Effect of Supportive Educational Interventions on Self-care practices and Expected Health Outcomes among Patients Undergoing Radical Nephrectomy

Heba Mahmoud[(1)], Mona Abd Elmaksoud Mohamed [(2)] ,Mervat Abdel Hamid Hawash[(3)]

(1) Lecturer of Medical Surgical Nursing Faculty of Nursing, Alexandria University, Egypt

(2) Lecturer of Medical Surgical Nursing, Faculty of Nursing, Alexandria University, Egypt

(3) Lecturer of Medical Surgical Nursing, Faculty of Nursing, Alexandria University, Egypt

Abstract

Background: Radical nephrectomy (RN), remains the most commonly performed procedure for the excision of renal cell carcinoma (RCC). Preoperative preparations of the RN patients physically and psychologically are the cornerstone of the good outcomes. **Aim:** This study aims to evaluate effect of supportive educational intervention on self-care practices and expected health outcomes among patients undergoing radical nephrectomy. **Research design:** A quasi-experimental research design with pretest, posttest, and follow up assessments was utilized to achieve the aim of this study. **Settings:** The present study was conducted at the Urology Surgical Department of the Main Alexandria University Hospital at Alexandria. **Subjects:** Purposive sample of 60 patients planned for radical nephrectomy and were recruited in this study and divided attentively into two equal groups (study and control). **Tools:** Five tools were used for data collection: Patients' Assessment Interview Schedule,Patient self-care practices, Numerical analog scale for pain severity, Beck Anxiety Inventory (BAI) Scale and Clavien-Dindo grading system for the classification of surgical complications. **Results:** Improvement in self-care practices among the study group than the control group after implementation of supportive educational interventions program, fewer post-operative complication grade II in the study group compared with patients in the control group with statistically significant differences. The pain & anxiety level were improved in the study group than control group after implementation of implementation of the supportive educational interventions program, (p 0.001), also there was statistically significant between level of anxiety in relation to post-operative complications. **Conclusion:** patient undergoing radical nephrectomy showed a significant improvement in their self-care practices and better post-operative health outcome as absent of post-operative complications, early recovery, effective pain and anxiety control after received of supportive educational interventions.

Keywords: Radical Nephrectomy, Supportive Educational Interventions, Self-care practices, Health outcomes

Introduction

Renal cell carcinoma (RCC), one of the top ten most frequent cancers worldwide, it accounts for approximately 3% of all adult malignancies and is the most lethal genitourinary tumor **(Znaor, etal 2015)**, Surgical resection of renal cell carcinoma (RCC) is the standard for long-term cure of the disease. Radical nephrectomy (RN) is a safe standard procedure and has demonstrated reliable oncological control. On the other hand, surgeons need to consider that the majority of individuals with localized RCC will survive their cancer and therefore every effort has to be made to minimize treatment related morbidity **(Pierorazio, et al., 2016)**.

Radical nephrectomy is the optimal treatment of choice for localized renal cell carcinoma, and involves removing the entire tumor most safely and can be performed through a variety of approaches including a more traditional open incision, laparoscopic surgery or robot-assisted laparoscopic surgery, Therefore, a variety of surgical procedures are available, depending on type and size of the tumor, extent of disease, and the patient's overall physical condition. **(Miller ,et al, 2019)**

Complications following RN are a major serious that include severe hemorrhage, wound infection, organ injury, postoperative pneumonia, and allergic reactions to anesthesia. Uncommon complications may include: adrenal insufficiency, and vascular thrombosis **(Kunath, etal,2017)** . Because patients are left with one functioning kidney, there is an increased risk of chronic kidney disease and post-operative lack of social and

emotional wellbeing. Preoperative anxiety has a great influence on the surgery outcomes. It could cause hypertension, increase heart rate, and thus, might lead to bleeding. Besides, it has been shown that high level of preoperative anxiety is correlated with an increased postoperative pain-relieving requirement. **(Nigussie, et al., 2014)**.

Preoperative patient education is a key part of nursing consideration aimed at helping patients to clarify information about their operation, and self care practice after surgery, based on patient need, level of knowledge and patient condition. Preoperative education has proven useful in decreasing postoperative complications and duration of stay as well as positively influencing recovery. Patients who are properly prepared with specific preoperative preparation deal more effectively with their surgical treatment and are better prepared to manage their pain and ability to perform postoperative activities **(Lobo;2016)**

Thus nurses play an important role in providing information preoperatively which eventually enhances and improve the patients' conditions postoperatively. Understanding the health education provided by the nurse decreases the risk of complications. pre and post-operative nursing care is a major attributes for success of any surgery , nursing is considered a key factor in the recovery and improvement of patients health outcome **(Di Marco et al.,2021).**

Patient undergoing radical nephrectomy may experience physical, psychological, and social problems during this period. Therefore, people with renal cell carcinoma need nursing educational interventions to support the required lifestyle changes, prevent and control disease progress. The nurse should ensure that patients' informational needs have been met before and after RN for successful management and improves the outcomes of surgeries. **(Ahmed, et al, 2019) .**

Nurse play a significant role in detecting early post-operative complications and preventing further complications through develop a framework of a comprehensive discharge program and improve post nephrectomy patients self-care practice regarding wound care , care of catheter ,drain , diet, physical activity , exercise, smoking cessation , how to keep the another kidney healthy through (regular monitor blood pressure, monitor blood sugar levels, reduce salt intake, avoid NSAIDs, moderate protein consumption, exercise regularly, control weight, monitor cholesterol levels and follow a balanced diet), also the nurse should teach patients about measures to decrease or relive post-operative anxiety and pain.**(Villa , et al ; 2020&Abdelmowla et al., 2017).**

Interventions to promote self-care practice among RN patients, and corresponding research, must take into account, few interventions studies conducted in Egypt to evaluate supportive-educational interventions on health outcomes among RN patients, so we conducted this study to evaluate the effect of a supportive educational interventions on the self-care practice and post-operative health outcomes of patients undergoing radical nephrectomy .

The significance of the study:

Today that the patients often enter RN surgery without receiving complete information about the surgery, anesthesia methods, the correct practices the patients should have followed postoperatively this may increase postoperative complications and disturb the patients emotionally and physically. It is good for the patients to be involved in their care. Many researches showed that when the patient was prepared for surgery through preoperative education classes or nurses teaching, this helped a patient improve self-care practices, knowledge, reduce anxiety, and lead to better postoperative outcomes, so the current study aimed to evaluate the effect of supportive educational interventions on the self-care practices and post-operative health outcomes in patients undergoing radical nephrectomy.

Operational definition

Expected health outcomes

In this study, post-operative health outcomes for patient's undergoing RN refer to improved the health status of RN patients through controlling of postoperative complications, in addition to an improved level

of self-care practices, decrease level of the post-operative pain and anxiety.

Aim of the Study:

Evaluate the effect of supportive educational intervention on self-care practice and expected health outcome among patient undergoing radical nephrectomy.

Research Hypothesis:

- Patients undergoing RN who receive a supportive educational interventions will exhibit better self-care practices & post-operative health outcomes than those who do not.

Materials and Method

Materials

Research Design:

A quasi-experimental research design with pretest, posttest, and follow up assessments was utilized to achieve the aim of this study.

Setting:

The present study was conducted at the Urology Surgical Department of the Main Alexandria University Hospital at Alexandria.

Subjects:

Purposive sample of 60 patients planned for radical nephrectomy admitted to the above-mentioned setting and were recruited in this study. The study sample was randomly assigned and divided attentively into two equal groups. The ***first group*** was the control group which, comprised 30 patients and was exposed to routine hospital care only. While the ***second group*** was the study group and comprised 30 patients and they were received the supportive educational intervention

The study sample was estimated based on the Epi-info -7 program using the following parameters:

1- Population size: 150 patients
2- Expected frequency: 50%
3- Acceptable error: 10%
4- Confidence coefficient: 95%
5- Minimum sample size: 60

Inclusion criteria:

Patients were considered eligible to participate in the study if they met the following criteria:

1. Age group from 18 ≥ 60 years old.
2. Agreeing to participate in the study
3. Able to communicate verbally, and able to follow the instructions.

Exclusion criteria:

1. Patient undergoing bilateral radical nephrectomy
2. Patients undergoing laparoscopic radical nephrectomy

Tools:

Five tools were used by the researchers to collect the necessary data based on the review of relevant literature.

Tool I: Patients' Assessment Interview Schedule:

This tool was developed by the researchers after reviewing related literature **(Ahmed et al., 2019, Villa etal ;2021 & Johnson etal;2021)** to assess patient's health status. It consisted of three parts as follows:

Part I: Patients' Socio-demographic Characteristics: This part of the tool included age, gender, educational level, marital status, area of residence, and occupation.

Part II: Patients' Clinical Data: were collected from patients' medical records, and it was included location of tumor, stage of renal cell carcinoma, patient's habits include smoking , past and present medical history, duration of illness, how disease discovered ,length of hospital stay and previous renal surgery.

Part III: Patient knowledge regarding radical nephrectomy: This tool was developed by the researcher after reviewing the relevant literature (**Abdelmowla etal , 2017)**. It included 12 main questions in which each question had a group of 3 and 4 answers include the following anatomy of the kidney ,functions of the kidney , causes of RCC , risk factors, grades of RCC ,signs and symptoms, diagnosis, in addition to the definition of radical nephrectomy, type of surgeries , preoperative care , complications of surgery and complementary treatment after surgery.

Scoring system

Each of the correct response was scored as one and incorrect as (0). And the scores obtained for each set of questions were summed up to get the total scores for patient's knowledge. Total knowledge score was categorized by using a scoring system as follows: Poor knowledge <50% & Good knowledge more than50 %.

Tool II: Patient self-care practices: This tool was developed by the researcher after reviewing the relevant literature (**Ahmed, et al, 2019, Abdelmowla etal , 2017)** . It included ten questions about coughing& breathing exercise, post-operative early ambulation, physical activity, diet, medication, wound care, care of catheter and drain, , non-pharmacological measures to relive pain (relaxation techniques, massage, support operation site during cough) ,tips to relive anxiety &ways to keep kidney healthy through (Regular monitor blood pressure, monitor blood sugar levels, reduce salt intake, avoid NSAIDs, moderate protein consumption, exercise regularly, control weight, quit smoking, monitor cholesterol levels and follow a balanced diet) and follow-up .

Scoring system

Patients respond through yes or no to each dimension of self-care practices. Total of self-care practices was taken from summing the "yes" responses and each right answer got high score. Scores less than (< 60%) are considered as unsatisfactory. Scores more than (> 60%) are considered as satisfactory.

Tool III: Numerical analog scale for pain severity

This tool was developed by Hjermstad (2011), to assess post-operative pain intensity. This scale contains standardized linear range from 0-10. The patient was asked to place a mark indicating where the current pain lies on the line. As 0 is "no pain", 1-3 represents "mild pain", 4-7 represents "moderate pain", 8-9 represents "severe pain", and 10 is the "worst possible pain".

Tool IV: Beck Anxiety Inventory (BAI) Scale

It was adopted by Beck, Epstein, Brown and Steer (1988)and updated by Osman (2002) and used by the researchers to measure the severity of anxiety. It consists of 21- item scale such as numbness or tingling, feeling hot, wobbliness in the leg, nervous and dizzy or lightheaded, etc. Scoring system: **Scoring system**

The questionnaire is a four point likert scale rated as (0) Not at all,(1) mildly but it didn't bother me much ,(2) moderately it wasn't pleasant at times ,(3) severely it bothered me a lot. The total score is calculated by finding the sum of the 21 items and were categorized into three levels as follows:

Score of 0-21 = low anxiety
Score of 22-35 = moderate anxiety
Score of 36 and above = sever level of anxiety

Tool V: Clavien-Dindo grading system for the classification of surgical complications: It was developed by Clavien et al (1992). It was reevaluated and modified in 2004 by Dindo et al. It was developed to classify complications based on life-threatening conditions, interventions required, and disability. It was adopted by the researcher to evaluate early postoperative complications. The classification includes

Table 1. Clinical Examples of Complication Grades

Grades	Definition
Grade I	Any deviation from the normal postoperative course without the need for pharmacological treatment or surgical, endoscopic and radiological interventions Allowed therapeutic regimens are: drugs as antiemetics, antipyretics, analgetics, diuretics and electrolytes and physiotherapy. This grade also includes wound infections opened at the bedside.
Grade II	Requiring pharmacological treatment with drugs other than such allowed for grade I complications. Blood transfusionsand total parenteral nutritionare also included.
Grade III	Requiring surgical, endoscopic or radiological intervention
- IIIa	Intervention not under general anesthesia
- IIIb	Intervention under general anesthesia
Grade IV	Life-threatening complication (including CNS complications)* requiring IC/ICU-management
- Iva	single organ dysfunction (including dialysis)
- IVb	multiorgandysfunction
Grade V	Death of a patient

The designed supportive educational intervention program included:

- Brief anatomy of urinary system . function of the kidney , definition of radical nephrectomy , manifestation of renal carcinoma, brief description for surgery, type of surgery, complications of radical nephrectomy ,pre-operative preparation , nursing care and teaching after surgery,

medications compliance , wound care , care of catheter, diet, physical activity and post operative exercise included (turning or moving a patient in bed, breathing and coughing exercises, legs and feet exercises), smoking cessation, non-pharmacological measures to relive pain(relaxation technique, massage, support operation site during cough) , how to keep kidney healthy through (regular monitor blood pressure, monitor blood sugar levels, reduce salt intake, avoid NSAIDs, moderate protein consumption, exercise regularly, control weight, quit smoking, monitor cholesterol levels and follow a balanced diet) and follow up schedule

Method

The study was accomplished as follows:

Ethical and legal Considerations

- Written informed consent was obtained from every patient to participate in the study
- Confidentiality of patients' data was assured.
- The anonymity and privacy of the study participants were respected.
- The patients were informed that their participation was voluntary and they have the right to withdraw from the study at any time.

Written approvals:

- Written approval to carry out the study was obtained from the Ethical Research Committee of the Faculty of Nursing, Alexandria University. Also, an official letter was submitted from the Faculty of Nursing, Alexandria University, to the director of the urology surgical department of the Main Alexandria University Hospital at Alexandria and to the director of nursing to obtain their approval for conducting the study, after explanation of the aim of the study.

Development of the study tools

- Tool one and two were developed by the researchers after extensive review of recent and relevant literature , tool three, four and five were adopted from (Mccaffery 1999, Beck 1988 & Clavien et al 1992), respectively.

Content validity

All tools were revised for content validity by panel of five experts in the field of Medical-Surgical Nursing, to test its contents validity, completeness, clarity of its items, and appropriateness of translations. Every jury member was informed about the aim and method of the study. Comments and suggestions of the jury were considered and the tool was modified accordingly

Reliability

The reliability of the tools was tested by means of Cronbach's alpha. The reliability coefficient for the tool I was (0.913.) and tool II was (0.942.) which means all tools were reliable.

Pilot study

A pilot study was carried out on 10% of the total studied subjects (6 patients) to ascertain the clarity, feasibility, and applicability of the developed tools, then the necessary modifications were done. Patients included in the pilot study were excluded from the total number of study subjects.

Data collection

- Data collection was started after securing the administrative approval.
- After explaining the purpose of the study by the researchers, the interview session for each subject was required approximately 30 to 45 minutes on an individual session.
- The data were collected throughout a period of ٧ months, from January 2020 to July 2020 .The purpose of the study was explained by the researchers to each patient.

The study was carried out in three phases.

Phase I: Preparation Phase

Preparation of the data collection tools and the designed the educational intervention program were carried out by the researcher after extensive literature review (nursing and medical textbooks, journals and internet resources.

Phase II: Planning Phase

Educational interventions program was developed based on patient needs, and related literature. The supportive nursing education were design to improve patient knowledge, self-care practices and clinical outcomes after radical nephrectomy. The interventions were based on patient needs identified in pretest. It's included the subordinate section as display in the patient handout such as definition of nephrectomy , clinical manifestations, complication and nursing management. Finally, self-care practices which emphasized on diet, wound care ,care of catheter , activity and exercise, and psychological condition .

Phase II: Implementation Phase

During preoperative period the researcher interviewed with both study and control groups, the researcher introduced herself to initiate communication, and explain the nature and purpose of the study. The study subjects were exposed to the supportive educational interventions activities which are two consecutive preoperative sessions over two weeks (1 sessions practical & 1 session theory). Each session lasted from 30 to 45 minutes. During the session each patient was given a written copy of (booklet) in clear Arabic language. A brief review from the patient to assess his or her understanding especially item need re-demonstration, then the researcher clarified any points that the patient didn't understand, the researcher ensured commitment of the study group patients to implement the nursing intervention through daily visiting them during hospitalization.

Phase III: Evaluation phase

Both study and control groups were visited daily during the postoperative period till discharge. During these phases, three evaluations were conducted for each patient in the study: first one was at the beginning of the study preoperatively , as a baseline data for developing the supportive educational interventions program according to patient's need using tool I,II,III and IV . Second evaluation occurs 2weeks after implementation of the program to evaluate the change in the patient knowledge , self-care practices and detect any post operative complications . Third evaluation was done one months to follow up patient by use the part three from tool I and tool II,III,IV and V

Statistical analysis of the data

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. **(**Armonk, NY: IBM Corp**)** Qualitative data were described using number and percent. The Kolmogorov-Smirnov test was used to verify the normality of distribution Quantitative data were described using range (minimum and maximum), mean, standard deviation, median. Significance of the obtained results was judged at the 5% level.

The used tests were

1- **Chi-square test:** For categorical variables, to compare between different groups
2- **Fisher's Exact or Monte Carlo correction:** Correction for chi-square when more than 20% of the cells have expected count less than 5
3- **Marginal Homogeneity Test** Used to analyze the significance between the different stages
4- **Student t-test :** For normally distributed quantitative variables, to compare between two studied groups
5- **Mann Whitney test:** For abnormally distributed quantitative variables, to compare between two studied groups
6 **–Wilcoxon signed ranks test:** For abnormally distributed quantitative variables, to compare between two periods
7- **Friedman test:** For abnormally distributed quantitative variables, to compare between more than two periods or stages.

Results:

Table 2: Shows the comparison between the two studied groups according to patients' socio-demographic characteristics.

Regarding age, it was noticed that around half the study patients (43.3%) were within the age group less than 45years and in the control group (46.7%) within age group 45 to less than 55 years. Concerning gender, it was found that the majority of the study group (90%) and around three - quarters of the control group (76.7%)were male . As regards to marital status, it was found that around three - quarters of the of the study group (73.3%) and the majority of the control group (86.7%) were married. In relation to the level of education, it

was found that less than half of the study and control groups (40.0%,46.7%),respectively were illiterate. Concerning the area of residence, it was found that more than half of the study group and around three-quarters of the control group (56.7%,80.0%),respectively were living in rural areas.

Table (3): Shows the comparison between the two studied groups according to patients' clinical data

Regarding the disease duration, the table showed that the majority of both study and control groups had the disease less than six months (96.7%,86.7%) respectively. Concerning how the disease discovered, the finding of the study revealed that the majority (90%, 80%) of the study and control groups discovered the disease by suffering from symptoms . In relation to location of tumor, the table showed that around three - quarters (73.3%) of the study group and more than half (56.7 %) of the control group had the tumor in the right side . Regarding the stage of renal cell carcinoma, the table showed that around three - quarters of the studied patients (73.3%) of the study group and around two third (63.3%) of the control group had stage II tumor . Regarding smoking habit **,**the table revealed that more than two third (70%) of the study group and more than three – quarters (80 %) of the control group were smoker. Concerning length of hospital stay, the study revealed that around two third (66.7%) , of the study group stayed in hospital from five to seven days while less than half (40%) of the control group stayed more than seven days . Regarding medical history for chronic disease, the table showed that less than half (40 %) of the study group had hypertension while more than half (56.7%) of the control group had no history for chronic medical disease.

Table (4): Comparison between the two studied groups according to Patient knowledge regarding radical nephrectomy

The table showed that the majority of patient (86.7%) of the study group had poor knowledge before the implementation of the supportive educational interventions and then increase level of knowledge to become good in (90.0%) after implementation of the program but there was no significant difference in the control group before and after the routine hospital care (0.208 (0.835), respectively .

This table also showed , there was statistically significant differences between the study and control group after implementation the supportive educational interventions regarding patient knowledge where p <0.001

Table (5): Shows the comparison between the two studied groups according to patient self-care practice

The table showed that all patient (100%) of the study group had unsatisfactory self-care practice before the implementation of the supportive educational interventions and then improved to become satisfactory (96.7 %) after implementation of the program but there was no significant difference in the control group before and after the routine hospital care (100%,86.7 %), respectively .

This table also showed , there was statistically significant differences between the study and control group after implementation the supportive educational interventions regarding patient self-care practices where p <0.001

Table (6): Shows comparison between the two studied groups according to patient self-care practice items

This table showed that there was a significant differences between the study and the control group in relation to the following practices coughing& breathing exercise, physical activity, wound care, medication ,care of catheter, ways to keep another kidney healthy ,follow up and the non pharmacological measures to relive pain where P < 0.01 , also there was a significant differences between the study and the control group in relation to the diet where P < 0.02

Figure (1): Shows comparison between the two studied groups according to pain severity. This figure showed that a significant improvement in the pain level was obvious among study group patients in comparison with the control group after two weeks and one month of follow up period .

Figure 2: Shows the comparison between the two studied groups according to anxiety level.

Table (7) : Illustrate comparison between the two studied groups according to grading system for the classification of surgical postoperative complications, this table showed that fewer post-operative complications grade2

in the study group (26.7 %) in comparison with control group (70%) and there was statistically significant difference between the two groups regarding presence of grade2 postoperative complications where p= 0.001 .

Table (8): Illustrate the relation between anxiety level and occurrence of postoperative complications both group , this table showed that statistically significant relation was found between anxiety level and occurrence of postoperative complications.

Table (9): Illustrate the relation between length of hospital stay and occurrence of postoperative complications in study and control group, this table showed that no statistically significant difference was found between length of hospital stay in relation to occurrence of postoperative complications

Table (2): Comparison between the two studied groups according to patients' socio-demographic characteristics

Patients' Socio-demographic Characteristics	Study (n = 30)		Control (n = 30)		Test of Sig.	p
	No.	%	No.	%		
Age (years)						
<45	13	43.3	5	16.7	χ^2= 5.111	0.078
45-<55	10	33.3	14	46.7		
≥55	7	23.3	11	36.7		
Min. – Max.	39.0 – 59.0		40.0 – 59.0		t=1.977	0.053
Mean ± SD.	48.43 ± 6.42		51.50 ± 5.56			
Median	48.50		52.0			
Sex						
Male	27	90.0	23	76.7	χ^2= 1.920	0.166
Female	3	10.0	7	23.3		
Marital status						
Married	22	73.3	26	86.7	χ^2= 3.093	^{MC}p= 0.284
Widow	5	16.7	4	13.3		
Divorced	3	10.0	0	0.0		
Level of education						
Illiterate	12	40.0	14	46.7	χ^2= 3.468	^{MC}p= 0.545
Read and write	8	26.7	10	33.3		
Primary education	5	16.7	5	16.7		
Preparatory education	3	10.0	0	0.0		
Secondary education	2	6.7	1	3.3		
Residence area						
Urban	13	43.3	6	20.0	χ^2= 3.774	0.052
Rural	17	56.7	24	80.0		

SD: **Standard deviation**
χ^2: **Chi square test** MC: **Monte Carlo** **t: Student t-test**
p: p value for comparing between the studied groups
*: Statistically significant at $p \leq 0.05$

Table (3): Comparison between the two studied groups according to patients' clinical data

Patients' Clinical Data	Study (n = 30)		Control (n = 30)		Test of Sig.	p
	No.	%	No.	%		
Disease duration						
6 months <1 year	1	3.3	4	13.3	χ^2= 1.964	^{FE}p= 0.353
Less than 6months	29	96.7	26	86.7		
How disease discovered						
Discovered by suffering from symptoms	27	90.0	24	80.0	χ^2= 1.176	^{FE}p= 0.472
Accidental discovered	3	10.0	6	20.0		
Location of tumor						
Right	22	73.3	17	56.7	χ^2= 1.832	0.176
left	8	26.7	13	43.3		
Stage of renal cell carcinoma						
Stage I	3	10.0	8	26.7	χ^2=	^{MC}p= 0.205
Stage II	22	73.3	19	63.3		

Patients' Clinical Data	Study (n = 30)		Control (n = 30)		Test of Sig.	p
	No.	%	No.	%		
Stage III	5	16.7	3	10.0	2.915	
Smoking						
Yes	21	70.0	24	80.0	χ^2=	0.371
No	9	30.0	6	20.0	0.800	
Length of hospital stay						
<5	5	16.7	7	23.3		
5–<7	20	66.7	11	36.7	5.829	0.054
≥7	5	16.7	12	40.0		
Min. – Max.	4.0 – 9.0		3.0 – 10.0		t=	0.153
Mean ± SD.	5.57 ± 1.14		6.13 ± 1.81		1.450	
Median	5.50		6.0			
Medical History for chronic disease						
Cardiovascular disease	2	6.7	0	0.0		
Hyper tension	12	40.0	5	16.7	χ^2=	^{MC}p=
Diabetes Mellitus	5	16.7	4	13.3	7.679	0.089
No	9	30.0	17	56.7		
Liver disease	2	6.7	4	13.3		

SD: **Standard deviation**
χ^2: **Chi square test** MC: **Monte Carlo** FE**: Fisher Exact** **t: Student t-test**
p: p value for comparing between the studied groups *: Statistically significant at $p \leq 0.05$

Table (4): Comparison between the two studied groups according to Patient knowledge regarding radical nephrectomy

Patient knowledge regarding radical nephrectomy (0–5)	Study (n = 30)				Control (n = 30)				Test of Sig.(p_1)	Test of Sig.(p_2)
	Before		After		Before		After			
	No.	%	No.	%	No.	%	No.	%		
Poor knowledge (<50%)	26	86.7	0	0.0	27	90.0	27	90.0	χ^2=0.162	χ^2=40.091*
Good knowledge (≥50 %)	4	13.3	30	100.0	3	10.0	3	10.0	(0.688)	(<0.001*)
Total score	0.77± 1.10		4.43± 0.68		0.77±0.97		0.80±1.21		U= 427.0	U=18.50*
% score	15.33±22.09		88.67±13.58		15.33±19.43		16.0±24.30		(0.707)	(<0.001*)
Z(p_0)	**4.754* (<0.001*)**				**0.208 (0.835)**					

SD: **Standard deviation**
χ^2: **Chi square test** **U: Mann Whitney test** Z: **Wilcoxon signed ranks test**
p_1: p value for comparing between the studied groups in **before**
p_2: p value for comparing between the studied groups in **after**
p_0: p value for comparing between **before and after**
*: Statistically significant at $p \leq 0.05$

Table (5): Comparison between the two studied groups according to patient self-care practice

Patient self-care practice (10–20)	Study (n = 30)				Control (n = 30)				Test of Sig.(p_1)	Test of Sig.(p_2)
	Before		After		Before		After			
	No.	%	No.	%	No.	%	No.	%		
Unsatisfactory (< 60%)	30	100.0	1	3.3	30	100.0	26	86.7	–	χ^2=42.088*
Satisfactory (≥60 %)	0	0.0	29	96.7	0	0.0	4	13.3		(<0.001*)
Total score	11.13±1.57		18.67±1.45		11.43±1.52		12.80±2.16		U=374.50	U=16.0*
% score	11.33±15.70		86.67±14.46		14.33±15.24		28.0±21.56		(0.239)	(<0.001*)
Z(p_0)	**4.805* (<0.001*)**				**2.856*(0.004*)**					

SD: **Standard deviation**
χ^2: **Chi square test** **U: Mann Whitney test** Z: **Wilcoxon signed ranks test**
p_1: p value for comparing between the studied groups in **before**
p_2: p value for comparing between the studied groups in **after** p_0: p value for comparing between **before and after**
*: Statistically significant at $p \leq 0.05$

Table (6): Comparison between the two studied groups according to patient self-care practice items

Patient self-care practice	Study (n = 30)				Control (n = 30)				$\chi^2(p_1)$	χ^2 (p_2)
	Before		After		Before		After			
	No.	%	No.	%	No.	%	No.	%		
Coughing& breathing exercise										
Unsatisfied	27	90.0	6	20.0	25	83.3	24	80.0	0.577	21.600*
Satisfied	3	10.0	24	80.0	5	16.7	6	20.0	(^{FE}p=0.706)	(<0.001*)
Physical activity										
Unsatisfied	28	93.3	3	10.0	27	90.0	26	86.7	0.218	35.306*
Satisfied	2	6.7	27	90.0	3	10.0	4	13.3	(^{FE}p=1.000)	(<0.001*)
Diet										
Unsatisfied	27	90.0	6	20.0	26	86.7	18	60.0	0.162	10.00*
Satisfied	3	10.0	24	80.0	4	13.3	12	40.0	(^{FE}p=1.000)	(0.002*)
Medication										
Unsatisfied	24	80.0	4	13.3	27	90.0	21	70.0	1.176	19.817*
Satisfied	6	20.0	26	86.7	3	10.0	9	30.0	(^{FE}p=0.472)	(<0.001*)
Wound care										
Unsatisfied	25	83.3	3	10.0	27	90.0	19	63.3	0.577	18.373*
Satisfied	5	16.7	27	90.0	3	10.0	11	36.7	(^{FE}p=0.706)	(<0.001*)
Care of catheter										
Unsatisfied	26	86.7	3	10.0	22	73.3	18	60.0	1.667	16.484*
Satisfied	4	13.3	27	90.0	8	26.7	12	40.0	(^{FE}p=0.333)	(<0.001*)
Follow-up										
Unsatisfied	23	76.7	2	6.7	26	86.7	21	70.0	1.002	25.452*
Satisfied	7	23.3	28	93.3	4	13.3	9	30.0	(0.317)	(<0.001*)
Tips to decrease anxiety										
Unsatisfied	29	96.7	4	13.3	24	80.0	28	93.3	4.043	38.571*
Satisfied	1	3.3	26	86.7	6	20.0	2	6.7	(^{FE}p=0.103)	(<0.001*)
Ways to keep another kidney healthy										
Unsatisfied	28	93.3	7	23.3	26	86.7	20	66.7	0.741	11.380*
Satisfied	2	6.7	23	76.7	4	13.3	10	33.3	(^{FE}p=0.671)	(<0.001*)
Non pharmacological measures to relive pain										
Unsatisfied	29	96.7	2	6.7	27	90.0	21	70.0	1.071	25.452*
Satisfied	1	3.3	28	93.3	3	10.0	9	30.0	(^{FE}p=0.612)	(<0.001*)

χ^2: **Chi square test** FE**: Fisher Exact**
p_1: p value for comparing between the studied groups in **before**
p_2: p value for comparing between the studied groups in **after**
*: Statistically significant at $p \leq 0.05$

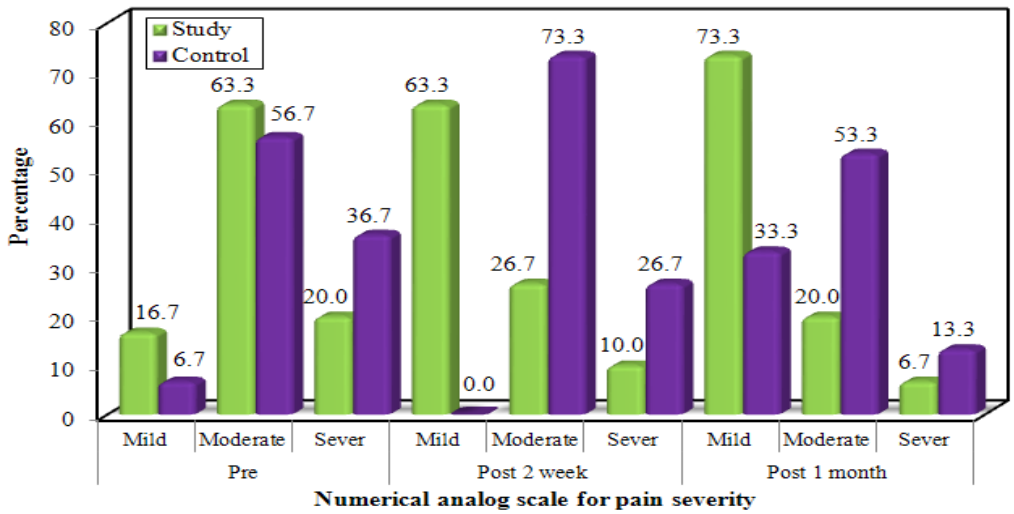

Figure (1): Comparison between the two studied groups according to pain severity

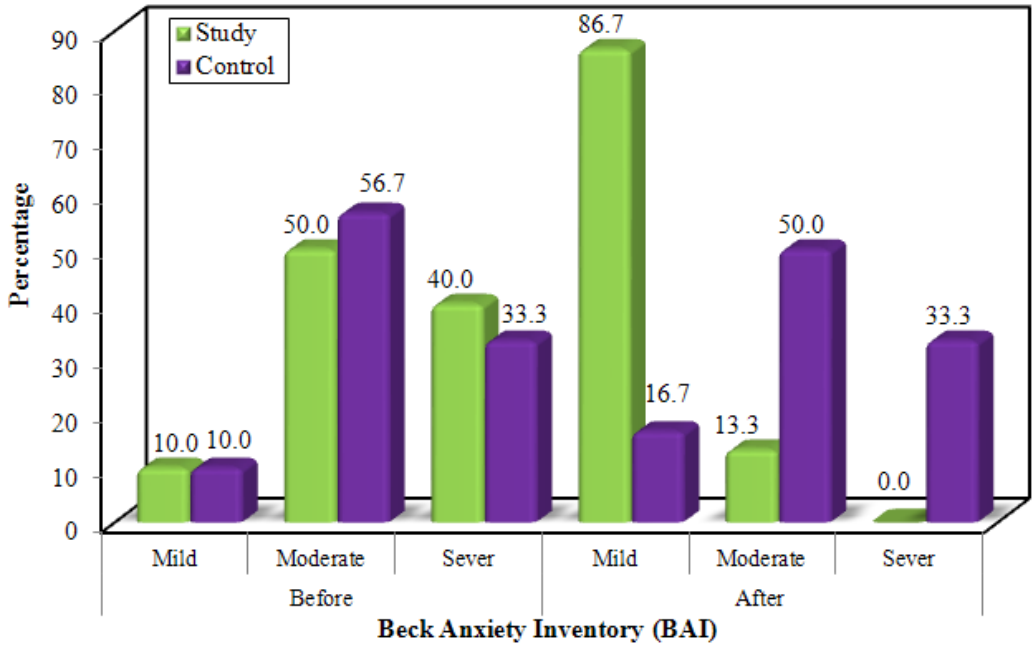

Figure (2): Comparison between the two studied groups anxiety level

Table (7): Comparison between the two studied groups according to grading system for the classification of surgical postoperative complications

Post-operative Complications	Study (n = 30)		Control (n = 30)		χ^2	p
	No.	%	No.	%		
Grade 1						
Not present	0	0.0	0	0.0	–	–
Present	30	100.0	30	100.0		
Nausea	11	36.7	12	40.0		
Vomiting	10	33.3	6	20.0		
Abdominal distention	7	23.3	4	13.3	9.555*	$^{MC}p=0.040^*$
Fever	2	6.7	1	3.3		
Bronchitis	0	0.0	7	23.3		
Grade 2						
Not present	22	73.3	9	30.0	11.279*	0.001*
Present	8	26.7	21	70.0		
Pnumonia	3	10.0	6	20.0		
Wound infection	2	6.7	7	23.3	11.376*	$^{MC}p=0.017^*$
Urinary tract infection	2	6.7	6	20.0		
Late fever	1	3.3	2	6.7		
Grade 3						
Not present	30	100.0	30	100.0	–	–
Present	0	0.0	0	0.0		
Death	-	-	-	-		
Bleeding	-	-	-	-		

χ^2: **Chi square test** MC: **Monte Carlo**
p: p value for comparing between the studied groups
*: Statistically significant at $p \leq 0.05$

Table (8): Relation between the anxiety level and occurrence of postoperative complications in study and control group .

Postoperative Complications	Anxiety level										$^{MC}p_2$	$^{MC}p_1$
	Control						Study					
	Mild (n = 5)		Moderate (n = 15)		Sever (n = 10)		Mild (n = 26)		Moderate (n = 4)			
	No.	%	No.	%	No.	%	No.	%	No.	%		
Grade 1												
Nausea	2	40.0	6	40.0	4	40.0	9	34.6	2	50.0	0.857	0.003*
Vomiting	0	0.0	2	13.3	4	40.0	9	34.6	1	25.0	0.758	<0.001*
Abdominal distention	0	0.0	2	13.3	2	20.0	6	23.1	1	25.0	0.068	0.017*
Fever	1	20.0	0	0.0	0	0.0	2	7.7	0	0.0	0.051	–
$\chi^2(^{MC}p)$	10.788 (0.130)						0.947(1.000)					
Grade 2												
Not present	1	20.0	4	26.7	4	40.0	20	76.9	2	50.0	1.000	<0.001*
Present	4	80.0	11	73.3	6	60.0	6	23.1	2	50.0	0.154	0.021*
$\chi^2(p)$	0.828(^{MC}p= 0.758)						1.285 (^{FE}p=0.284)					
Pnumonia	0	0.0	3	20.0	3	30.0	1	3.8	2	50.0	0.638	0.284
Wound infection	0	0.0	4	26.7	3	30.0	2	7.7	0	0.0	1.000	0.029*
Urinary tract infection	3	60.0	3	20.0	0	0.0	2	7.7	0	0.0	0.072	0.357
Late fever	1	20.0	1	6.7	0	0.0	1	3.8	0	0.0	0.051	0.667
$\chi^2(^{MC}p)$	9.957 (0.186)						6.461 (0.150)					
Grade 3												
Not present	5	100	15	100	10	100	26	100	4	100	0.927	<0.001*
Present	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	-	-
Bleeding	-	-	-	-	-	-	-	-	-	-		
Death	-	-	-	-	-	-	-	-	-	-		
$\chi^2(^{MC}p)$	–						–					

χ^2: **Chi square test** MC: **Monte Carlo** FE**: Fisher Exact**
*: Statistically significant at $p \leq 0.05$

Table (9): Relation between length of hospital stay with postoperative complications

Postoperative complications	Length of hospital stay		t	p
	Study (n = 30)	Control (n = 30)		
	Mean ± SD.	Mean ± SD.		
Grade 1				
Nausea	5.09 ± 0.83	7.08 ± 1.73	3.566*	0.003*
Vomiting	5.90 ± 0.88	6.17 ± 1.47	0.403	0.699
Abdominal distention	6.29 ± 1.38	4.50 ± 0.58	2.995*	0.016*
Fever	4.0 ± 0.0	7.0	–	–
Grade 2				
Not present	5.45 ± 0.91	5.56 ± 0.88	0.283	0.780
Present	5.88 ± 1.64	6.38 ±2.06	0.621	0.540
Pnumonia	5.33 ± 1.53	7.00 ± 2.53	1.030	0.337
Wound infection	7.0 ± 2.83	7.0 ± 1.83	0.00	1.000
Urinary tract infection	6.0 ± 1.41	5.50 ± 1.87	0.397	0.724
Late fever	5.0	5.0 ± 1.41	0.0	1.0
Not present	5.45 ± 0.91	5.56 ± 0.88	0.283	0.780
Grade 3				
Not present	5.57 ± 1.14	6.13 ± 1.81	1.450	0.152
Present	–	–		
Bleeding	-	-		
Death	-	-		

t: Student t-test
*: Statistically significant at $p \leq 0.05$

Discussion

The nursing care today focuses on physical care as well as psychological care , which became an important base of nursing care in surgical patients. The preoperative education is beneficial where the well-versed surgical patient experiences less anxiety and good surgical outcomes and fewer post-

operative complications (Abd El GwadElkalashy& Masry, 2018)

Today radical nephrectomy patients at risk for preoperative anxiety due to fear from unknown, postoperative pain and complications, this negative perception regarding the what happen after surgery can effect on recovery, which can lead to poor outcome and longer hospitalization, so is an important nursing responsibility and care provider in preoperative phase to inform patient about surgery, pain control, postsurgical self-care practice explanation. This can promote recovery and achievement of the optimal health. RN Patients who are physically and psychologically prepared for surgery tend to have better surgical outcomes **(Abd El GwadElkalashy& Masry, 2018).**

The result of the present study revealed that around half the study patients were within the age group less than 45years and less than half in the control group within age group 45 to less than 55 years, this result is in harmony with (**Ahmed, et al., 2019)** who found that the mean age of patients undergoing RN was fifty-seven years. Concerning gender, it was found that the majority of the study and control group were male,,these findings in line with (**Zabor etal ,2016**) who stated that the majority of patient undergoing RN were male and the gender ratio of RCC is approximately male 2:1 female .

Accordingly, the result of the present study showed that the majority of the study and control patients were smoker,these findings were in line with (**Scelo& Larose, 2018),** who showed that cigarette smoking, and hypertension been implicated as risk factors for RCC,. also in this regard **(Samar, etal;2018**) reported that tobacco smoking is a prevalent health problem in Egypt, associated with malignant tumors, but these findings contradict with (Ehdaie et al., 2014) who reported that more of the studied patients were nonsmokers.

Regarding the stage of renal cell carcinoma, the present results showed that around three - quarters of the study group and around two third of the control group had stage II tumor, these results supported with **(Luo etal ,2019)** who reported that most of the patients undergoing RN had stage II of RCC.

Regarding to total self-care practices, the results of the current study showed that all patients of both group had unsatisfactory self-care practice pre interventions about important of exercise ,wound care ,care of catheter, diet, this has a connection with the lack of experience of previous surgery and illiteracy state. improvement were occur of the study group after implementation of the program compared with control group with P ($<0.001^{*}$) , these results in agreement with **(Hammadpour etal ,2015),** who reported the supportive educational intervention can improve surgical patients' self-care ability and positively affect post-operative health outcomes, also in this regard **(Aarts, etal., 2018)** who reported that intensive, systematic, tailored and planned education support by a nurse results in an increase in patients' self-care behavior. Moreover, this finding was in agreement with **(Villa etal ,2020)** who concluded that ,the preoperative education is provided to patients improve their coping skills, increase knowledge on self-care abilities and leads to improved postoperative outcomes in patients undergoing major urology surgery.

Concerning the pain severity, the present study showed that a significant decrease in pain level among the study group in comparison with the control group through the follow up periods, preoperative instruction provided on pain control and compliance of patients with exercise after surgery such as deep breathing help patients to be able to control pain, this finding was consistent with findings of studies by (**Youssef and Hassan,2017**). "stated the provision information on preoperative exercise and performed by patient was effective on reducing postoperative pain ".Moreover, this finding was in agreement with (**Yeola and Jaipuriya 2016**) which investigated the "effect of different pre-operative education programs on the anxiety and pain levels of patients", the patients in the group that had received routine care reported the highest level of pain, while patients on planning preoperative education had a low level of pain and anxiety , also in this regard **(Grawe etal ;2015)** reported that patients who received preoperative education experience a greater reduction in postoperative pain than

patients without preoperative education . The finding disagreed with **(Reaza-Alarcon& Rodriguez-Martin, 2019)**who conducted similar study and said that they didn't find any differences between the intervention and control groups they rationalized that by presence of effective preoperative hospital protocol.

Regarding to anxiety, the current study revealed that the study group had improvement and a significant lower in anxiety score compared to the control group after supportive educational program compared with control group . This reduction on anxiety level indicates that preoperative information provided had a significant impact to reassure and support patient psychologically. This finding is agreed with the line of conclusions of studies was conducted in Nigeria and India by (**Lobo, 2016)** concluded to the provision of adequately information help patient to reducing anxiety . This is in line with **(Lin et al., 2016)** who concluded that perioperative anxiety was significantly reduced in the intervention group which received preoperative education . In this regard **(Akinsulore, et al., 2015)** concluded the planned pre-operative education can have a significant impact on patient anxiety and the fear of complications were the main factors responsible for preoperative anxiety in both study and control groups.

postoperative complication considered as an important change in the recovery of the patient the present study revealed that more than two third of the control group and the minority of the study group had grade II complications and there was statistically significant difference between the two groups with P ($<0.001^{*}$) This finding is a good indicator for the effect of the preoperative information provided and demonstrating patient on postoperative exercise to reducing the potential complication ,this findings were in agreement with **(Ahmed, et al., 2019),** who stated that the most common grade II complications (UTI, pneumonia, fever and wound infection) appeared in the control group due to limited information the control group received about their condition and about surgery during perioperative period , this illustrate the effect of a supportive educational interventions on the health outcomes among the study group.

These results were supported by **(Klaiber et al, 2018)** who revealed that Postoperative patient education is an essential component of nursing care aimed at assisting patients to take care of themselves following discharge from hospital ,this lead to decrease post operative complications . Also ,in this regard **(Adugbire & Aziato, 2018)** reported that effective supportive education provides patients with the information and practices required to understand their condition, surgery, and recovery; to prevent and manage postsurgical complications; and to reduce hospital readmission, morbidity and mortality rates **(Aarts et al., 2018).**

The present study showed that statistically significant relations were found between postoperative complication and level of anxiety This finding agree with (**Abd El Gwad Elkalashy & Masry, 2018)** who concluded that Preoperative education and psychological support has proven useful in decreasing postoperative complications and positively influencing recovery. **(Akinsulore et al., 2015)** were in the same line with the current study as they reported that the most common factors responsible for preoperative anxiety were fear of complications.

The finding of the present study showed that no significant relation between length of hospital stay and occurrence of complications this study come in agree with study finding by **(Guo ; 2017)** indicated "the preoperative teaching minimize the postoperative complications but did not effectiveness on length" of hospital stay ". This finding diagree with line of studies by (**Shenson , et al, 2017),** reported, preoperative instruction of patients had reduced the hospital stay after surgery. also the study findings agree with **(Surkan, & Gibson, 2018)** who concluded the duration of the hospital stay and post operative complications did not differ significantly between both study and control group because the both groups followed hospital protocol in these points.

Finally ,the previous findings reflect that, the beneficial effect of supportive educational interventions on the self-care practices and

post operative health outcomes and we concluded that informing and educating patients are important for preparing them for the operation both physically and psychologically before RN surgery are reported to decrease patients' anxiety , decrease pain level thus reduce the need for analgesics, prevent post-operative complications, and shorten hospital length of stay by enhancing recovery speed after the operation.

Conclusion

Based on the finding of the current study, it was concluded that patient undergoing radical nephrectomy showed a significant improvement in their self-care practices and better surgical outcomes as decrease of post-operative complications, early recovery, effective pain control and anxiety control.

Recommendations

Based on results of the present study the following can be recommended:

1- Surgical nursing staff should provide proper explanation and counseling to be adherence with the post operative self care practice to promote outcome for RN patient's.

2- Establishment of health care educational center in the urosurgery department to educate patients about necessary instructions regarding their conditions using booklet and illustrated pamphlets for each patient especially those who cannot read and write

3- The hospital should establish regular conference and training program about preoperative preparations for surgical nurses to improve quality of nursing care and patient self care practice.

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