

Effect of Educational Intervention on Nurses' Performance Post Renal 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 postoperative surgical complications sometimes require multidisciplinary team approach. **Aim of the study:** The aim of this study was to evaluate effect of educational intervention on nurses' performance post renal transplantation. **Resarch design:** Quasi-experimental design wase used to achieve the aim of the study. **Setting:** The study was conducted at Nasser Institute Hospital. **Sample:** All available nurses (40) providing direct care for renal transplantation patient in the above-mentioned setting. **Tools of data collection:** Two tools were used to collect the data, 1- Interview questionnaire sheet which consists of personal data and assessment of nurses' knowledge related to caring of patients post kidney transplantation: 2- An observational checklist to assess nurses' practice related to caring of patients post kidney transplantation. **Results:** Most of nurses had unsatisfactory knowledge and practice regarding care of patient post renal transplantation pre-educational intervention implementation. While there was significant improvement post educational intervention ($p < 0.05$). **Conclusion:** Implementation of educational intervention will significantly improve nurses' performance (knowledge and practice) post renal transplantation. **Recommendations:** Further research are recommended to evaluate the effectiveness of implementing the nursing educational programs for caring patients with kidney transplantation on their quality of life.

Keywords: Educational Intervention, Nurses' Performance, Renal Transplantation.

Introduction

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 (Urstad et al, 2021).

Kidney transplantation was the ideal treatment option for many patients with end stage renal disease because of a better quality of life, a greater freedom from dependence upon a

machine, freedom from fluid and dietary restriction, return of sexual function and fertility with the possibility of parenthood. Post-transplant nursing care is as important as pretransplant nursing care in terms of enhancing quality of life, preventing complications, and providing necessary changes to treatment. So, should 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).

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 (Fadlalmola & Elkareem, 2020).

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 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). According to experience of researchers, it was noted that the nurse's knowledge and practice about that measures insufficient and requirement for improvement.

Aim of the study

The aim of this study was to evaluate effect of educational intervention on nurses' performance post renal transplantation.

Research Hypothesis:

Implementation of educational intervention would significantly improve nurses' performance (knowledge and practice) post renal transplantation.

Subjects and methods

Research design:

Quasi-experimental design was utilized to achieve the aim of the study.

Setting:

The study was conducted at Nasser Institute Hospital.

Sample:

All available nurses providing direct care for renal transplantation patient in the above-mentioned setting. They were 40 male and female nurses with at least one-year experience.

Tools of data collection:

The present study utilized the following tools for data collection; a questionnaire sheet and an observation checklist.

Tool I: Structured questionnaire for nurses:

The researcher prepared the questionnaire after reviewing of recent relevant literature from (Younis, et al, 2018; Hussein & Zatoon, 2019 & Masaad, et al, 2020) for assessment of nurses' knowledge related to caring of patients post kidney transplantation which include:

Part (1): Personal data of the study subjects, included: age, sex, marital status, qualification, years of experience and courses related to deal with patient after kidney transplantation. It included 6 questions.

Part (2): To assess nurses' knowledge about the following:

- 1- Kidney transplantations and its complication and included 25questions.
- 2- Nursing intervention for patients with kidney transplantation and infection control standards, which applied in kidney transplantation units. It included 12 questions.

Scoring system:

All knowledge questions were weighted according to the items included in the answer of each question. The scoring system was "1" score for correct answer and "0" score for incorrect answer. The total knowledge score for nurses was 43 scores. This score was converted into percentage and categorized as the following:

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- $\geq 80\%$ indicated satisfactory knowledge level. = ≥ 34.4 score
- $< 80\%$ indicated unsatisfactory knowledge level. = < 34.4 score

Tool II: Observation checklist for nurses' practice:

A clinical observational checklist was constructed by the researcher based on the literature of nursing review guided by (Perry et al., 2014; VCH professional practice, 2014; ATI, 2015; institute for Health care improvement, 2015; Awad, et al, 2016; Otukoya & shepherd, 2018; Davis, 2019; Doyle & mccutcheon, 2021 & Oczkowski, et al, 2021) The checklist was required to assess nurses' practice related to caring of patients post kidney transplantation which include:

Part (1): Assessment of patients with Kidney Transplantation (KT). It included 10 items.

Part (2): Nursing intervention for patients with KT. It included 299 items.

Part (3): Infection control in KT unit. It included 84 items.

Scoring system:

Scoring system for practice was done in such a way that giving "one" score for each "done" step and that "not done" step was scored "zero". The total practice scores ranged from zero to 393. This score are converted into percentage and categorized as the following:

- $\geq 85\%$ indicated competent practice level. = ≥ 334 score

- $< 85\%$ indicated incompetent practice level. = < 334 score

Content validity

Content validity was achieved by a panel of five experts (two professors in Internal Medicine from two Universities one professor in Internal Medicine and Nephrology Ain Shams University and the other professor in Internal Medicine Benha university, one professor of Medical Surgical Nursing Faculty of Nursing Menofeya University and two-assist professors of Medical Surgical Nursing Faculty of Nursing Benha University) who revised the tools and educational intervention for clarity, relevance, comprehensiveness and applicability. Minor modifications were done according to their opinions.

Reliability

Reliability was done by Cronbach alpha test, which was equal to 0.806 for tool one and equal 0.892 for tool two.

Ethical considerations

Permission to conduct the study was taken from dean of Faculty of Nursing Benha University and medical director of Benha University Hospital. Nurses' oral consent was obtained before starting data collection. The aim of the study was explained to all nurses. They were assured about confidentiality and anonymity of the study. They were informed about their right to refuse or withdraw from the study at any time without giving a reason. In addition, approval to conduct this study was obtained from ethical committee in Faculty of Nursing, Benha University.

Pilot study

A pilot study was carried out on 10% of the sample (4 nurses), and was later included in the sample because no modification done in the

study tools. The purpose of the pilot study was to test the clarity and applicability of study tools and to determine the time needed to complete the questionnaire sheet and observational checklist for each nurse.

Fieldwork

The fieldwork was performed over a period of (18) weeks started from the beginning of May 2021 until September 2021. Field work consisted of four phases.

Assessment phase:

An oral permission was taken from the nurses after explanation the purpose of data about personal data and their knowledge about urinary system, kidney and its function, kidney disease, kidney transplantation, indication and contraindication for kidney transplantation, preparation for kidney transplantation and possible complications after kidney transplantation before implementing the educational intervention by using the first tool (structured questionnaire). The time taken for filling out the questionnaire varied between 20-30 minutes. In addition, nurses' practices were assessed by using second tool (observation checklist) before implementing the educational intervention.

Planning phase:

This phase included designing educational intervention as the following:

The general objective:

Nursing staff members will acquire knowledge and skills on how to care for patients after kidney transplantation.

Implementation phase:

Total number of the studied nurses was (40) nurses. It was difficult to meet all nurses at the same time. Thus, they were divided into (8) groups. Each group contains five nurses in every

session. The researcher was attended two days/week (Saturday and Monday) from 9:00am to 4:00pm. The researcher met every group (10) sessions. Five sessions for theory and five sessions for practice. Each session lasted for (30-45) minutes, including the period of discussion. The educational intervention has been implemented through (80) sessions and total hours for session (44-66) hours. The nurses were present all the time of intervention sessions and the duration of each session was variable, according to its contents as well as the nurse's response.

An orientation to the intervention and its process were presented. Each session started with a brief summary about what had been given through the previous session, then the objectives of the new topics, talking to consideration the use of simple language to suite the level of all nurses' education.

Discussion, motivation, and reinforcement during the intervention sessions were used to enhance learning. All nurses were cooperative with the researcher and at the end of each session, the nurses participated in discussion to correct any misunderstanding. Also, they were informed about the time of the next session.

Evaluation phase:

The evaluation was done immediately after implementing the educational intervention by using the same tools of data collection to evaluate effectiveness of the educational intervention in improving nurse's performance.

Statistical Analysis:

Results were collected, statistically analyzed by personal Computer using Statistical Package of Social Science (SPSS) (version 21) and tabulated.

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Results:

Table (1): Shows that 50% of the studied nurses aged from 20 - >30 years old, while 40% of the studied nurses are qualified by diploma and have years of experience less than 5 years or from 5 -10 years. Moreover, 50% of them received training courses about KT.

Figure (1): Illustrates that the satisfactory level of total knowledge score among the studied nurses was significantly improved from 62.5%

pre-educational intervention to 96% post intervention ($p < 0.001$).

Figure (2): Illustrates that the competent level of total practice score among the studied nurses was significantly improved from 47.5% pre-educational intervention to 97.5% post intervention ($p < 0.001$).

Table (2): Shows that there were highly positive statistically significant correlations between knowledge and practice scores of studied nurses post educational intervention ($p < 0.000$).

Table (1): Distribution of studied nurses regarding personal data of the studied nurses (n=40).

Items	Demographic characteristics	No	%
Age /years	• 20 - >30	20	50.0
	• 30 - >40	12	30.0
	• 40 - >60	8	20.0
	Min –Max	21-48	
	Mean ±SD	31.30±8.10	
Sex	• Male	12	30.0
	• Female	28	70.0
Marital status	• Married	28	70.0
	• Single	8	20.0
	• Divorced	4	10.0
	• Diploma	16	40.0
Qualification	• Speciality	12	30.0
	• Technical institute	12	30.0
	• <5	16	40.0
Years of experience	• 5-10	16	40.0
	• >10	8	20.0
	Min –Max	3-18	
	Mean ±SD	7.10±4.92	
	previous courses of training	• No	20
• Yes		20	50.0
Number of courses(n=20)	• One course	8	40.0
	• Two course	4	20.0
	• Three course	4	20.0
	• More than three	4	20.0

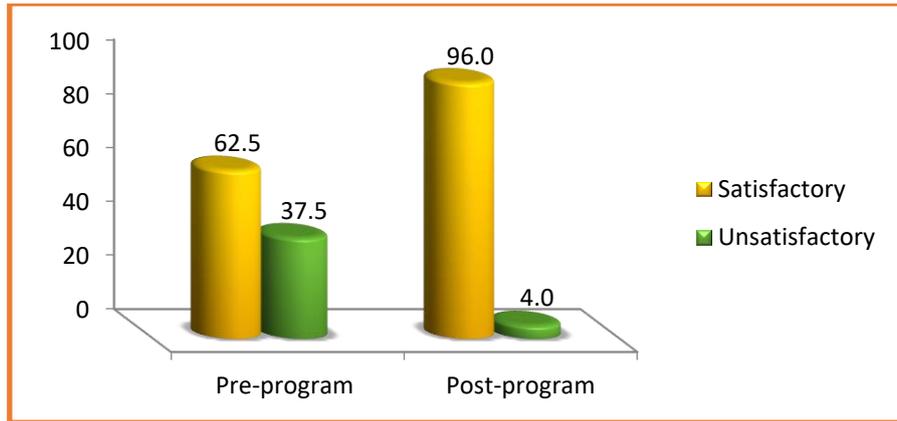


Figure (1): Distribution of studied nurses regarding total nurses' knowledge level pre and post educational intervention (n=40).

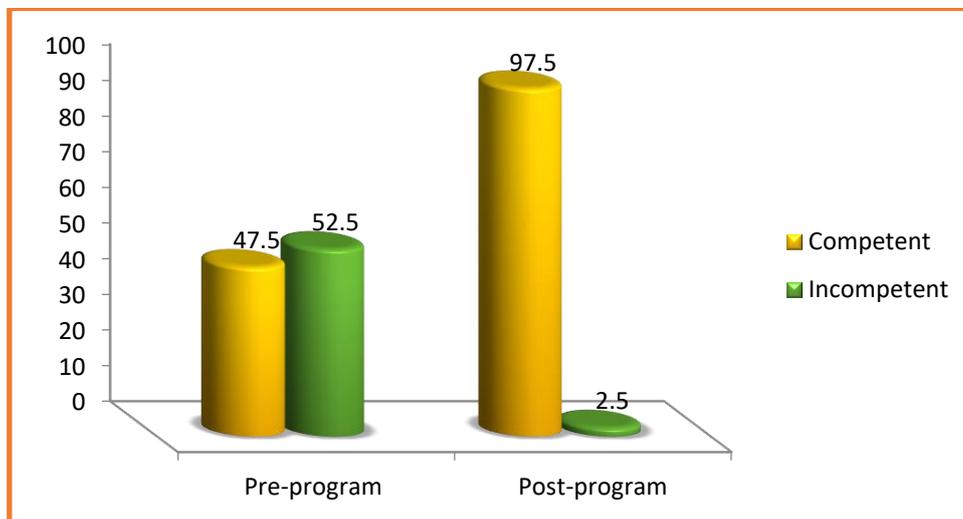


Figure (2): Distribution of studied nurses regarding their total practices score pre and post educational intervention (n=40).

Table (2): Correlation between total knowledge and total practice score of studied nurses post educational intervention.

Items	Total knowledge			
	Pre intervention		Post intervention	
	r	p-value	r	p-value
Total practices	0.220	0.173	0.698	0.000**

Statistical insignificant difference $p > 0.05$. Statistical significant difference $p < 0.05$ *. highly statistical significant difference $p < 0.001$ **.

Discussion

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. 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 **Zelnick, et al, (2021)**.

Personal data of the current study findings showed that, half of nurses age ranged between 20->30 years old with mean age of 31.30 ± 8.10 years. This result may be explained by the fact that the critical units such as KT units almost needs younger age nurses because of their energy and powerful and as they are young, they can tolerate the nature of working in KT units and caring for those critically ill patients.

This finding is in accordance with **Masaad, et al, (2020)**, who studied "Effectiveness of a training program on nurses' knowledge and practice regarding postoperative nursing care of renal transplanted patients". They found that nearly majority of sample their age range between 20-30 years. While another study done by **Hussein and Zatoon (2019)**, who conducted a study about "Nursing intervention program on nurses' knowledge and practices post kidney transplantation". They disagree with the findings of this study about age of nurses, where reported that more than one third of nurses age was 30-39 years and 40-50 years.

Concerning nurses'sex and marital status; the present study showed that about three quarters of studied nurses were females and married. This finding was similar to the study done by **Hussein and Zatoon (2019)** reported that more than two thirds was female. In addition, **Masaad, et al, (2020)**, who founded that the majority of their study sample were females.

Regarding qualification and years of experience of the studied nurses, it was observed that two fifths of them qualified by diplom. In addition, two fifths of studied nurses had working experience less than five years and from five to ten years. This was in agreement with the result obtained by **Masaad, et al, (2020)**, who found that the majority of sample had working experience less than five years. While, contrast with them in nurses' education that most of nurses qualified by bachelor nursing. Another study done by **Hussein and Zatoon (2019)**, who disagreed with the findings of this study in years of experience, where reported that nearly half of studied nurses had 5- 10 years of experience and had a baculare degree of nursing education.

Concerning the nurses' attendance of training courses; about management of patient with kidney transplantation, the study finding emphasized that half of studied nurses reported that they had attended training courses and two fifth of them attended one courses. This may be due to the overloaded of work in KT units may reduce the nurses' chance of attending and cooperating in such in-services training program, also as a result of lake of resources of the Hospitals, lack of Hospitals staff development plan, and inactive training committee in the kidney unit.

These findings are supported by **Jamieson, et al, (2016)**, who emphasized that the training ongoing programs are essential to nurses and help them in taking the responsibility of working in critical units to identify the rules and responsibilities because those in-services training programs and workshops have a positive reflect on nurses self-confidence. Also, it is very important to providing training courses not only for nurses but also for all health team workers in kidney transplantation fields. While these findings are in contrast with another study finding

done by **Hussein and Zatoon (2019)**, who added that the majority of nurses participated in training courses regarding management of patient with kidney transplantation.

Assessment of the total knowledge of the studied nurses about kidney transplantations prior educational intervention implementation has shown that more than one third of them had unsatisfactory knowledge level while most of them had satisfactory knowledge level post educational intervention. These findings may be due to the lack of frequent training courses. Also, may be due to nurses in kidney transplantation unit not have enough time to attend their meetings in addition to burden of work and decrease number of them in the kidney transplantation unit. These findings confirmed that educational intervention should be frequently implemented for nurse specifically these who work at critical nursing setting.

This finding was in agreement with **Camila, et al, (2015)**, who conducted a study about "Perceptions of nurses and clients about nursing care after kidney transplantation" it was revealed that studied nurses had lack of knowledge. In addition, this finding are agreed with **Mohammad, et al,(2017)**,who reported that there was a significant difference in pre and post educational program knowledge score.

Regarding total nurses' practice, the present study revealed that the minority of studied nurses had competent total practice score before educational intervention implementation. This result may be attributed to decrease of nurse's knowledge, limited training and burden of work and lack of recurrent training courses. This finding is supported by **Camila, et al, (2015)**, who reported that at the pre-intervention phase, the majority of the studied staff nurses had incompetent practice regarding caring after kidney transplantation. The same results

obtained by **Younis, et al, (2018)**, who reported that the majority of the studied nurses had a deficit practice regarding management of patient post kidney transplantation.

In this study, the post educational intervention scores have demonstrated statistically significant improvement in all items of nurses practice post kidney transplantation. This improvement in nurses' practices following the educational intervention seems logic when compared to pre educational intervention, as the content of the educational intervention in this study was appropriate for nursing education, introduced in simple manner and language, the content of educational intervention supported with pictures for every procedure.

This finding is supported by **Younis, et al, (2018)**, who illustrated that nurses' practice was enormously moved forward as compared with pre-intervention practice. These findings come in the same line with **Hussein & Zatoon (2019)**, who revealed that implemented educational interventional program has positively improve studied nurses practice regarding caring after kidney transplantation, as most of the studied nurses had a competent level of practice at both immediate post and follow up phases.

Concerning the correlation, the present study indicated that there was high statistically significant correlation between nurse's knowledge and practice post educational intervention only. This result may be attributing to the fact that practicing of any skills should be based on the related scientific knowledge.

These findings agreed with many studies revealed that changes **Yatin, et al, (2014)**, who conducted a study in Guidelines for prevention of hospital acquired infections. These researchers prescribed that

- Hussein E.E., Zatoon H.K., (2019).** Nursing Intervention Program on Nurses' Knowledge and Practices Post Kidney Transplantation. *IOSR Journal of Nursing and Health Science*.8, (2).01-10.
- Institute for Healthcare Improvement, (2015).** High alert medication safety. From <http://www.ihl.org/topics/highalertmedicationsafety/pages/default.aspx>
- Jamieson, N., Hanson, C., Josephson, M., Gordon, E., Craig, J., Halleck, F., & Tong, A. (2016).** Motivations, challenges and attitudes to self-management in kidney transplant recipients: A systematic review of qualitative studies. *American Journal of Kidney Diseases*.67(3), 461–478.
- Masaad H., Fadlalmola H., Elsanousi O., Abdullah I., Yousif K., Elrufarei S., Ahmed M., (2020).** Effectiveness of a training program on nurses' knowledge and practice regarding postoperative nursing care of renal transplanted patients. *Pak-Euro Journal of Medical and life Sciences*.3, (3).89-96.
- Mohammad M., Attia H., Qalawa S. & Ahmed S., (2017).** Impact of Self Learning Package on the Patient's Performance Undergoing Kidney Transplantation. *Port Said Scientific Journal of Nursing*. 4, (1). 156-181.
- Oczkowski S., Jankowski M., Szuldrzyński K., (2021).** Arterial Blood Gas Sampling. *McMaster Textbook of Internal Medicine*. Krakow: Medycyna Praktyczna. <https://empendium.com/mcmtextbook/chapter/B31.IV.24.5.3.3>.
- Otukoya R., Shepherd E., (2018).** Principles of effective oral and denture care in adults. *Nursing Times*; 114: 11, 22-24.
- Perry A., Potter P., & Ostendorf W., (2014).** Clinical skills and nursing techniques (8th ed.). St Louis, MO: Elsevier-Mosby.
- Urstad K., Wahl A., Moum T., Engebretsen E. & Andersen M. H., (2021).** Renal recipients' knowledge and self-efficacy during first year after implementing an evidence based educational intervention as routine care at the transplantation clinic. 22: 265.
- VCH Professional Practice, (2014).** Indwelling urinary catheter: Procedure for insertion and removal (adult). Vancouver: Vancouver Coastal Health.
- Yatin M., Abhinav G., Subhadh T., Myatra S.N. Samaddar D. P., Vijaya P., Pradip k., Bhattacharya, & Ramasubban S., (2014).** Guidelines for prevention of hospital acquired infections, *Indian J Crit Care Med.*; 18(3). 149:163.
- Younis, M., H, Mohammed, T., Gh, Khalil S. S., (2018).** Infection control: effect of nursing teaching protocol on nurses' knowledge and practice regarding kidney transplantation patients, *International Journal of Advanced Nursing Studies*, 7 (1).21-26.
- Zelnick L., Leca N., Young B, & Bansal, N., (2021).** Association of the estimated glomerular filtration rate with vs without a coefficient for race with time to eligibility for kidney transplant. 4(1):e2034004. Doi: 10.1001/jamanetworkopen.

تأثير التدخل التعليمي علي اداء الممرضين بعد زرع الكلى

هبة عبد الله أحمد علام - منال حامد محمود - نهال محمود ابوالفضل - رشا فتحي محمد

أصبحت عمليات زرع الكلى من الإجراءات الجراحية الشائعة المرتبطة بمعدلات نجاح عالية. ومع ذلك ، فإن الكشف والتشخيص الدقيق والإدارة في الوقت المناسب لمضاعفات جراحية ما بعد الجراحة تتطلب أحياناً نهج فريق متعدد التخصصات. لذا هدفت هذه الدراسة الى تقييم تأثير تطبيق التدخل التعليمي للممرضين علي اداءهم بعد زرع الكلى. تم استخدام تصميم شبه تجريبي لاجراء هذه الدراسة. أجريت هذه الدراسة في مستشفى معهد ناصر للبحوث والعلاج بالقاهرة. تم تطبيق هذه الدراسة على جميع الممرضين المتاحين الذين يعملون في وحدة زراعة الكلى وعددهم (40) ممرض وممرضة. حيث كشفت النتائج أن لدى معظم الممرضين معلومات وممارسات غير مرضية فيما يتعلق برعاية المريض بعد زرع الكلى قبل تنفيذ التدخل التعليمي. بينما كان هناك تحسن كبير بعد التدخل التعليمي. كما اوصت الدراسة بضرورة إجراء المزيد من الأبحاث لتقييم فاعلية تنفيذ البرامج التعليمية التمريضية لرعاية مرضى زراعة الكلى على نوعية حياتهم.