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EFFECTIVENESS OF A TRAINING PROGRAM ON NURSES' KNOWLEDGE AND PRACTICE REGARDING POSTOPERATIVE NURSING CARE OF RENAL TRANSPLANTED PATIENTS



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Abstract

Background: The nurse plays a pivotal role in assisting the patient in facing many challenges that are associated with renal transplantation, including the complications and long-term physical and psychosocial implications.

Aim: The study aimed to assess the effects of a training program on nurses' knowledge regarding post-operative nursing care of renal transplantation patients in the renal transplantation centers in Khartoum Sudan.

Methods: An interventional, hospital-based study carried out, the total coverage method used to lay down the sample which reaches (n=72) nurses. The study conducted at the three main transplantation centers in the Khartoum State (Ahmed Gasim, Ibn Sina, and East Nile).

Results: The total number of the participating nurses was 72 nurses having their age between 20 and 30 years. The nurses' knowledge before the implementation of the program, n=19 nurses (26.4%) was poor, n=50 nurses (69.4%) was good, and n=3 nurses (4.2%) was very good. After the program, the total number of nurses become i.e. n=72, nurses' knowledge score was poor in n=1 (2.4%) participant, good n=21 (29.2%) participants, and very good in n=50 (69.4%).

Conclusion: The study concluded that a significant improvement in the knowledge and skills of the nurses who work in the renal transplantation units after the program. Frequent and schedule-training programs need to apply for nurses at hospitals to update their knowledge and practices.

Keywords: Education program, Nurse's knowledge, Nurse's practice, Renal transplantation, Postoperative

INTRODUCTION

Chronic kidney disease (CKD) is a worldwide public health problem. In the United States, the prevalence of end-stage renal disease (ESRD) is increasing (1). Chronic kidney

disease (CKD) is any condition that causes reduced kidney function over a period of time (2). End-stage renal disease (ESRD) refers to the total and permanent kidney failure.

The incidence of CKD is increasing most rapidly in the people having the age > 65 years (3). The incidence of recognized CKD in people with age 65 and older is more than double during the years 2000 to 2008. ESRD mortality though the total number of ESRD patient deaths has continued to rise, the death rate has declined in recent years after peaking in 2001. The number of deaths from ESRD rose from 10478 in 1980 to 90118 in 2009 (4).

Chronic renal failure (CRF) is a common disease in Sudan, the prevalence of renal failure increase in Sudan the renal transplant is the best treatment of renal failure the patient with renal transplant need good postoperative nursing care. In June 2009, there were 2858 patients on hemodialysis (HD) in Sudan, 122 patients on continuous ambulatory peritoneal dialysis (CAPD), and 1168 kidney transplant recipients (5). In Sudan, kidney transplantation accounted for 28% of the total provided renal replacement therapies (6).

Diabetes mellitus was a much commoner cause of CRF in Sudan than in Europe (7). Kidney transplantation has become the treatment of choice for most patients with ESRD. During the past 40 years, more than 380,000 kidney transplantations performed worldwide, and more than 174,000 performed in the United States. Transplantation of the human kidney is the treatment of choice for advanced chronic renal failure worldwide. Tens of thousands of procedures have been performed with more than 180,000 patients bearing functioning kidney transplants in the USA (8).

Nurses must consider many issues facing the renal transplant recipient, such as fluid balance, urine output, medication management, infection prevention, chronic disease management, fluid balance, urine output, and the many psychological issues that surround receiving a transplant. Important guidelines of care of complex transplant patients in the postoperative period are provided (9). Nurses working with this patient group, have a key role in encouraging adherence to medication and helping patients to achieve a good quality of life (10). The nursing role in optimizing long-term patient outcomes and quality of life (11). Nurses care for renal transplant recipients require specialized knowledge and skill to reduce problems in early post-transplant period by prevention, anticipation, and early intervention to maximize short and long-term graft outcome. Nursing care of renal transplant also relies on specialized knowledge and skill to assess for and manage long-term complications associated with renal transplantation (12). In Integrative review study, majority of nurses had inadequate knowledge before implementation of the program which presented by mean equal 6.1 for types of infection, 5.5 for prevention, 5.7 for manifestations and 5.3 for pre discharge teaching, while in posttest it was increased to be 11.1, 7.4, 10.4 and 10.7 respectively, which indicate adequate response to the program (13). Concerning training programs for nurses in Sudan, we find several successful programs and have given positive results towards training nurses, which encourages its importance (14).

Moreover, a study in Sudan showed that In hemodialysis wards, nurses play a pivotal role in care of access which emphasizes the role of nurses to hemodialysis patients as general (15).

General objective of this study was to assess the effect of training programs on nurses' knowledge and practice regarding postoperative nursing care of renal transplantation patients to provide data for decision making. Specific objectives of the study were to assess the nurses' knowledge regarding post-operative nursing care of renal transplant patients before the intervention program, to assess nurses' practice regarding post-operative nursing care of renal transplant patients before intervention program, to design and implement an educational program concerning post-operative nursing care of renal transplantation and to determine the effects of the educational program on nurses' knowledge and practice regarding post-operative nursing care of renal patient transplantation.

MATERIALS AND METHODS

STUDY DESIGN

This study was a pre and post interventional hospital-based study. It was conducted in the Khartoum state governmental hospitals that provide renal transplantation services.

STUDY AREA

Three public sector hospitals (Ahmed Gasim Center, Ibn Senna Hospital and East Nile Hospital in Khartoum State), having renal transplantation practices, were chosen for this study.

STUDY POPULATION

This study includes nurses who work in post-renal transplantation recovery wards, intensive care units (ICU), high dependency units, and the general transplant wards in the three hospitals mentioned. All Nurses who work in post renal transplantation were included in the study, whereas, nurses refused to participate, un-certificated and nurses in vacation during the study period were excluded from the study.

SAMPLING SIZE AND SAMPLING TECHNIQUE

Consecutive none probability sampling technique (total coverage) was the suitable technique for this study. The study samples represented a total coverage of the nurses fulfilling inclusion criteria, which were 72 out of 82 nurses. Participants were 41, 18 and 13 enrolled from Ahmed Gasim Hospital, Ibn Senna Hospital, and East Nile Hospital respectively.

VARIABLES OF THE STUDY

Background variables were gender, level of education and level of experience. Other variables were nurse's knowledge regarding; indications of renal transplantation, contraindications of renal transplantation, donor relationship with the recipient, complications of renal transplantation, rejections of renal transplantation, and post-operative nursing care of renal transplantations. And Nurse's practice regarding; assessing of patient ABC, checked urinary status, achievement of methods of barrier

nursing, assessment of wound, performance of ongoing care, assessment of the abdomen and documented all the events.

DATA COLLECTION TOOLS AND PILOT STUDY VALIDITY

The data collection tools include a self-administer questionnaire for the assessment of knowledge and an observational checklist to assess practice. Whereas, questionnaire reliability was assessed by the pilot study assessment which was a group of ten nurses from Ahmed Gasim Hospital (excluded from the original sample).

DATA COLLECTION TECHNIQUE

Data were collected by interviewing and observing the nurses in three phases: Before implementation of the educational program a pretest, after collection of pretest, the nurses are subject to the educational program, and then the same tools were used in pretest to collect posttest data from nurses. Posttest was done twice early post interventions and late after three.

HEALTH EDUCATIONAL PROGRAM

After collection of pretest data, the nurses received the educational program and then the same tools, as in pretest, were used in collecting posttest data from nurses. An intensive educational program designed by the researchers according to the knowledge and practices that nurses should need.

DATA ANALYSIS

Descriptive analysis was done to interpret and processed data using the SPSS program version 20.

ETHICAL APPROVAL

The study proposal was ethically approved and endorsed to research committee in the Nursing Faculty, The National Ribat University, and the research management department in the state ministry of health. The ethical committee in the Hospitals where the study was conducted also endorsed it officially.

RESULTS AND DISCUSSION

This study was an experimental study, aimed to assess effectiveness of a training program on nurses' knowledge and practice regarding postoperative nursing care of renal transplant patients in the Sudan.

Despite the fact that 90 nurses from three hospitals were eligible for our study, only 72 participants completed the study to the end. The final 72 nurses were distributed among the different transplantation centers as, Ahmed Gasim n=41 nurses (56.9%); Ibn Sina n=18 nurses (25%) and East Nile n=13 nurses (18%).

Among all study subjects (n=72 nurses), 8.3% were males and 91.3% were females and the male to female ratio was 1:11 (Table I). This result is similar to a result of study done in Sudan 2014 (where males represented 7.3% and the females were 92.7% with the ratio of 1:11). The males were less than females, in the present study, the majority of the participants were females.

The minimum level of education of our participants was bachelor degree, 80.6% nurses had bachelors degree, and 9.7% nurses had masters degree (Table I). The

difference of education depends on the job preferences because many of the nurses in Sudan prefer to work in Ministry of Higher Education comparing ministry of health.

Table I. Demographic characteristics of nurses (n=72) from three renal transplantation centers

Variable	Frequency	Percentage
Gender		
Male	6	8.3
Female	66	91.7
Age groups (Years)		
20-30	60	83.3
31-45	8	11.1
46-55	4	5.6
Level of education		
Diploma	6	8.3
BCS	58	80.6
MSc	7	9.7
PhD	1	1.4
Position in the unit		
Head nurse	8	11.1
Ward nurse	21	29.2
ICU nurse	27	37.5
Recovery nurse	16	22.2

Table II. Details of nursing care experience of the 72 study participants during the period of the study

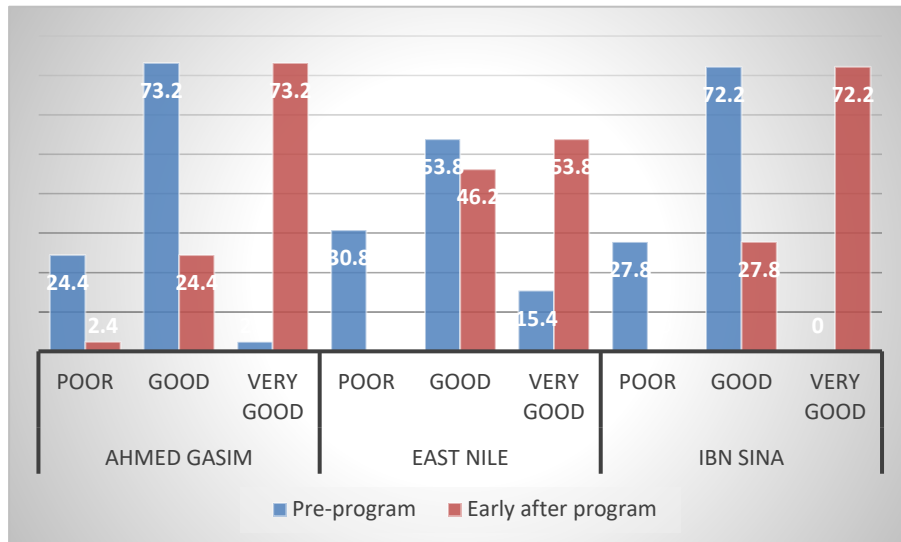
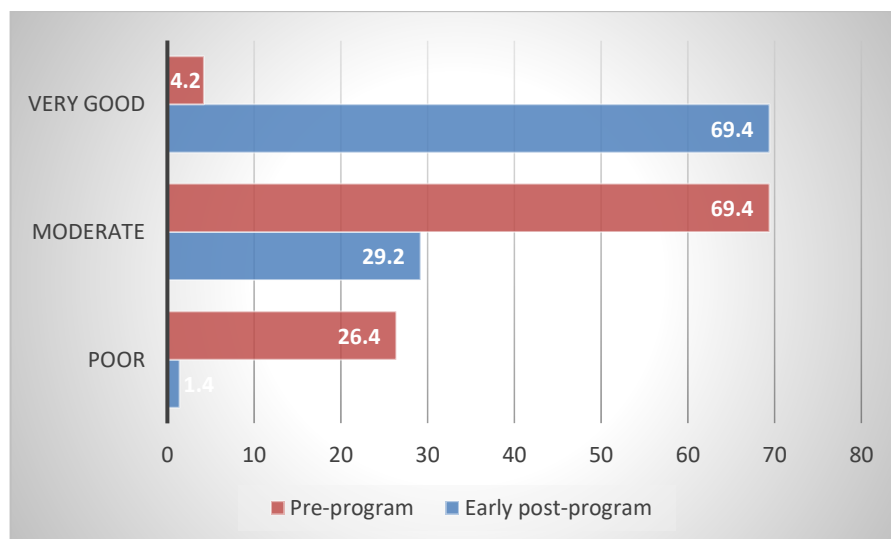
Variables	Frequency	Percentage
Duration of nursing practice in years since graduation		
> 5 years	50	69.4
5 - 10 years	14	19.4
> 10 years	8	11.2
Type of nursing care training regarding renal transplantation that received		
Short	10	13.9
Intermediate	13	18.1
long	37	51.4
None		
Duration of work at the renal transplantation unit		
< 6 month	36	50
6 months – 11 months	16	22.2
1 - 2 years	8	11.1
> 2 years	12	16.7
Academic nursing activity in the renal transplantation unit		
Seminars	12	16.7
Case Study	6	8.3
Tutorial	1	1.4
Lectures	15	52.8
None	38	20.8

Table III. Grades scores of the participating nurses` knowledge before implementation of the program

Score grades	Frequency	Percentage
Poor	19	26.4
Good	50	69.4
Very good	3	4.2
Total	72	100

Table IV. The pre-educational program participants` mean score of major knowledge components compared to the early post-program score.

Knowledge component	Before implementation of program correct answer		Early after implementation of program correct answer	
	n	%	n	%
Renal transplantation in general	37	51.4	59	82.3
Complications	40.5	56.5	61	84.8
Rejection	29	40.3	57	79.2
Post-op nursing care	20	27.8	51.5	71.5
Means	31.6	44	57.12	79.5

**Fig. 1.** Overall score grade of nurses` knowledge before the educational program versus early after the program by hospital ($n=72$)**Fig. 2.** Score grade of overall knowledge components of the study participants, the pre-program versus the early post-program ($n=72$)

Regarding workshops or training courses $n=37$ (51.4%) of the responders have not received training which indicated that managers have not paid attention to the importance of training and updating the knowledge for nursing staff that provide care for renal transplant recipients who had special needs and considerations which may lead to many complications (Table II).

It is essential for the nurses to know the common types of rejections and its related times in post renal transplant period, in order to provide adequate prevention, care and start management early if it occurs, because of special considerations of renal transplant recipients. This study represented that $n=49$ (68.1%) had not known about the common

types of rejections, only $n=23$ (31.9%) had knowledge about this. The level of knowledge of nurses improved in posttest to $n=61$ (84.7%). These findings reflected that there was highly significant relation between nurse's knowledge about types of rejections in pre and posttest (Table III). This indicated a satisfactory positive impact of the educational program on their previous knowledge about types of rejections. This finding is quite similar to the study done in London that aimed to develop the knowledge and understanding of the long-term care of a patients undergoing of renal transplantation (16). A will had achieved three hours of learning in accordance with the EDTNA/ERCA criteria for continuing professional development (16).

Complete physical examination is very important of the post transplantation patients. Only 9.7% ($n=7$) was done it in pretest while $n=71$ (98.6%) were done it in post program (Table IV). The nurses were unaware about physical examination and they believed that it is doctor's procedure. We observed this in pretest and concentrated in our program which led later on this great improvement in the nurses practice (17). A similar study at Ahmed Gasim Hospital to assess patient's knowledge and attitude of post kidney transplantation in 2006 done by Ahmed, concluded that patients need more teaching about medication's side effects, complications and ability to assess themselves for these complications. It agrees with our findings, the need for pre-discharge teaching and guidance in order to increase their knowledge (18).

Regarding nurses knowledge in pre-educational program with early implementation by hospitals; the Ahmed Gasim's pre-program of nurses knowledge was only 2.4% while post-program nurses knowledge was 73.2% which was statistically significant with $p<0.000$. In East Nile Hospital the pre-program nurses knowledge was 15.4%, while post program, it was improved to 53.8% with $p<0.0003$ which was statistically significant. In Ibn Sina Hospital, before-program nurses knowledge was 72.2% with $p<0.0003$ statistically significance values (Fig. 1). This data strongly support the educational program of nurses conducted by Hammad et al. in Khartoum state dialysis centers in 2020 (19).

Regarding the pre-educational and early implementation program, another airway assessment was very important for the post transplantation patients. In our study airway pre-program (32.4%), post-program (98.6%) were statistically significant with $p<0.0003$. On the other hand the urinary assessment was also important to check the nurses practice in which pre-program (49.0%) and post-program (98.6%) was also statistically significant with $p<0.000$ (Fig. 2). A similar study was conducted in Indonesian Hospital to assess Nurses Association of Infection Prevention and Control (2019), concluded that nurses need more teaching to encourage the better understanding (20).

This study emphasized the lack of clinical guidelines for nurses to take care of patients of renal transplantation. This finding was controversial with the KIGO clinical practice guideline for the care of kidney transplant recipients. The 2009 KDIGO clinical practice guidelines on the monitoring, management and treatment of kidney transplant recipients was intended to assist the practitioner caring for adults and children after kidney transplantation (21).

CONCLUSION

More and regular workshops and training courses need to be established for nurses regarding post-operative nursing care of renal transplantation to improve and updating their knowledge to provide appropriate protection for renal transplant recipients.

Designing and implementing more training courses about postoperative nursing care of renal transplantation are needed.

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