation client is very important. One has to follow complete aseptic techniques for postoperative care. The first day of postoperative period is closely monitored with 30 minutes intervals, for signs and symptoms of kidney transplantation rejection such as increased blood pressure and edema. Antibiotics and anti-hypertensive drugs are used to maintain the electrolyte balance and blood pressure. Dextrose and sodium solution are administered post-operatively with the ratio of saline and dextrose as 2:1. Urine is monitored hourly. It is very important to maintain intake and output chart to detect the transplanted kidney function. (Chan., 2014)<sup>(20)</sup>.

Drain has to be monitored as increased drain volume is a sign of bleeding. Abdominal drain is placed for 5-7 days. Doppler ultrasound can be advised after 24 days. Position should be closely monitored. Immunosuppressant drugs, fluid and electrolyte balance, wound care, pain management, intensive spirometer, early ambulation and restoration of normal bowel elimination are the areas of concern. Recovery of upper gastro intestinal function is usually uncomplicated but constipation is common problem because of ileus after a retroperitoneal dissection and the constipating side effects of phosphate hinder corticosteroids. Therefore stool softening, bulk forming laxatives and enemas are necessary. (Hentry., 2013)<sup>(19)</sup>.

### **1.1. Significance of the study:**

Kidney transplantation is considered the main decision strategy for renal replacement therapy for end-stage renal disease patients who had no physical or psychological contraindications; healthcare-associated infection (HAI) prevalence survey found that there were an estimated 157,500 surgical complications associated with inpatient surgeries in 2013. Applying nursing intervention program are very important to improve nursing performance for decreasing the risk of complications post renal transplantation. (Younis., et al., 2018)<sup>(18)</sup>, (CDC., 2017)<sup>(2)</sup>, (van., 2014)<sup>(16)</sup>. According to experience of researchers, it was noted that the nurse's knowledge and practice about that measures insufficient and requirement for improvement.

**1.2. Aim of the study:** The present study aimed to evaluate effect of educational intervention on nurses' knowledge and practices post kidney transplantation through the following:

1.2.1 Assessing nurses' knowledge and practice for patient post kidney transplantation.

1.2.2. Developing and implementing theoretical and practical an educational intervention for caring patient post kidney transplantation.

1.2.3. Examining the effect of theoretical and practical educational intervention on nurses' knowledge and practice post kidney transplantation.

### **1.3. Research Hypothesis**

1.3.1 Implementation of the theoretical and practical an educational intervention will improve nurses' knowledge and practice for patient post kidney transplantation.

## **II. Subjects and Methods**

**2.1 Research design:** A quasi experimental design was utilized to achieve the aim of the current study dependent variable was the level of nurses' knowledge and practice and independent variable was theoretical and practical an educational intervention post kidney transplantation.

**2.2 Setting:** The present study was conducted at Special Ain-Shams Hospital for kidney transplantation in Egypt.

**2.3 Sample:** A convenient sample of total 40 nurses providing direct care for kidney transplantation patient in the above-mentioned areas.

**2.4 Tools of data collection:**

Data were collected using two tools in order to achieve the aim of the study. The researchers developed two tools after reviewing the related literature.

**Tool I: kidney transplantation nurses' knowledge assessment tool:**

This tool was developed by the researchers, to assess nurses' knowledge about kidney transplantation including: nursing management before and after conducting the intervention. This tool covering different aspects of nurses' knowledge for kidney transplantation nursing management including definition of kidney transplantation ( 2 items), prerequisites for kidney transplantation ( 8 items), indication for kidney transplantation ( 5 items), Preparation of patient for kidney transplantation (12 items), Complication of kidney transplantation ( 8 items), Signs of infection (8 items), Signs of organ rejection (7 items), Signs of shock (5 items), Signs of bleeding (6 items) and finally Prerequisites of kidney donation (8 items) as a total (69 items). Additionally, tool (I) was initiated to collect socio-demographic characteristics of nurses such as age, educational level, job title, years of working experience in the kidney transplantation hospital.

**Scoring system of the knowledge:**

**Total knowledge score:**

Satisfactory knowledge----- $\geq 75\%$  of total knowledge score (more than 52 marks).

Unsatisfactory knowledge----- $< 75\%$  of total knowledge score (less than 52 marks).

**Tool II : kidney transplantation nurses' practice checklist tool:**

The tool adopted to evaluate nurses' practice toward caring for patient post kidney transplantation surgery. This tool covering different procedure including (clinical examination, care of mechanical ventilator, arterial blood gases sampling, care central venous catheter, administration of prophylactic antibiotics, endotracheal suctioning, urinary catheter care, breathing exercises, oral care and Ryle nutrition ).

**Scoring system of the practice:**

**Total practice score**

Incompetent practice----- $< 85\%$  of total practice score

Competent practice ----- $\geq 85\%$  of total practice score.

**2.5 Field work:**

The study was implemented during the period from the first August 2016 to the end of January 2017. The study tools were adapted and designed by the researchers after reviewing the relevant recent literatures. Content validity and reliability test were done before starting data collection process. The data collection, pre / post and two month after educational training program were done by the researchers.

**2.5.1 Validity and reliability of the tool:** Validity test was done by 5 experts from Medical surgical nursing specialty and 2 from neurological consultants. The nurses' knowledge questionnaire sheet reliability were confirmed by Cronbach's alpha coefficient (alpha= 0.923 for nurses' knowledge questionnaire & alpha=0.896 for nurses practice checklist tool)

**2.5.2 Pilot study:** A pilot study was carried out on 10% of the total study sample to test the clarity, feasibility and applicability of the tools of the study. Pilot subjects were later included in the study as there was no radical modifications in the study tools.

**2.5.3 Administrative and ethical considerations:** The researchers explained the purposed of the study and their rights as a study participant, including anonymity and confidentiality, their rights to withdraw from the study at any time. Informed consent was obtained from the nurses participated in the current study.

**2.5.4 Educational program intervention: implemented through different four phases:-**

**2.5.4.1 Assessment phase:** The researchers were keen to assess nurses' knowledge post kidney transplantation management as a pretest before the evaluation of their practice, so as not to affect the content of knowledge questions on the pre nurses' practice test. The researchers interviewed each nurse individually according their available time and asked them to answer and fill the self-administer questionnaire sheet about their knowledge for kidney transplantation management and also asking them write what they wanted and needed to know in

relation to kidney transplantation assessment; which involve the learners in the planning of the program and encouraging them to formulate their learning goals, which provides a flexible teaching focus on the learner's demands and not on the teacher's view of what the learners need to know. Evaluate their practice by used kidney transplantation management form and compared their results to the score given by the researchers.

**2.5.4.2 Planning phase:** theoretical and practical educational program was developed according to predetermine actual nurses need (pretest). It consisted of two parts (theoretical & practical) as follows: Theoretical part: it contains the following items; General knowledge for kidney transplantation management (definition, indication & importance), kidney transplantation management components, Scores for each component and minimum & maximum scores of kidney transplantation management. Practical part: demonstration and re-demonstration for kidney transplantation management related procedures. Method of teaching used was presentation & discussion by data show (computer) and Handout.

**2.5.4.3 Implementation phase:** kidney transplantation management educational program was provided through 10 sessions were provided through the educational intervention,(3 theoretical and 7 practical sessions. The educational was delivered throughout 15 weeks each week involved three sessions, and every session took about forty to sixty minutes, The total number of groups were 8 groups (for each 5 nurses). The session timing was between morning and afternoon shift or throughout morning shift after giving the routine care to the critically ill patients. Theoretical sessions focused on: definition of kidney transplantation, prerequisites for kidney transplantation, indication for kidney transplantation, Preparation of patient for kidney transplantation, Complication of kidney transplantation, Signs of infection, Signs of organ rejection, Signs of shock and Signs of bleeding and finally Prerequisites of kidney donation. Practical session focused on the following items: assessment, how to perform primary & secondary survey, and demonstration of nursing management for kidney transplantation patients divided as follows: each week involved three sessions (60 minutes for each) in small groups about 5 nurses discussing with them in their working area to facilitate the meeting. Each session included displaying simple training videos for practical skills related to kidney transplantation nursing management using audiovisual aids. Each nurse received the Arabic instructional booklet " for kidney transplantation nursing intervention " to attract her attention, motivate and support her learning and practicing. The content of theoretical part was given for all the studied nurses at the end of the last session.

**2.5.4.4. Evaluation phase:** Examining the theoretical and practical educational intervention on studied nurses was started immediately after implementation the educational intervention (posttest1) immediately after the program intervention end during the follow-up periods after three months of the program intervention (posttest 2) were done using the same tools of the pretest. Then a comparison between the pre/post and follow-up tests was done.

**2.6 Statistical design:** Statistical analysis was done using IBM SPSS 22 statistical software package. Cleaning of data was done to be sure that there is no missing or abnormal data by running frequencies and descriptive statistics. Data was presented using descriptive statistics in the form of frequencies and percentages for categorical variables, means and standard deviations for continuous variables paired test, and chi-square. Pearson correlation analysis was used for assessment of the inter-relationships among quantitative variables. The significant level of all statistical analysis was at  $< 0.001$  &  $< 0.05$  (P value).

### III. Results

Table (1) illustrates that 35% of the study nurses were in the age group 30-49 and from 40-50 years old, their mean age is  $32.74 \pm 8.59$  years. In relation to the level of education, it was noted that only (22.2%) of the study subjects were Secondary nursing education, while (55%) of them have Baculare of nursing. As regards to years of experience, it was found that, (45 %) of the study subjects had from 5-10 years and from 10-15 years of experience .The mean years of experience were  $9.48 \pm 4.76$ .inaddition 55% of them had a training courses regarding management of patient with kidney transplantation.

Table (2) reveals the distribution of mean score of studied nurses' knowledge regarding kidney transplantation at the different three phases of assessment (pre-immediate post and follow up phases). It is showed that there was highly statistical significant differences between studied nurses knowledge mean score at different phases of assessment.

Table (3) indicates distribution of total practice score among the studied nurses regarding preparation for kidney transplantation; it is indicated that there was a highly statistical significance difference regarding studied nurses' practice toward patient assessment, patient approval and transplantation admission skills at both immediate post intervention and the follow up phase ( $p < 0.001^{**}$ )..on the other hand there was a statistical

significance difference regarding studied nurses' practice preoperative preparation skill at both immediate post intervention and the follow up phase ( $p < 0.05^*$ ).

Table (4) reveals distribution of total practice score among the studied nurses postoperative care for kidney transplantation; it is indicated that there was a highly statistical significance difference regarding studied nurses' practice Clinical examination, Care of mechanical ventilator, Arterial blood gases sampling, Care of central venous catheter, Administration of prophylactic antibiotics, Oral care & Ryle nutrition, Endotracheal suctioning, Urinary catheter care, and Breathing exercises skills at immediate post intervention ( $p < 0.001^{**}$ ). On the other hand there was a statistical significance difference regarding studied nurses' practice skill at the follow up phase ( $p < 0.05^*$ ).

Table (5) shows that, there was a highly statistical significant positive association between head nurses knowledge, and practice at the immediate post and follow up intervention phases.

Figure (1) illustrates the percentage distribution of total knowledge score among the studied nurses; it is indicated that more than half of them (62.5%) had unsatisfactory level of the knowledge at pre intervention phase. On the other hand 92.5% and 82.5% of them had satisfactory level of knowledge at both immediate post interventions and follow up phases respectively.

Figure (2) illustrates the percentage distribution of total practice score of the studied nurses regarding kidney transplantation. It is indicated that 57.5% of the studied staff nurses had incompetent practice regarding caring post kidney transplantation patient at the pre-intervention phase. On the other hand 82.5%, 72.5% of them had a competent practice at both immediate post and follow up phases respectively.

#### IV. Discussion

Kidney transplants have become common surgical procedures that are associated with high success rates. The complications associated with the procedure are low especially compared with other organ transplants. Nevertheless the detection, accurate diagnosis and timely management of surgical complications after kidney transplant are important tasks of the team managing these patients as some of the complications can result in significant morbidity of the recipient, risk of graft loss and mortality. (Peneva., et al., 2015)<sup>(13)</sup>.

The result of the present study shows a positive effect of an educational intervention on critical care nurses' performance for kidney transplantation. Moreover, the result of the present study supported the stated hypothesis that, there was a highly significant improvement of knowledge and practice at both immediate post intervention and follow up phases as compared with pre intervention phase.

Regarding socio-demographic characteristics of the studied nurses, the result of the current study indicated that mean age of nurses was  $32.74 \pm 8.59$  years. These finding agreed with (Muslim., et al., 2017)<sup>(11)</sup>, in the study to (Practice of Nursing Care for Central Venous Catheter Among intensive care unit Nurses in Private Tertiary Care Hospital Peshawar). In relation to the level of education of the studied nurses, more than half of them (55%) of them had a baculare degree of nursing education. These findings are in contrast with (Muslim,2017)<sup>(11)</sup>, in the study to evaluate " Practice of Nursing Care for Central Venous Catheter Among intensive care unit nurses in Private Tertiary Care Hospital Peshawar, KP", it was showed that the majority of nurses had a diploma degree of nursing education.

In relation to the studied nurses' years of experience, it was found that, nearly half of the studied nurses had from 5-10 years, with the mean  $9.48 \pm 4.76$ . These findings are in contrast with (Muslim,2017)<sup>(11)</sup>, in the previous mentioned study, who added that the majority of nurses had from (1-2 years of experience). Moreover the present study findings revealed that more than half had a training courses regarding management of patient with kidney transplantation.

As regarding the level of knowledge of the studied nurses at the pre-intervention phase, the present study findings revealed that nearly two third of studied nurses had a poor knowledge. These findings are agreed with (Camila et al., 2015)<sup>(1)</sup>, in the study to assess "Perceptions of nurses and clients about nursing care after kidney transplantation", it was revealed that studied nurses had a defiance of knowledge. These findings may be due to the lack of frequent training courses.

Regarding effect of the implemented educational intervention, it was indicated that it is highly improve studied nurses knowledge at both the immediate post intervention and follow up phases, as the mean score of their total knowledge was improved from ( $41.9744 \pm 3.63$  at pre-intervention phase to  $66.2564 \pm 1.787$  and  $64.6750 \pm 2.70221$ ) at both immediate post intervention and follow up phases respectively. These findings supported that educational program should be frequently implemented for nurse specifically these who work at critical nursing setting.

At the pre-intervention phase, the present study findings indicated that more than of the studied staff nurses had incompetent practice regarding caring after kidney transplantation. These findings are agreed with (Younis., et al., 2018)<sup>(18)</sup>, in the study to evaluate "effect of nursing teaching protocol on nurses' knowledge and practice regarding kidney transplantation patients", it was pointed out that the majority of the studied nurses had a deficit knowledge regarding management of patient post kidney transplantation.

The present study findings revealed that implemented educational interventional program has positively improve studied nurses practice regarding caring after kidney transplantation, as the majority of the studied nurses had a competent level of practice at both immediate post and follow up phases, these findings come in the same line with (Younis et al., 2018)<sup>(18)</sup>, in the previous mentioned study, who illustrated that nurses' practice was enormously moved forward as compared with pre-intervention practice. Moreover ,these findings were in concurrence with those of (Sherwood, 2006)<sup>(15)</sup>, (Sayed et al., 2011)<sup>(14)</sup> who expressed that a lot of researches that indicated changes in nursing practice occur following the participation of persistent nursing educational programs increase knowledge and skills and can likewise change attitudes.

Concerning the correlation, the present study result indicated that there was a highly statistical significant positive association between head nurses knowledge, and practice at the immediate post and follow up intervention phases. These findings agreed with a lot of studies revealed that changes (Yatin et al., 2014)<sup>(17)</sup>,(Janet, 2016)<sup>(9)</sup>, bolstered that in service program beneficially affected enhancing the nurses' performance. These researchers prescribed that educational programs should be organized according to the need of the nurses with constant evaluation.

### V. Conclusion

In the light of the present study, it was concluded that, the theoretical and practical an educational intervention had a positive effect in improving nurses' knowledge and practice for kidney transplantation in transplantation care unit. There was also a positive correlation between levels of nurses' knowledge as regards their practice.

### VI. Recommendations

The study recommended continuous educational programs should be planned on regular basis to nurses' caring of kidney transplantation patients for enhancing nurses' knowledge and practice to achieve high quality of care. Nursing educators should Establishing and distributing a manual procedure book to all nurses who were working in kidney transplantation units including standard of techniques that must be applied and followed. Replication the study on different settings to be generalizes the results of current study.

### VII. Limitation

No limitation

**Table (1):** Distribution of personnel characteristics of the studied nurses (n=40).

Personnel characteristics	No	%
<b>Age in years</b>		
20 - 29	12	30.0
30-39	14	35.0
40-50	14	35.0
<b>Mean ±SD</b>	32.74±8.59	
<b>Gender</b>		
Male	13	32.5
Female	27	67.5
<b>Educational qualification</b>		
Secondary nursing education	8	20.0
Technical nursing education	10	25.0
Baculare of nursing	22	55.0
<b>Years of experience</b>		
Less than 5 years	4	10.0
5-<10 years	18	45.0
10-<15	18	45.0
<b>Mean ±SD</b>	8.4	
<b>Marital status</b>		9.48±4.76
Single	10	25.0
Married	30	75.0
Training courses regarding management of patient with kidney transplantation.		
<b>Yes</b>	22	55.0
<b>No</b>	18	45.0

**Table (2):** Distribution of studied nurses knowledge mean scores regarding management of kidney transplantation (n=40).

Item	Pre and post intervention				Pre and follow up intervention				
		Pre-intervention	Post intervention	Paired t test	P value	Pre-intervention	Follow up	Paired t test	P value
		Mean ±SD	Mean ±SD			Mean ±SD	Mean ±SD		
Definition of kidney transplantation	2	1.4000±.4961	1.8500±.36162	-4.201	<0.001**	1.4000±.4961	1.7750±.4229	-3.553	<0.001**
Prerequisites for kidney transplantation	8	5.4250±.9306	7.8750±.33493	-18.320	<0.001**	5.4250±.9306	7.5250±.6400	-11.124	<0.001**
Indication for kidney transplantation	5	3.2500±.4385	4.8750±.33493	-19.030	<0.001**	3.2500±.4385	4.7500±.4385	-14.811	<0.001**
Preparation of patient for kidney transplantation	12	7.2000±.9391	11.6250±.6278	-23.402	<0.001**	7.2000±.9391	11.0750±.916	-21.148	<0.001**
Complication of kidney transplantation	8	4.7750±.1073	7.7750±.42290	-18.283	<0.001**	4.7750±.1073	7.5250±.6788	-13.421	<0.001**
Signs of infection	8	4.5750±.1009	7.6250±.62788	-18.610	<0.001**	4.5750±.1009	7.5000±.6405	-16.542	<0.001**
Signs of organ rejection	7	3.4000±.6324	6.1000±.81019	-15.021	<0.001**	3.4000±.6324	5.5000±.7161	-13.181	<0.001**
Signs of shock	5	3.2250±.7333	4.7750±.42290	-10.515	<0.001**	3.2250±.7333	4.6500±.4830	-8.924	<0.001**
Signs of bleeding	6	3.6500±.89299	5.9000±.30382	-13.795	<0.001**	3.6500±.89299	5.4250±.54948	-9.819	<0.001**
Prerequisites of kidney donation	8	5.1000±.1081	7.9750±.15811	-17.046	<0.001**	5.1000±.1081	5.8750±.9111	-3.444	<0.001**
Total knowledge	69	41.9744±3.63	66.2564±1.787	-37.545	<0.001**	41.9744±3.63	64.6750±2.70221	-29.907	<0.001**

**Table (3):** Distribution of studied nurses practice regarding preparation for kidney transplantation (n=40).

Variable	Times of assessment	Incompetent <85%		Competent ≥ 85%		X <sup>2</sup> (1)	P value	X <sup>2</sup> (2)	P value
		No	%	No	%				
Patient assessment	Pre-intervention	24	60.0%	16	40.0%	17.28	<0.001**	11.60	<0.001**
	Immediate post intervention	6	15.0%	34	85.0%				
	Follow up	9	22.5%	31	77.5%				
Preoperative preparation	Pre-intervention	18	45.0%	22	55.0%	5.69	<0.05*	3.51	<0.05*
	Immediate post intervention	8	20.0%	32	80.0%				
	Follow up	10	25.0%	30	75.0%				
Patient approval	Pre-intervention	23	57.5%	17	42.5%	20.18	<0.001**	15.63	<0.001**
	Immediate post intervention	4	10.0%	36	90.0%				
	Follow up	6	15.0%	34	85.0%				
Transplantation admission	Pre-intervention	27	67.5%	13	32.5%	16.36	<0.001**	11.25	<0.001**
	Immediate post intervention	9	22.5%	31	77.5%				
	Follow up	12	30.0%	28	70.0%				

**Table (4):** Distribution of studied nurses practice regarding postoperative care for kidney transplantation (n=40).

Variable	Times of assessment	Incompetent <85%		Competent ≥ 85%		X <sup>2</sup> (1)	P value	X <sup>2</sup> (2)	P value
		No	%	No	%				
Clinical examination	Pre-intervention	17	42.5%	23	57.5%	9.02	<0.05*	5.95	<0.05*
	Immediate post intervention	5	12.5%	35	87.5%				
	Follow up	7	17.5%	33	82.5%				
Care of mechanical ventilator	Pre-intervention	26	65.0%	14	35.0%	25.81	<0.001**	18.62	<0.001**
	Immediate post intervention	4	10.0%	36	90.0%				
	Follow up	7	17.5%	33	82.5%				
Arterial blood gases sampling	Pre-intervention	24	60.0%	16	40.0%	11.60	<0.001**	7.27	<0.05*
	Immediate post intervention	9	22.5%	31	77.5%				
	Follow up	12	30.0%	28	70.0%				
Care of central venous catheter	Pre-intervention	26	65.0%	14	35.0%	25.81	<0.001**	20.83	<0.001**
	Immediate post intervention	4	10.0%	36	90.0%				
	Follow up	6	15.0%	34	85.0%				
Administration of prophylactic antibiotics	Pre-intervention	24	60.0%	16	40.0%	19.52	<0.001**	15.22	<0.001**
	Immediate post intervention	5	12.5%	35	87.5%				
	Follow up	7	17.5%	33	82.5%				
Oral care & Ryle nutrition	Pre-intervention	21	52.5%	19	47.5%	14.58	<0.001**	7.68	<0.05*
	Immediate post intervention	9	22.5%	31	77.5%				
	Follow up	9	22.5%	31	77.5%				
Endotracheal suctioning	Pre-intervention	21	52.5%	19	47.5%	10.76	<0.001**	4.17	<0.05*
	Immediate post intervention	7	17.5%	33	82.5%				
	Follow up	12	30.0%	28	70.0%				
Urinary catheter care	Pre-intervention	27	67.5%	13	32.5%	12.83	<0.001**	7.21	<0.05*
	Immediate post intervention	11	27.5%	29	72.5%				
	Follow up	15	37.5%	25	62.5%				
Breathing exercises	Pre-intervention	21	52.5%	19	47.5%	12.57	<0.001**	7.68	<0.05*
	Immediate post intervention	6	15.0%	34	85.0%				
	Follow up	9	22.5%	31	77.5%				

**Table (5):** Correlation between studied nurses' knowledge and practice scores at different phases of intervention.

Total knowledge score	Total practice score					
	Pre-intervention		Immediate post intervention		Follow up	
	r	P value	r	P value	r	P value
Pre-intervention	.217*	<0.05*	-	-	-	-
Immediate post intervention	-	-	.538**	<0.001**	-	-
Follow up	-	-	-	-	.393**	<0.001**



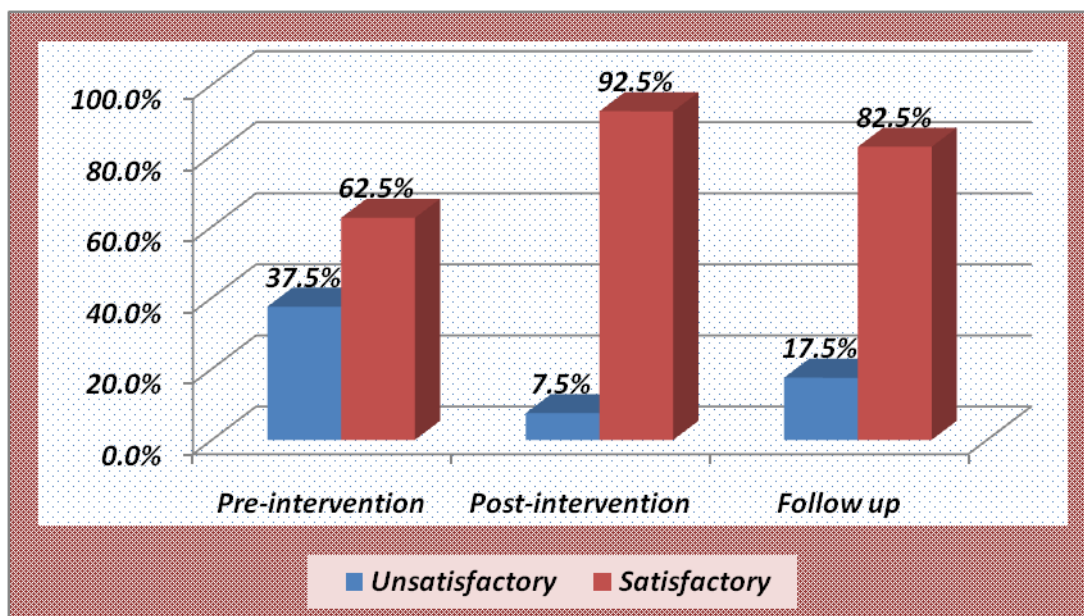


Figure (1): percentage distribution of total knowledge score of the studied nurses regarding kidney transplantation.

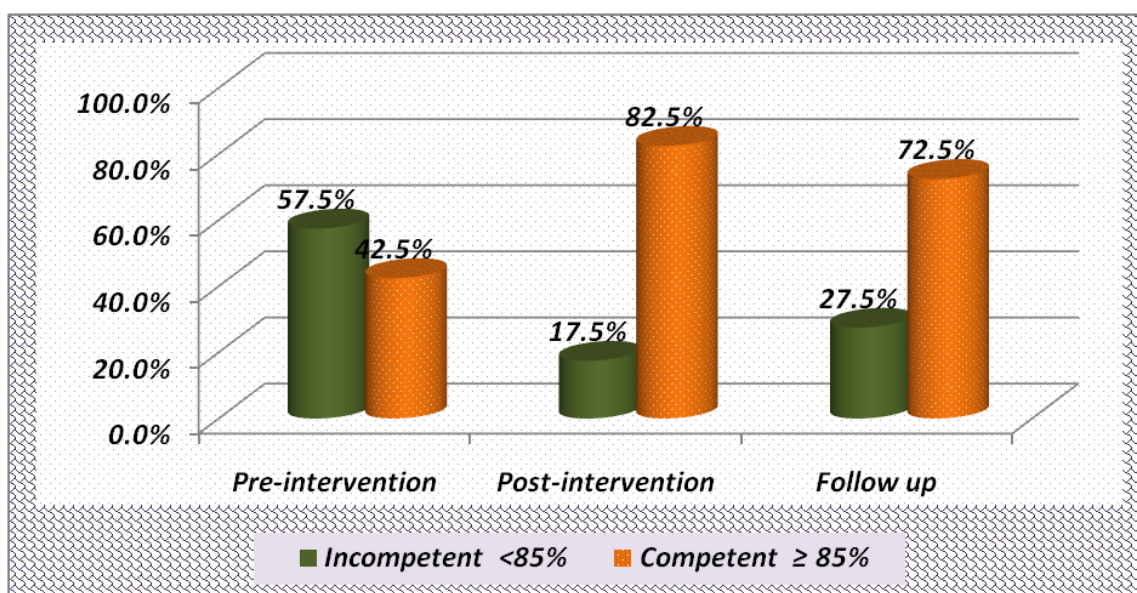


Figure (2): percentage distribution of total practice score of the studied nurses regarding kidney transplantation.

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Hussein E. E. and Zatoon H. K. " Nursing Intervention Program on Nurses' Knowledge and Practices Post Kidney Transplantation". *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, vol. 8, no.02 , 2019, pp. 65-74.