

## Effect of Educational Guidelines on Nurses' Performance regarding Percutaneous Nephrostomy Tube

Nagwa Mohamed Helmy (1), Azza Anwar Aly (2), Rania Reafaat Abdelkader Atia (3), Badria Mahrous Abdelhameed Mohammed (4), Zeinab Gamal Mohamed Ellatif Abouelezz (5)

(1) Lecturer of Medical-Surgical Nursing Faculty of Nursing Suez Canal University

(2) Assistant professor of Medical-Surgical Nursing faculty of Nursing Damanhour University, Associate professor of medical surgical nursing Ibsina national college for Medical studies KSA.

(3) Physiology department Faculty of Medicine Zagazig University and Basic Medical Science Faculty of Applied Medical Science AlBaha University

(4) Lecturer of Medical-Surgical Nursing, Faculty of Nursing, Menoufia University-Egypt; Affiliated to Nursing Department, Faculty of Applied Medical Sciences, Albaha University, Saudi Arabia.

(5) Fellow Medical-Surgical Nursing, Student Hospital, Mansoura University.

Lecturer of Medical-Surgical Nursing, Faculty of Nursing, Misr University for Science and Technology

### Abstract:

**Background:** Percutaneous nephrostomy tube (PCN) is a widely utilized interventional procedure for upper urinary diversion and decompression of the renal collecting system. Caring for patients with a percutaneous nephrostomy is a critical component of nursing management to minimize complications and improve the health status of those patients. However, there is inadequate information for nurses as well as a lack of evidence and guidance (*Buachuen S. (2022)*). **The study aimed** to investigate the effect of the educational guidelines on nurses' performance regarding percutaneous nephrostomy tube. **Study design:** A quasi-experimental design was used to conduct this study (pre/post-test). **Setting:** The research was carried out in the urology department at Suez Canal University Hospital. **Sample:** A convenient sample of 40 of all available staff nurses working in the urology department. **Tools of data collection:** One tool was used for data collection. **Tool I:** "Nurses' Performance Assessment Sheet" which was composed of three parts; 1. Demographic data for nurses, 2. Nurse's knowledge questionnaire and 3. Nurses practice observational checklist. **Results:** The study result revealed that there was a highly statistically significant positive correlation between total knowledge scores and total practice scores of the studied nurses' pre and posts educational guidelines implementation regarding percutaneous nephrostomy tube. **Conclusion:** It was concluded that the educational guidelines had a positive effect on improving nurses' knowledge and practice regarding percutaneous nephrostomy tube. **Recommendations:** Ongoing educational programs and in-service training programs about the percutaneous nephrostomy tube should be provided to nurses to upgrade their knowledge and skills.

**Keywords:** Educational guidelines, Nurses' performance, Percutaneous nephrostomy tube.

### Introduction

A short and flexible rubber tube or catheter is placed through the skin into the kidney as part of a common medical procedure called a percutaneous nephrostomy tube to drain the urine while using imaging as radiological guidance using fluoroscopy, ultrasound, or computerized tomography (CT) guidance under local anesthesia or sedation. The urinary system benefits from this intervention and can operate regularly. Additionally, compared to surgery, this method has less side effects, making it the best choice for patients who do not want to undergo surgery or for patients who are at high risk. As a result, Percutaneous Nephrostomy Catheters will be boosted

during the forecast period by the growing popularity of PCN treatments (*Karim, 2019*).

There are two types of drainage tubes for nephrostomies; A coil that is kept in the renal pelvis and serves as the retention mechanism, or a Pigtail (placed in Radiology). Pigtail catheters come in two different varieties: Boston Medical and Cook Mac-loc. The only variation is how the catheter is unlocked to be removed. Wide Bore catheters, such as Malecot or Foley, are the second kind (placed in the operating room) (*Azer, et al., 2018*).

In the hands of an expert, PCN is a minimally invasive procedure that is both safe and effective. For 85 to 90% of all

nephrostomy placements, PCN is typically suggested for the decompression of urinary blockage. This condition may be attributable to nephrolithiasis, pelvicalyceal malignancy, retroperitoneal fibrosis, and various urogenital and soft tissue malignancies. Some diagnostic techniques also involve nephrostomies, such as antegrade pyelography and ureteral perfusion studies (*Buachuen, 2022*).

In essence, complications from percutaneous nephrostomy, a minimally invasive technique, are possible and occur in patients at a rate of 2% to 10%. (*Sun, et al., 2020*). Hematuria is the greatest danger of percutaneous nephrostomy; almost all patients experience temporary hematuria to some extent, but only 1-3 percent of those individuals need transfusions or surgery. Another frequent complication is pain, which can be managed with oral or intravenous analgesics. PCN insertion in pyonephrotic kidneys can also lead to severe bacteremia and sepsis. Extravasation of urine, catheter dislodgement, and the inability to remove a nephrostomy tube due to crystallization are also considered known risks. Injury to surrounding organs (pneumothorax and colonic injury) is rare but a documented hazard, especially in supra-coastal punctures (*Naik, et al, 2018*).

To increase the success rate of interventions and reduce problems, nurses are crucial in the pre-and post-operative care of patients having percutaneous nephrostomy tube placement. Patients have frequently been given preventative antibiotics before having percutaneous nephrostomies, nothing to eat or drink six hours before the procedure, advice to the patient to stop taking anticoagulants and other medications, and all investigative procedures are part of pre-operative management, which involves patient preparation before the procedure (*Dyer & Regan, 2020 & Echenique, et al., 2016*)

However, post-procedure nursing care involves giving analgesia as directed, caring for wounds, and carefully monitoring dressing and tube drainage. The patient must also spend four hours on bed rest and the drainage bag should always be kept below the level of the kidneys. Additionally, vital signs should be monitored every half hour for the first two hours after the procedure, every one hour for the following two hours, and after that every four hours for the following twenty-four hours.

To reach a consistent urine production, measure its output every four hours for four days, then every four hours for twenty-four days, then eight hours until steady. Check the color and presence of sediment in the urine (*Martin & Baker 2019& Aaron, et al., 2014*).

Therefore, nurses should be knowledgeable about patients' requirements to give the best nursing interventions to maintain patient safety, enhance patients' health and ultimately improve patients' life quality throughout the intervention (*Aldridge, 2021*). To increase the standard of healthcare and to gain new information and abilities, nursing staff personnel must be taught and trained. Education standards are thought of as a way to give nurses the theoretical and technical knowledge required to learn new skills and continuously enhance nursing practice. Encourage nurses to take on responsibility for their professional development as well (*Young & Leslie, 2022*).

#### **Significant of the study:**

The high frequency and prevalence of chronic kidney disorders, as well as the rise in incidences of urinary tract infections and stones, are considered the main factors predicted to propel the expansion of the global market for percutaneous nephrostomy tubes (*Aaron et al., 2019*). The installation of a percutaneous nephrostomy tube is a beneficial medical technique for draining the renal collecting system with minimum invasive access, but the patient with a percutaneous nephrostomy tube needs special nursing care to improve the outcome of the intervention, so nurses must be familiar with how to look after and manage patients with nephrostomies (*Mostafa & Abbaszadeh, 2018*). Nevertheless, there is a lack of information and direction in the nursing area, hence this study purposed to examine the effect of the educational guidelines on nurses' performance regarding percutaneous nephrostomy tube.

#### **Operational definition:**

##### **Educational Guidelines:**

It refers to theoretical and practical training regarding caring for percutaneous nephrostomy tube provided to nurses who care for patients undergoing percutaneous

nephrostomy tubes to improve their performance.

### **Nurses' performance:**

It means the act of successfully carrying out a task while utilizing knowledge, as opposed to merely processing it. In this study, "performance" refers to assessing the practice and knowledge of the participating nurses in the care of patients with percutaneous nephrostomy tubes.

### **Aim of the study**

The study aimed to investigate the effect of educational guidelines on nurses' performance regarding percutaneous nephrostomy tube through:

- Assessing nurses' knowledge pre and post-educational guidelines.
- Assessing nurses' practices pre and post-educational guidelines.
- Designing and executing the educational guidelines in accordance with the requirements of nurses.
- Evaluating the effect of the educational guidelines on nurses' performance regarding percutaneous nephrostomy tube.

### **Research hypothesis:**

H1: Nurses' performance is expected to be improved post-receiving the educational guidelines regarding percutaneous nephrostomy tubes than pre-receiving educational guidelines.

### **Subjects and Methods:**

#### **Research design:**

A quasi-experimental design was used to conduct this study (pre/post-test)

#### **Setting:**

The research was carried out in the urology department at Suez Canal University Hospital, Egypt. This setting was chosen due to its service to the area with the highest population density and its high patient prevalence in the canal region.

#### **Subjects:**

A convenient sample of 40 of all staff nurses working in the urology department volunteered to take part in the study.

#### **Tools of data collection:**

#### **Tool (I) Nurses' Performance Assessment Sheet:** it was composed of three parts:

#### **Part (1): Demographic data for nurses:**

Following a survey of the pertinent literature, the researchers created and wrote it in straightforward Arabic (*Abdelfattah, et al., 2015; Jihad & Reda, 2018*). It was concerned with studied nurses' characteristics data which included; age, sex, qualification, years of experience, and attended a training course for urology or other training courses.

#### **Part (2): Nurses' knowledge questionnaire:**

The researchers created and built the nurses' knowledge questionnaire after reviewing the most recent national and international related literature (*Abdelfattah, et al., 2015, Jihad & Reda, 2018; Karim, 2019; Dyer & Regan, 2020*), to assess nurses' knowledge regarding percutaneous nephrostomy tube pre- and post-educational guidelines implementation. It included main three parts; Knowledge about the anatomy and physiology of the urinary tract (10 questions), General knowledge about percutaneous nephrostomy tubes (15 questions), and Knowledge about post-operative nursing care for percutaneous nephrostomy patients (25 questions). The total number of questions was (50).

#### **Scoring system:**

Each accurate response received a score of one, while each wrong response received a score of zero. The overall score was (50). The total nurses' knowledge was classified into Poor level: who obtained less than 50% (less than 25 degrees), Fair level: who obtained 50-70% (25- 35 degrees) and Good level: who obtained more than 70 % (more than 35 degrees).

#### **Part (3): Nurse's practice observation checklist:**

The researchers created a nurse's practice observation checklist after reviewing the relevant literature (*Abdelfattah, et al., 2015; Jihad & Reda, 2018; Dyer & Regan, 2020*), to assess nurses' practical aspects of the basic competencies related to percutaneous nephrostomy tube pre- and post-educational guidelines implementation. It consisted of six procedures; Immediate postoperative nursing care of (PCN) patient (12 steps), Performing hand washing included (8 steps), Assessing and monitoring vital signs (50 steps), Wound care and irrigation of (PCN) (24 steps), Instructions before discharge (15 steps) and finally Removal of (PCN) (10 steps).

#### **Scoring system:**

The nurse's practice observation checklist had 119 items, and each one was

scored as follows: the item that was observed to be completed correctly received a score of 1, and the item that was incomplete or poorly completed received a score (of 0). The following categories were used to group the nurses' total practice level score: If the percentage was less than 75%, the score was inadequate, and inadequate if less than 75 %.

### **Tool validity and reliability:**

#### **1) Validity:**

The data collection tool's validity was evaluated by five professional experts (3 experts from the medical surgical nursing department, the Faculty of Nursing, Suez Canal University, and 2 experts in urology and nephrology specialty, the Faculty of Medicine, Suez Canal University) for its clarity, thoroughness, applicability, and relevance. Slight changes were adopted as a result of their evaluations.

#### **2) The Reliability:**

The tool's reliability was measured by using the internal consistency approach. It demonstrated high reliability with Cronbach alpha coefficients of 0.96 for the Nurses' knowledge questionnaire and 0.95 for Nurse's practice observation checklist.

#### **Fieldwork:**

The data of the present study was collected in six months, from 1st February 2022 to 30th July 2022. The study was conducted through three phases:

#### **A-Preparatory phase:**

To develop the tools for data collecting and build the educational guidelines, the researchers looked over and studied the recent and older materials that were available as textbooks, papers, periodicals, and internet searches. The booklet, which was produced in Arabic and printed according to the sample size, was then given out as part of the implementation of the educational guidelines.

#### **Pilot study:**

The aforementioned tool was used in a pilot study on four nurses, representing 10% of the nurses from the chosen units, to assess each tool's applicability, clarity, and timeframe. The main study subjects were exempt from nurses who participated in the pilot trial.

#### **Ethical consideration:**

Official authority to carry out this study was obtained by a letter from the dean of the Faculty of Nursing at Suez Canal

University. After outlining the study purpose, the directors of the aforementioned setting provided their written consent. Before beginning the study, the researchers obtained the nurses' consent and gave a brief explanation of its goals. Additionally, they informed the participants that their involvement was completely voluntary, that they may reject to participate, that they could withdraw from the study at any time, without having to give a reason, and that their identity and confidentiality would be maintained.

#### **B- Implementation phase:**

The researchers initiated the data collection firstly by collecting demographic characteristics utilizing tool I part 1, the knowledge of the participants regarding percutaneous nephrostomy tube was then evaluated using tool I part 2 as baseline data, along with practices of percutaneous nephrostomy tube care using tool I part 3. The obtained data was utilized as a pretest to gauge how well nurses performed after receiving the educational guidelines regarding percutaneous nephrostomy tubes. In addition to textual materials that were offered with photographs as an illustrative guide for greater clarification to nurses, the researchers were given spoken instructions. This illustration handout was designed by the researchers in the light of a literature review, results, previous research recommendations, and opinions of healthcare members (*Hayes, 2005; Almeida, et al, 2012; Ramchandani, et al., 2001*), as well as they subjected the handout to content testing. The involved nurses were distributed into eight groups, each group formed of five nurses. Each group was scheduled for 4 teaching sessions (the first two sessions covering theoretical content and the last two sessions covering practice) in four consecutive visits; each session lasted fifteen minutes using the instructional handout.

#### **Contents of sessions**

##### **Session 1:**

The researchers gave an overview of the session's topics before moving on to the learning objectives. The session was conducted by the researchers in Arabic, which was understandable to the nurses. The anatomy and physiology of the urinary system were explained by the researchers. The researchers began to assess nurses' knowledge and practices about percutaneous nephrostomy tube (pre-test).

##### **Session 2:**

It featured information about the percutaneous nephrostomy tube including a definition and general understanding of the percutaneous nephrostomy tube. Photos, movies, posters, and PowerPoint presentations were used to implement this session.

### Session 3 (practical part):

During this phase, the nurses trained the specific practical skills such as immediate postoperative nursing care of (PCN) patients, performing hand washing, and vital signs monitoring (pulse, respiration, temperature, and blood pressure). Researchers used educational videos about percutaneous nephrostomy tube, demonstration, and re-demonstration approaches to training participating nurses throughout this phase.

### Session 4 (practical part):

It is the last session that the study nurses trained in other practical skills regarding a percutaneous nephrostomy tube as instructions before and after discharge, fluid intake, managing pain, changing the urine bag and complications, wound care, irrigation of (PCN) and removal of (PCN). Researchers also used educational videos about percutaneous nephrostomy tube, demonstration, and re-demonstration approaches to training participating nurses throughout this phase.

### C- The Evaluation phase:

The evaluation of research sample knowledge and practice was carried out using parts 2 and 3 of the tool that was used in the pre-test to assess the effect of the educational guidelines on nurses' performance one month after the implementation of the percutaneous nephrostomy tube educational guidelines.

### Statistical analysis:

SPSS for Windows, version 20, was used for both data entry and statistical analysis. To present the data, descriptive statistics were used. For qualitative variables, frequencies and percentages were used, and for quantitative variables, means and standard deviations. A P-value of <0.05 was used to determine statistical significance.

### Results:

**Table (1):** Reveals 50% of the participating nurses were between (20 < 30) years old a mean age (of  $32.25 \pm 7.06$ ), and 70% of the studied nurses were female. A nursing diploma was held by more than two-fifths (45%) of the participating nurses. In terms of years of experience, 40% of the

involved nurses had <10 experience years. Respecting the nurses who attended a training course for urology and other training courses, 70% of the nurses who participated in the study said that they had never attended any previous training courses including urology-specific ones.

**Table (2):** Compares the knowledge sub-item scores of the study's nurses, there were highly statistically significant differences in the nurses' knowledge sub-item scores for the following knowledge sub-items: " knowledge about the anatomy and physiology of the urinary system, general knowledge about percutaneous nephrostomy tube and knowledge about post-operative nursing care for patients with percutaneous nephrostomy " post-educational guidelines implementation phase ( $P < 0.001$ ).

**Figure (1):** Depicts the nurses' total knowledge scores regarding percutaneous nephrostomy tube pre- and post-educational guidelines implementation. It referred to 20% of the study's nurses had good total knowledge scores regarding percutaneous nephrostomy tube during the pre-educational guidelines implementation phase which improved post-implementation, and that number increased afterward to become 60% of them with highly statistically significant differences during pre/post-educational guidelines implementation phases.

**Table (3):** Compares the studied nurses based on their practice sub-items scores; there were highly statistically significant differences in the nurses' practice sub-items scores for " Immediate postoperative nursing care of (PCN) patient, performing hand washing, assessing and monitoring vital signs, wound care and irrigation of (PCN), Instructions before and after discharge and finally Removal of (PCN) " during the post-educational guidelines' implementation phase ( $P < 0.001$ ).

**Figure 2:** Portrays the nurses' total practice scores regarding percutaneous nephrostomy tube pre and post- the educational guidelines implementation. Before obtaining the educational guidelines, only 20% of the study nurses had an adequate practice level, while once the educational guidelines were implemented, this percentage boosted afterward to 90% of them.

**Table (4):** illustrates the existence of a positive association between the total practice scores of the participated nurses with the total knowledge scores post the implementation of

educational guidelines regarding percutaneous nephrostomy tube ( $r = 0.83$ ,  $r = 0.42$ , respectively) with a high statistically significant value of  $p < 0.001$ .

**Table (4):** illustrates the existence of a positive association between the total practice scores of the participated nurses with the total knowledge scores post the implementation of educational guidelines regarding percutaneous nephrostomy tube ( $r = 0.83$ ,  $r = 0.42$ , respectively) with a high statistically significant value of  $p < 0.001$ .

Table (1): Distribution of the studied nurses according to demographic data (n=40).

Variables.	The Studied Nurses (n=40)	
	N	%
<b>Age:</b>		
20 < 30	20	50.0
30 < 40	10	25.0
≥40	10	25.0
<b>(Mean±SD): 32.25±7.06</b>		
<b>Gender:</b>		
Male	12	30.0
Female	28	70.0
<b>Qualification:</b>		
Nursing diploma.	18	45.0
Bachelor of nursing.	12	30.0
Master of nursing.	10	25.0
<b>Years of experience:</b>		
< 5	12	30.0
<10	16	40.0
>10	12	30.0
<b>Attended training course for urology:</b>		
Yes	12	30
No	28	70

SD: standard deviation

Table (2) Comparison between the studied nurses according to their knowledge sub-items scores regarding percutaneous nephrostomy tube pre and post-educational guidelines implementation (n=40).

Knowledge items	Pre- the educational guidelines		Post- the educational guidelines		X <sup>2</sup>	P-value
	No	%	No	%		
1- Knowledge about the anatomy and physiology of the urinary tract.	20	50	40	100	133.42	<0.001**
2- General knowledge about percutaneous nephrostomy tube.	18	45	38	96	140.24	<0.001**
3- Knowledge about post-operative nursing care for patients with percutaneous nephrostomy.	23	57	39	97	120.21	<0.001**

χ<sup>2</sup>: Chi-square test \*: Statistically significant at p ≤ 0.05 \*\*: Highly significant at p-value < 0.001

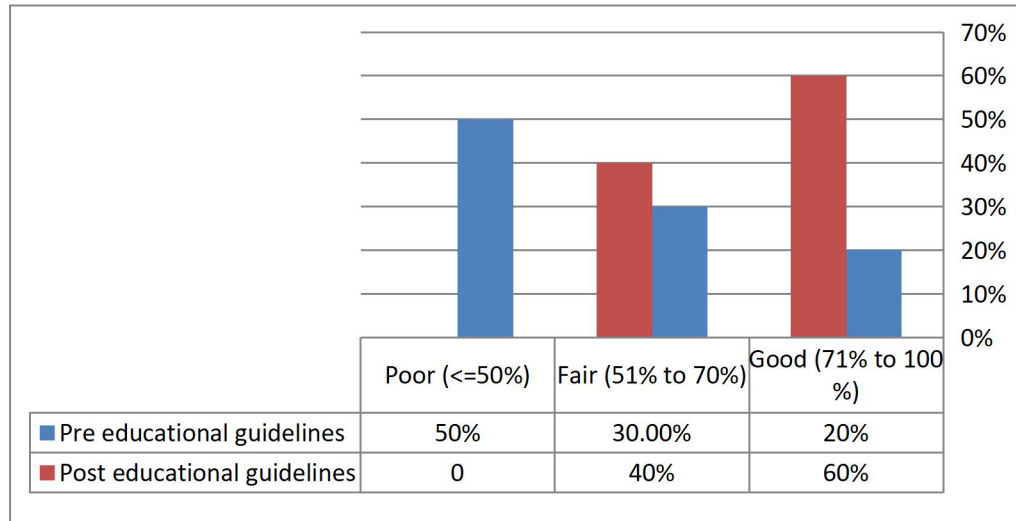


Figure (1): Comparison between the studied nurses according to their total level of knowledge regarding percutaneous nephrostomy tube pre and post-educational guidelines implementation (n=40).

Table (3) Comparison between the studied nurses according to the practice regarding percutaneous nephrostomy tube pre and post-educational guidelines implementation (n=40).

Knowledge sub-items	Pre- the educational guidelines		Post- the educational guidelines		X <sup>2</sup>	P-value
	No	%	No	%		
1- Immediate postoperative nursing care of (PCN) patients.	24	10	40	100	123.62	<0.001**
2- Performing hand washing.	8	20	47	96	110.26	<0.001**
3- Assessing and monitoring vital signs.	12	30	48	90	90.26	<0.001**
4- Wound care and Irrigation of (PCN).	14	35	32	80	130.27	<0.001**
5- Instructions before and after discharge.	0	0.0	40	100	120.29	<0.001**
6- Removal of (PCN).	0	0.0	40	100	140.28	<0.001**

χ<sup>2</sup>: Chi-square test \*: Statistically significant at p ≤ 0.05 \*\*: Highly significant at p-value < 0.001

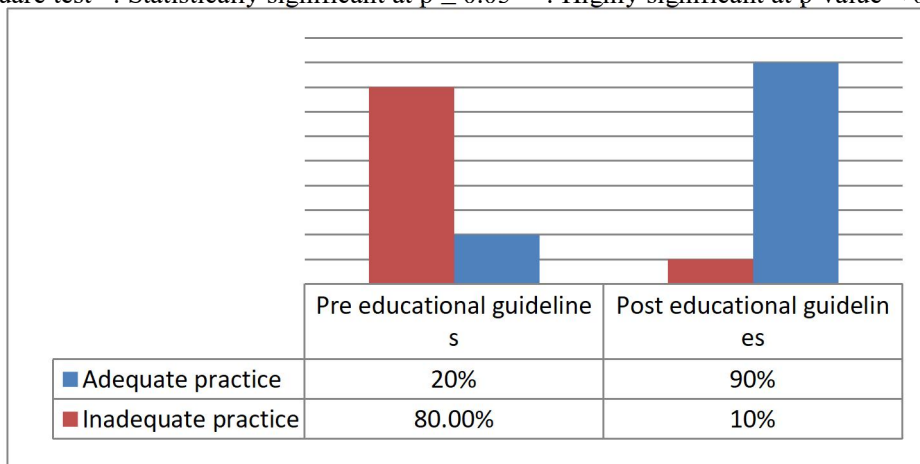


Figure (2) Comparison between the studied nurses according to their total practice scores regarding percutaneous nephrostomy tube pre and post-educational guidelines implementation (n=40).



**Table (4): Correlation between total knowledge score with total practice score for the studied nurse's pre and post-educational guidelines implementation (n=40).**

Items	Total Knowledge scores			
	Pre-educational guidelines implementation		Post educational guidelines implementation	
	r	p-value	r	p-value
<b>Total Practices scores</b>	0.83	0.000**	0.42	0.003**

r: Pearson coefficient, No significant at  $p > 0.05$ , \*Significant at  $p \leq 0.05$ , \*\*Highly significant at  $p < 0.001$ .

**Table (5): Percentage distribution of the studied female students (study and control groups) regarding their demographic characteristics**

Variables	Students(n=150)				x <sup>2</sup>	P
	Studygroup (n=75)		Control group (n=75)			
	N	%	N	%		
<b>•Age(years):</b>						
16-17	50	67	53	71	1.983	0.058
17-18	25	33	22	29		
Mean±SD	16.31±0.78		16.73±0.43			
<b>•Residence:</b>						
Rural	54	72.0	56	75.0	1.106	0.062
Urban	21	28.0	19	25.0		
<b>Academic year:</b>						
First	44	59.0	41	55.0	1.273	0.204
Second	20	27.0	24	32.0		
Third	11	14.0	10	13.0		
Mean±SD	26.73±3.47		25.68±4.24			

**\*Significant (P<0.05)**

Table (6): Percent distribution among the studied female students in the study and control groups regarding their menstrual history

Variables	Students(n=150)				x <sup>2</sup>	P
	Study group (n=75)		Control group (n=75)			
	N	%	N	%		
<b>Age of menarche (years):</b>						
9-<11	4	5.0	3	4.0	0.39	0.837
11-<13	56	75.0	59	79.0		
13-<15	9	12.0	8	11.0		
15-17	6	8.0	5	6.0		
<b>The rhythm of menstruation:</b>						
Regular	70	93.0	72	96.0	0.100	0.762
Irregular	5	7.0	3	4.0		
<b>Interval of the menstrual cycle (days):</b>						
<28	3	4.0	5	7.0	0.703	0.413
28-30	72	96.0	70	93.0		
<b>Duration of menstrual blood flow (days):</b>						
2-3	9	12.0	10	13.0	0.815	0.033
4-5	25	33.0	23	31.0		
6-7	39	52.0	37	49.0		
8-10	2	3.0	4	5.0		
<b>Amount of menstrual blood (No. of pads /day):</b>						
Slight (One)	10	13.0	8	11.0	0.128	0.049
Moderate (2-3)	60	80.0	61	81.0		
Excessive (≥4)	5	7.0	6	8.0		

\*Significant (P&lt;0.05)

x<sup>2</sup>: Chi-square test

**Table (7): Percent distribution among the studied female students in the study and control groups regarding their dysmenorrheal characteristics**

Variables	Students(n=150)				x <sup>2</sup>	P
	Studygroup (n=75)		Control group (n=75)			
	N	%	N	%		
<b>▪ The onset of dysmenorrhea:</b>						
-Before the menstrual period	15	20.0	13	16.0	0.517	0.768
-With the onset of menstruation & continue for 48 hours	60	80.0	62	83.0		
<b>#▪ Location of dysmenorrhea:</b>						
-Lower abdomen	32	85.0	36	48.0	0.139	0.709
-Lower back	39	52.0	38	51.0	3.367	0.067
- Lower limbs	18	24.0	17	23.0	1.008	0.315
- Perineal area	16	21.0	18	24.0	2.559	0.278
-Knee	8	7.0	6	8.0	0.326	0.568
<b>#▪ Associated symptoms with dysmenorrhea:</b>						
-Fatigue & tiredness	70	93.0	69	92.0	0.901	0.343
-Drowsiness	50	71.0	39	52.0	1.714	0.190
-Nausea & vomiting	55	73.0	60	80.0	0.034	0.853
-Diarrhea	39	52.0	38	51.0	0.035	0.852
-Constipation	37	49.0	33	44.0	0.045	0.831
-Headache	35	47.0	37	49.0	0.036	0.849
-Restlessness	34	45.0	40	53.0	1.645	0.200
<b>#▪ Previous methods used to relieve dysmenorrhea:</b>						
-Pharmacological	11	15.0	10	13.0	0.137	0.703
-Non-Pharmacological	39	52.0	38	51.0	0.569	0.436
-Both	25	33.0	27	36.0	0.312	0.556

\*Significant (P<0.05)

x<sup>2</sup>:Chi-square test #:More than one answer was chosen

**Table (8): Mean score of pain dysmenorrheal severity among the studied female students in the study and control groups according to modified Behavioral Pain Scale pre and post-intervention.**

Pain dysmenorrhea severity	Students(n=150)		Value	P
	Studygroup (n=75)	Control group (n=75)		
<b>•Pre-intervention:</b>				
Mean±SD	9.05±1.78	9.93±1.45	0.573	1.769
<b>•Post-intervention:</b>				
Mean±SD	1.67±1.56	7.56±2.67	7.632	0.0001*
x <sup>2</sup> value	41.563	2.863		
P	0.0001*	0.265		

\*Significant (P<0.05)

x<sup>2</sup>value of Friedman test Zvalue of Mann-Whitney test

**Table (9): Mean and standard deviation of dysmenorrheal duration among the studied female students in the study and control groups pre and post-intervention**

Dysmenorrheal Duration	Students(n=150)		Zvalue	P
	Studygroup (n=75)	Control group(n=75)		
<b>•Pre-intervention:</b>				
Mean±SD	4.89±1.27	4.36±1.21	0.203	0.227
<b>•Post-intervention:</b>				
Mean±SD	1.78±0.52	4.03±1.15	8.767	0.0001*
x <sup>2</sup> value	33.623	6.192		
P	0.0001*	0.412		

\*Significant( $P < 0.05$ )  $x^2$ value of Friedmantest Z value of Mann-Whitney test

**Table (10): Comparison of fatigue scores among the studied female students in the study and control groups pre and post-intervention**

Items	Group	Pre-intervention	Post-intervention
Fatigue scores	Study group (75)	26.89±4.02	14.23±2.34
	Control group (75)	27.79±4.67	23.77±2.23
P- value	Study group (75)	0.125	0.0001*
	Control group (75)	0.069	0.043

\*Significance at 0.0001 levels

## Discussion:

In situations where a retrograde stent is not an option, the nephrostomy tube provides an alternative method of access to the kidney. Long-term nephrostomy care and management require nurses to be knowledgeable about issues related to fluid management, infection control, wound care, and management of tube and bags. Additionally, nurses need to ensure that patients have ample supplies and equipment, a strategy for routine tube replacement or removal, and know who to call in case of issues. Therefore, those nurses must enroll in a training program related to the care of patients with percutaneous nephrostomies. (*Martin & Baker, 2019*).

This study was carried out to assess the effectiveness of the designed educational guidelines on nurses' performance regarding percutaneous nephrostomy tube. The existing study results displayed a considerable enhancement in the nurses' knowledge and practices thus promoting nursing performance after the implementation of the structured educational guidelines. These data confirmed the significance of the applied guidelines and led to the achievement of the predetermined hypothesis.

According to a descriptive statistic of the study nurses' demographic data, half of them were between the ages of 20< and 30 years old on average age of  $32.25 \pm 7.06$ . This finding goes in line with (*Abdelfattah, et al., 2015*) who discovered that the ages of the majority of studied nurses ranged from 20- <30 years. Moreover, this outcome is in agreement with the finding of conducted research by (*Jihad & Reda, 2018*) who indicated that the age group among the study subjects was (23-27) years old. Regarding gender and the level of education among the participating nurses, the vast majority of nurses who participated in the study were females and held nursing diploma degrees. The present result is compatible with the study of (*Abdelfattah, et al., 2015*) who claimed that the highest proportion of the study nurses were females and had diploma degrees in nursing.

Concerning years of experience, two-fifths of the involved nurses had less than 10 years of experience. The researchers claimed that the bulk of the study's staff nurses was young and recently graduated may have contributed to this outcome. This finding is in accordance with a paper investigated by (*Abdelfattah, et al., 2015*) which found that

most nurses had experience ranging from 5 to 10 years.

Respecting nurses attended a training course for urology and other training courses, but most of the nurses who joined the study did not participate in urology training courses or any other training programs. In researcher opinion, attending an in-service educational program is always updating nurses' knowledge, improves staff skills, also acquiring the ability to function purposefully in an emergency this opinion is in line with (*Finkelman & Kenner, 2013*), who stated that nurses' knowledge was influenced by professional education and training. The finding (*Jihad & Reda, 2018*) is in agreement with the result of the present study mentioned that a tiny proportion of nurses participated in urology-related in-service training.

Concerning nurses' knowledge level; the outcomes of the recent investigation supported the existence of highly statistically significant differences in knowledge scores amongst the study nurses. Through the pre-implementation phase of the educational guidelines, there was slightly half of the nurses had poor knowledge about the anatomy and physiology of the urinary tract, general knowledge regarding the percutaneous nephrostomy tube, and knowledge about post-operative nursing care for patients with percutaneous nephrostomy. According to researchers, this outcome might be attributed to several reasons, such as the fact that the majority of joined nurses in the study had never participated in a training program before, that their nursing curricula did not include enough courses on the percutaneous nephrostomy tube, and that there was no Arabic source available to them for knowledge updates. However, post-implementation of the educational guidelines, this proportion boosted, and became most of the nurses were more oriented and had good knowledge levels regarding percutaneous nephrostomy.

From the perspective of the researchers, this illustrates the beneficial effect of the application of instructional guidelines on boosting awareness and better comprehension of percutaneous nephrostomy tube care among the involved nurses. Similar to knowledge, only the program's attendance is an independent predictor that has a positive impact on the practice score. This result is well-matched with *those* (*Jihad & Reda, 2018*) who indicated in a study that the nurse knowledge level concerning nursing management of patients with

percutaneous nephrostomy tube was poor level during the pre-test phase of the educational guidelines implementation, while post-test results showed that the nurses' knowledge was improved to a high level. Furthermore, his outcome is similar to research implemented by (*Abdelfattah, et al., 2015*) which referred to half of the participating nurses having a poor knowledge level about percutaneous nephrostomy tube, one-third of them had a fair level, and less than one-fifth had a good level post implementation of the educational guidelines.

Relating to the nurses' practice level regarding percutaneous nephrostomy tube, it was noticed that significant improvement in all items of the current study scores through the post-test phase after the implementation of the educational guidelines. Only one-fifth of the study subjects had an adequate practice level during the pre-educational guidelines' implementation phase, while the ratio was reversed and turned to most of the study sample had an adequate level of practice through the post-educational guidelines implementation phase.

The researchers believe that this result belonged to the profound contribution of the structured educational guidelines implementation on optimizing nursing practice and also cleared that implementation of the educational guidelines was a successful method of increasing nurses' practice regarding percutaneous nephrostomy tube, hence this indicates the success of the implementation of educational guidelines. In the same line, (*Jihad & Reda, 2018*) showed that the majority of participating nurses had unsatisfied practice levels concerning nursing management of patients with percutaneous nephrostomy tube during the pre-test phase of the educational guidelines implementation, in contrast, post-test results showed that the nurses' practices level was improved to satisfied level.

Referring to the correlation between the nurses' knowledge and nurses' practice levels of percutaneous nephrostomy tube care, the present study showed that there was a positive relation between the nurses' knowledge and practice levels after the educational guidelines' implementation. This discovery may be attributable to the fact that comprehensive knowledge serves as the cornerstone for proper practice, and it also served to underline the need of strengthening nurses' knowledge and practice to facilitate their acquisition of excellent knowledge and its

application. This correlation is explained by the fact that when nurses have sufficient knowledge that can help them to practice well, which is reflected in their patient care.

This was further explained by (*Oyira, et al., 2016*) who pointed out that knowledge has a substantial impact on the delivery of high-quality nursing care by nurses at the University of Calabar Teaching Hospital. Harmonious with this finding (*Abdelfattah, et al., 2015*), showed that the implementation of instructional guidelines linked to the care of patients with percutaneous nephrostomy tubes resulted in a good relationship between nurses' knowledge and practice levels.

### **Conclusions:**

In light of the study's findings, it is possible to conclude that the educational guidelines had a noticeable positive effect on improving nurses' performance regarding percutaneous nephrostomy tube. There was a highly statistically significant positive correlation between the total knowledge scores and total practice scores of the nurses who participated in the study before and after receiving the educational guidelines regarding the percutaneous nephrostomy tube.

### **Recommendations:**

Based on the findings of the current study, it is advised that the following recommendations be taken into consideration:

- Ongoing educational programs and in-service training programs about the percutaneous nephrostomy tube should be provided to nurses to upgrade their knowledge and skills.
- Nurses should be aware of and inform patients of pre-discharge instructions.
- Replication of the current study with a larger sample of nurses in different settings is required to generalize the results.
- Further research is recommended to determine patients' satisfaction regarding nursing performance for patients with percutaneous nephrostomy tubes.

### **References:**

- Aaron D., Trisha M. & Nicole L. (2019):** Infectious Outcomes of Nephrostomy Drainage before Percutaneous Nephrolithotomy Compared to Concurrent Access. American

- urological association education and research, Vol. 192, 770-774.
- Abdel Fattah K., Abdel Hafez S. & Ghanem H. (2015):** Establishment of standards for post-operative nursing care in patients with Percutaneous Nephrostomy tube (PCN) insertion. *Assiut Scientific Nursing Journal*; Vol 3(5): Pp. 79-87.
- Abdelmowla R., Hussein A., Shahat A., Abdelmowla H. & Abdalla M. (2017):** Impact of Nursing Interventions and Patients' Education on Quality of Life Regarding Renal Stones Treated by Percutaneous Nephrolithotomy. *Journal of Nursing Education and Practice*; Vol. 7(12): Pp.52-62.
- Aldridge M. (2021):** Leadership and Management in Professional Nursing Practice, the University of Northern Colorado, UNC Scholarship & Creative Works. UNC Faculty Open Textbooks, chap 4, Pp.90. Available at: <https://digscholarship.unco.edu/cgi/viewcontent.cgi?article=1002&context=textbooks>.
- Almeida M. & Padilla N. (2012):** Nursing Management of Patients with Nephrostomy Tubes. Guidelines and Patient Information Template. *Liverpool Health Service*; Vol. 47(5), Pp.127-39.
- Azer S, Abd-El Mohsen S. & Sayed S. (2018):** The Effect of Nursing Guidelines on Minimizing Incidence of Complications for Patients with Percutaneous Nephrostomy Tube. *American Journal of Nursing Research*; Vol. 6(5), Pp.327-34.
- Buachuen S. (2022):** Post-operative Nursing Care for Patients Undergoing Percutaneous Nephrostomy for Treatment of Obstruction Uropathy. *Journal of Nursing Science and Health*; Vol. 45 (1), Pp.117-27.
- Cirillo J. (2018):** percutaneous nephrostomy Available at: [http://www.drugs.com/cg/nephrostomy-tubeinsertion-after care-instruction.html](http://www.drugs.com/cg/nephrostomy-tubeinsertion-after-care-instruction.html)
- Cormio L. & Annese P. (2017):** Percutaneous nephrostomy in the supine position. *Urology*; vol 69 (2): 377-80.
- Dyer R. & Regan J. (2020):** Percutaneous nephrostomy with extensions of the technique: step by step. *Radiographics* 22 (3): 503-525.
- Echenique, A., DeJesus, L. & Abisch, A. (2016):** Under the Beam: Nursing Considerations on Patient Undergoing a Nephrostomy Tube Placement. *Journal of radiology nursing*; Vol 35 (3): Pp. 248-51.
- Finkelman, A. & Kenner, C. (2013):** Professional Nursing Concepts, the Essence of Nursing: Knowledge and Caring. (2nd) edition, USA, Jones & Bartlett Learning, LLC. Pp. 160-200.
- Hautmann S. (2019):** nephrostomy. Available at: <http://emedicine.Medscape.Com/article/445893-overview>.
- Hayes. D (2005):** Clinical updates: Pigtail Drain tubes: A guide for Nurses. *Australian Nursing Journal*; V12 (10): Pp. 19-20
- Jihad, R. & Reda, A (2018):** Effectiveness of an education program on nurses' knowledge concerning nursing management of percutaneous nephrostomy tube at Baghdad Teaching Hospitals. *Indian Journal of Public Health Research and Development*; Vol 9(8): Pp.1207-14.
- Karim R. (2019):** Percutaneous nephrostomy by direct puncture technique: an observational study. *Indian Nephrol*; pp 84-8.
- Kumar S. & Ganesamoni R. (2017):** Fragmented Digital percutaneous Nephrostomy Tube: Etiology and Management. *Korean Journal of Urology*, pp 492-6.
- Martin R & Baker H (2019):** Nursing care and management of patients with a nephrostomy. *Nursing Times [online]*; Vol 115 (11): Pp. 40-3.
- Mostafa S. & Abbaszadeh S. (2018):** Percutaneous nephrostomy for treatment of posttransplant ureteral obstructions. *Urol J* 5 (2): 79-83.
- Naik S., Lal H., Gupta B. & Verma p. (2018):** Dual Technique Percutaneous Nephrostomy: Experience from a Tertiary Care Centre. *MSCR*; Vol 6 (2), Pp. 1176 84.
- Oyira E., Ella R., Usochukwu E & Akpan P. (2016):** Knowledge Practice and Outcome of Quality Nursing Care Among Nurses in University of Calabar Teaching Hospital (UCTH). *Journal of Education and Training Studies*; Vol. 4(11): Pp. 179-93.

- Ramchandani P., Cardella J., Grassi J., Roberts C., Sacks D., Schwartzberg M, and Lewis A (2001):** Quality improvement guidelines for percutaneous nephrostomy. *Journal of Vascular Interventional Radiology*; Vol 12: Pp.1247- 51.
- Sun B, Min H & Son Y (2020):** Acute kidney injury in obstructive uropathy epidemiology, renal outcome, and mortality. *NDT*; Vol 35(3): Pp. 567.
- Young M. & Leslie S. (2022):** Percutaneous Nephrostomy. *Stat Pearls Publishing*; available at: <https://www.ncbi.nlm.nih.gov/books/NBK493205/>