Impact of Coaching Intervention Program on Nurses' Performance Regarding Caring for Patients Undergoing Percutaneous Nephrostomy Tube

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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 and a lack of evidence and guidance. One of the most effective ways to support nurses' personal and professional development is coaching. Aim: To evaluate the impact of coaching intervention program on nurses' performance regarding caring for patients undergoing percutaneous nephrostomy tube. **Method:** A quasi-experimental design was used to conduct this study (pre/post-test) to achieve the aim of the study. **Setting:** The research was carried out in the urology department at Sohag University Hospital. **Sample:** A convenient sample of all available nurses **(50)** worked at the previously mentioned setting. **Tools of data collection:** Three tools were used; **Tool (I):** Structured interviewing questionnaire consisted of two parts: **Part (1):** Personal data of the nurses. **Part (2):** Nurses' knowledge questionnaire, **Tool (II):** Nurses' observational checklist and **Tool (III):** Coaching Practice Rating Scale, used by the nurses as a self-evaluation instrument to reveal the degree to which their coaching practices. **Results:** The majority of the nurses in the study had higher levels of practice and knowledge after the coaching intervention program than they did before, according to the study's findings. Furthermore, a statistically significant correlation was seen between the total ratings for the knowledge and practice of nurses. **Conclusion**: The coaching intervention program enhanced the coaching abilities and performance of nurses in the area of patient care for those undergoing percutaneous nephrostomy tubes. **Recommendations**: To improve their abilities as coaches and caregivers of patients having percutaneous nephrostomy tube placement, nurses should consistently implement the coaching intervention program.

Keywords: Coaching intervention program, Patients undergoing percutaneous nephrostomy tube & Nurses' performance.

Introduction:

As part of a common medical procedure known as a percutaneous nephrostomy tube, a short, flexible rubber tube or catheter is placed through the skin into the kidney to drain the urine while using imaging as radiological guidance using fluoroscopy, ultrasound, or computerized tomography (CT) guidance while under local anesthesia or sedation. This technique helps the urinary system function routinely. This approach is the greatest option for those who do not want to have surgery or who are at high risk because it also has fewer negative effects than surgery. As a result, the rising demand for PCN therapies will support the market for Percutaneous Nephrostomy Catheters throughout the forecast period (**Karim**, **2020**).

Nephrostomy drainage tubes come in two varieties: pigtails (located in radiology) or coils (stored in the renal pelvis and acting as a retention mechanism). Cook Mac-loc and Boston Medical are the two brands of pigtail

catheters available. The only difference is in the method for unlocking and removing the catheter. **Azer et al. (2020**) state that the second type of catheter is Wide Bore catheters, which are used in operating rooms and include Malecot or Foley.

When performed by a trained professional, PCN is a safe and efficient minimally invasive technique. PCN is usually recommended for the decompression of urinary obstruction in 85–90% of nephrostomy placements. Nephrolithiasis, pelvicalyceal cancer, retroperitoneal fibrosis, and several urogenital and soft tissue cancers may be the cause of this illness. Certain diagnostic methods, such ureteral perfusion studies and antegrade pyelography, also require nephrostomies (**Buachuen, 2022).**

In summary, complications from the minimally invasive procedure known as percutaneous nephrostomy might arise and affect patients at a rate ranging from 2% to 10%. In 2020, Sun et al. The most common side effect of percutaneous nephrostomy is hematuria, which almost all patients experience temporarily. However, only 1-3 percent of these patients require transfusions or surgery. Pain is another common consequence that can be treated with intravenous or oral analgesics. Sepsis and severe bacteremia can also result after PCN implantation in pyonephrotic kidneys. Urine overflow, catheter dislodgement, and crystallization that prevent nephrostomy tube removal are other documented complications. Pneumothorax and colonic injuries are uncommon but recognized risks that might occur, particularly in supra-coastal punctures (**Naik, et al, 2020).**

Nurses play a critical role in the pre- and post-operative care of patients undergoing percutaneous nephrostomy tube installation, helping to lower complications and raise the success rate of interventions. In addition to being advised to cease taking anticoagulants and other medications, patients have frequently been given preventative antibiotics before percutaneous nephrostomies. Pre-operative management also includes patient preparation before the procedure, and all investigative procedures are included in this (**Dyer & Regan,** 2020 **& Echenique, et al., 2020).**

On the other hand, post-procedure nursing care entails tending to wounds, monitoring dressing and tube drainage closely, and providing analgesics as prescribed. The drainage bag must constantly be kept below the level of the kidneys, and the patient must also remain bedridden for four hours. Furthermore, after the procedure, vital signs should be checked every half hour for the first two hours, every hour for the next two, and every four hours for the next twenty-four hours. Measure the urine output every four hours for four days, then every four hours for twenty-four days, and finally every eight hours until the production is stable. Examine the urine for sedimentation and color (**Martin & Baker 2020& Aaron, et al., 2020**).

One of the requirements for a patient to gain more knowledge, practice, motivation, and awareness of the significance of co-responsibility to make decisions about medical treatment and improve the patient's outcomes is educational guidelines that are comprehensive, tailored to the patient's level of understanding, delivered at the appropriate time, and easily understood. Increased education is a causative factor in reducing the incidence of coronary heart disease. Increasing education is probably going to improve health in line with the findings from other study designs (**Longo et al 2020).**

Knowledge and technical advancements present additional challenges for nurses caring for these patients. The benefits include increasing knowledge and experience, enhancing self-care, reducing anxiety, increasing patient satisfaction with treatment, enhancing pain management, and causing the least amount of disruption to regular activities. Finally, policies and initiatives aimed at educating patients bring them closer to the healthcare practitioner and increase their level of satisfaction with their treatment (**Tangiisuran et al., 2020).**

Insufficient training and expertise could lead to unexpected deaths from surgical complications. Rapidly identifying signs and challenges puts nurses in a great position to take

critical action and improve results (**Gorka et al., 2020**). Nurses typically care for patients before, during, and following any type of therapy, including percutaneous nephrostomy tubes, and they are responsible for a variety of jobs and duties related to the care of these patients. In every situation, the nurse plays a specific role as a member of the surgical health care team. If there is little or restricted preoperative training and preparation, more surgical support will be needed to address any underlying medical conditions that are expected to surface (**Vera**, **2020**).

This approach supports people who wish to reach their full potential, develop their knowledge and skills, and define goals and strategies for achieving them (**European Federation of Nurses Association, 2020**). By taking part in coaching, nurses can enhance their knowledge base and progress in learning new competencies. The supportive and encouraging environment in which students gain skills and knowledge is made possible by coaches. Nurses can use it to grow in their professions and get greater enjoyment out of their employment. Strategies for keeping senior nurses, providing opportunities for junior nurses, and providing all nurses with support and helpful assistance are still being investigated by organizations (**Elnagar et al., 2020**).

This approach provides assistance to people who wish to reach their greatest potential, establish objectives and strategies for achieving them, and develop their skills and knowledge (**European Federation of Nurses Association, 2020**). Engaging in coaching can help nurses enhance their learning of new skills and reinforce their current knowledge. Support and encouragement permeate the environment in which students gain skills and knowledge because of their coaches. It's something that nurses may use to grow in their professions and get more satisfaction from their work. Companies are still investigating ways to keep senior nurses on staff, provide chances for junior nurses, and provide helpful assistance to all nurses (**Elnagar et al., 2020**).

Significant of the study:

In addition to providing the best care possible, nurses in urology units also have a difficult task: guiding patients through a complex body of knowledge and procedures. The opportunity to consciously plan nurses' professional growth according to their own and their families' needs and expectations is provided by coaching (**Lee & Oh, 2020**).

According to **Aaron et al**. (**2020**), the primary reasons expected to fuel the expansion of the global market for percutaneous nephrostomy tubes are the increased frequency and prevalence of chronic kidney illnesses, as well as the rise in rates of urinary tract infections and stones. A minimally invasive method of draining the renal collecting system is the installation of a percutaneous nephrostomy tube. However, to maximize the benefits of this intervention, the patient requiring this tube requires specialized nursing care, so nurses must be knowledgeable about how to care for and manage patients with nephrectomies (**Mostafa & Abbaszadeh, 2020**). However, there is a dearth of knowledge and guidance in the nursing field, which is why this study aimed to evaluate the impact of coaching intervention program on nurses' performance regarding caring for patients undergoing percutaneous nephrostomy tube.

Operational definition:
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 evaluate the impact of coaching intervention program on nurses' performance regarding caring for patients undergoing percutaneous nephrostomy tube. This aim was achieved through:

• Assessing nurses' knowledge regarding the care of patients undergoing percutaneous nephrostomy tubes.

• Assessing nurses' practice regarding the care of patients undergoing percutaneous nephrostomy tube.

Research hypotheses

H1. After participating in coaching intervention program sessions, nurses will exhibit higher scores regarding knowledge about percutaneous nephrostomy tube post-coaching intervention program than pre-coaching intervention program.

H2. After participating in coaching intervention program sessions, nurses will exhibit higher scores regarding the practice of percutaneous nephrostomy tube post-coaching intervention program than pre-coaching intervention program.

Subject & Methods

Research design:

A quasi-experimental design was used to conduct this study (pre/post-test) to achieve the aim of the study.

Setting:

The research was carried out in the urology department at Sohag University Hospital.

Sample:

A convenient sample of all available nurses **(50)** worked at the previously mentioned setting**.**

Tools of data collection:

Tools of data collection: Three tools were used;

Tool (I): Structured interviewing questionnaire: Structured interview questionnaire adopted from **(Abdelfattah, et al.,** *2020***; Jihad & Reda, 2020***)* and modified by the researcher after reviewing the relevant literature. It consisted of two parts:

Part (1): Personal data of the nurses: It was concerned with studied nurses' characteristics data which includes 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., 2020, Jihad & Reda, 2020; Karim, 2020; Dyer & Regan, 2020)*, to assess nurses' knowledge regarding percutaneous nephrostomy tube pre- and post-coaching intervention program 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:

- Nurses' answers scored on two parts: Part 1: Multiple choice questions (correct = one, incorrect =0). Part 2: Right and wrong questions (right =one, wrong =0).The total score is categorized as satisfactory for a total grade of equal or more than 75% and unsatisfactory for a total grade of less than 75% (**Eldosoky, 2004 & Kasem, 2016***)*

Tool (II): 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- coaching intervention program 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 considered inadequate and adequate if equal or less than 75 %.

Tool (III): Coaching practices rating scale, employed by the nurses as a self-evaluation instrument to demonstrate the degree to which their coaching methods. Nurses can assess how closely their coaching practices align with the coaching characteristics by using the coaching practices rating scale as a self-evaluation tool. **Rush and Shelden's (2006**) work is adapted here. Identifying desirable skills and a timeframe for the coaching process with the learner, working with them to develop an action/motor plan to achieve the desired ability after each coaching session, and acknowledging the learner's current knowledge and skills as a foundation for improving that knowledge and skills are just a few of the 14 statements on the scale.

The researcher employed the following grading system: None of the Time (1), some of the Time (2), About Half of the Time (3), Most of the Time (4), and Always (5) are the options for not having a measurement opportunity. Five. The overall score ranged from 14 to 70, and the categories were the degree of competence (more than 65%) and the level of ineptitude (less than 40%).

Procedure

Fieldwork:

Six months passed between April 1, 2023, and September 30, 2023, during which time the data for this study was gathered. Three stages make up the study's execution:

A-Preparatory phase:

To create the data collection instruments and the coaching intervention program, the researchers reviewed and analyzed both current and historical resources that could be found online and in textbooks, articles, journals, and other print media. The booklet was created in Arabic and printed by the sample size. It was then distributed as part of the coaching intervention program.

Tools validity and reliability:

Tools **Validity:**

Five professional experts assessed the validity of the data collection tool for its clarity, thoroughness, and applicability (two experts from the Faculty of Medicine, Sohag University, and three experts from the medical-surgical nursing department). No modifications were made in response to their evaluations.

Tools Reliability:

- The internal consistency of tools is assessed using the Cronbach's alpha coefficient. The values for the nurses' knowledge questionnaire (0.954), coaching practice scale (0.798), and nurses' observational checklist (0.952) were the values for practice.

Pilot study*:*

To evaluate each tool's applicability, clarity, and timeliness, a pilot research involving four nurses—representing 10% of the nurses from the chosen units—was conducted using the previously indicated instrument. Among the study participants were the nurses involved in the pilot study.

Ethical consideration:

Written initial approval was given by the faculty dean and the research ethics committee of the nursing faculty. A letter from the dean of Sohag University's faculty of nursing gave official permission to conduct this study. The aforementioned setting's directors gave their written approval after describing the goal of the study. The nurses granted their consent and were briefly informed of the study's objectives before the researchers started. The participants were also told that participation in the study was entirely optional, that they could decline, that they could leave the study at any time, without having to provide a reason, and that the study would protect their identity and confidentiality.

Secondly, in the coaching program application:

First, the researchers used Tool I Part 1 to gather personal data from the participants. Next, they used Tool I Part 2 to assess the participants' baseline knowledge of percutaneous nephrostomy tubes and Tool II to assess the participants' practices for caring for

these tubes. The researcher used (tool III) to evaluate the coaching approaches used by each nurse while she saw her providing care to patients before, during, and after percutaneous nephrostomy tubes.

To determine how well nurses performed following the coaching intervention program for percutaneous nephrostomy tubes, the collected data was used as a pretest. Said instructions were provided to the researchers in addition to written materials that included images as an explanatory reference for nurses to better understand. In addition to subjecting the presentation to content testing, the researchers produced this illustrative handout based on a review of the literature, results, recommendations from earlier research, and the opinions of healthcare professionals (**Almeida et al., 2022**). The participating nurses were divided into eight groups, with five nurses in each group. There were four scheduled teaching sessions for each group, with the first two addressing theoretical material and the last two sessions covering practice) in four consecutive visits; each session lasted fifteen minutes using the instructional handout.

1. At this stage, scientists utilize the GROW modeling technique (Whitmore, 2002). The most widely used coaching strategy model is called GROW (Goal, Reality, Options, Will). Identifying the problem's origin, developing a workable solution, and implementing it are all steps in the cooperative problem-solving process that the GROW model uses. This model is thought to be a simple, useful approach that concentrates on the actions of coaches as they help clients accomplish their goals and find solutions to problems while providing coaching. Four phases exist:

2. G for Goal: The goal should be as specific as possible since it expresses the objectives the nurses have for themselves.

3. R for Reality nurses now explain the current state of affairs and the extent to which they have fallen short of their goals.

4. What obstacles (O for barriers) prevent nurses from achieving the goal? The helper can find answers and workarounds for these issues once they are identified.

5. W for the will to proceed: To finish the work, nurses must implement the options they have selected.

6. Every nurse in the intervention group took part in the eight coaching sessions that made up the coaching program. These consultations can take place one-on-one or over the phone.

The topic of the first coaching session was something the nurses were either unfamiliar with or couldn't understand. Before beginning instruction on a particular topic in the care of patients receiving a percutaneous nephrostomy tube, the researchers determined and verified the specific objectives that each subject in phase G (goal setting) wanted to accomplish. These included defining, justifying, investigating, complications, and precautions of percutaneous nephrostomy tubes, patient preparation, nursing management of a patient undergoing a percutaneous nephrostomy tube, nurses' knowledge of percutaneous nephrostomy tubes, nurses' knowledge of patient care (health education), identify coaching in nursing, etc.

The barriers and difficulties in implementing the theme of "care intervention recommendations for patients with percutaneous nephrostomy tube" at the R (Reality) stage were identified by the researchers using framing questions. Based on the needs of the participants and the most recent guidelines for the treatment of patients with percutaneous nephrostomy tubes in the O (options) stage, the researchers created coaching sessions that drive education by going over what to know and do about each program item. In the final stage of W (will), the researchers verified the information and encouraged participants to perform coaching in the workplace with confidence.

During the coaching process, the coach does not provide any pre-made solutions. The coach helps the participant every step of the way by listening intently to what they have to say and by asking open-ended questions that will enable the participant to figure out the best course of action given their resources to achieve the intended result. During the coaching sessions, the participants were given opportunities to ask questions, become more aware of their surroundings, and engage in activities that broadened their perspective.

The researchers provide training sessions

to assist nurses in expanding their knowledge and skill set. Pre- and post-percutaneous nephrostomy tube care procedures, nursing care for patients with percutaneous nephrostomy tubes, indications, problems, patient health education, and information about percutaneous nephrostomy tubes made up the majority of the training's content. There are also accessible coaching methodology sessions. The coaching sessions are conducted in a variety of forms, including in-person encounters. Nurses' values, resources, and patient care management were among the topics covered in the coaching sessions. One example of a coaching topic was how to treat patients receiving percutaneous nephrostomy tubes while focusing on professional development.

Contents of sessions
Session 1:

The learning objectives were presented by the researchers after they had covered the themes of the session. The researchers conducted the session in Arabic, which the nurses could understand. The researchers explained the urinary system's architecture and physiology. The pre-test was used by the researchers to gauge the nurses' proficiency with and understanding of percutaneous nephrostomy tubes.

Session 2:

It provided definitions and an overview of the percutaneous nephrostomy tube, among other information regarding the device. To carry out this session, images, videos, posters, and PowerPoint presentations were used.

Third Session (practical part):

Nurses were taught specific practical skills during this phase, including hand cleaning, monitoring vital signs (blood pressure, temperature, pulse, and respiration), and providing immediate postoperative nursing care for PCN patients. Throughout this phase, nurses who were participating in the study were trained through educational videos about percutaneous nephrostomy tubes, demonstration, and re-demonstration techniques.

Session 4 (practical part):

During the final session, the study nurses received additional practical training on managing pain, changing the urine bag and any problems, wound care, irrigation, and removal of a percutaneous nephrostomy tube, and

instructions before and after discharge. Throughout this phase, the researchers trained participating nurses using educational videos about percutaneous nephrostomy tubes, demonstration, and re-demonstration procedures.

The final phase, program evaluation (post coaching):

The researchers started the study aimed to evaluate the impact of the coaching intervention program on nurses' performance regarding caring for patients undergoing percutaneous nephrostomy tube after each session of the coaching program. Use continuous feedback to obtain invaluable insights. During a coaching session, nurses provided assistance for work habits and provided a worksheet and/or action item. Throughout all of the surveys they complete, the nurses use the same pre-test tools.

Statistical analysis:

Data entry and statistical analysis were performed using SPSS for Windows, version 20. Descriptive statistics were employed to display the data. Means and standard deviations were utilized for quantitative data, whereas frequencies and percentages were used for qualitative variables. The association between two variables was evaluated using the chi-square test. Statistical significance was defined as a P-value of less than 0.05.

Results:

Table 1 shows that 42% of the nurses in the study were in their 20s and 30s, and 66% of the nurses were female. Approximately 36% of the nurses who took part in the survey had attended a nursing technical institute, according to the findings of their educational background. Additionally, as the same chart demonstrates, 42% of the nurses who participated in the study said they had five to ten years of experience or less.

As shown in Figure (1), 82% of the nurses in the study stated they had not attended any percutaneous nephrostomy tube training sessions.

According to **Table (2)**, most of them possessed a sufficient level of understanding of percutaneous nephrostomy tubes, covering all of its sub-items. Significant variations were

observed in the pre-and post-knowledge scores (p<0.001) between the coaching intervention program before and after.

Table (3): Presents the evidence of a substantial difference in nurses' knowledge of nursing coaching following the coaching intervention program; knowledge scores were considerably lower before the program than following it (p= <.001).

Table 4: Shows that there was a noteworthy variation in the pre- and post-coaching intervention program practices of nurses concerning percutaneous nephrostomy tubes.

Figure (2): Shows the nurses' overall degree of knowledge of the pre- and post-coaching intervention program implementation of percutaneous nephrostomy tubes. According to the study, 20% of the nurses participated in the pre-coaching intervention program implementation phase and had a satisfactory overall level of knowledge regarding percutaneous nephrostomy tubes. This knowledge improved after the program was implemented and increased to 90% of the nurses with highly statistically significant differences after the program's implementation.

Figure 3 shows the pre- and post-coaching intervention program nurses' overall practice level using percutaneous nephrostomy tubes. Following the coaching intervention program, 94% of the research nurses exhibited a sufficient practice level, compared to only 30% before the program's implementation.

Figure 4 shows the pre- and post-coaching intervention program nurses' overall practice level using percutaneous nephrostomy tubes. Following the coaching intervention program, 88% of the research nurses exhibited competent practice levels, compared to only 18% before the program's implementation.

Table (5) presents findings indicating a moderate positive correlation (r = 0.627, P value 0.0001) between knowledge and practice scores before the coaching intervention program, and a fair positive correlation (r = 0.245, P value < 0.0001) between the knowledge and practice scores of the studied sample. Furthermore, r= 0.372, P value 0.001, and r= 0.373, P value < 0.002, respectively, showed a substantial correlation between the investigated sample's knowledge before the coaching intervention program and their knowledge and practice scores following the program.

Table (6): Showed that there was a highly statistically significant correlation between the knowledge and educational level of the studied nurses. Additionally, there was a correlation between nurses' residence and practice at (P value <0 .001).

Table (1): Personal data among the studied nurses (n=50)

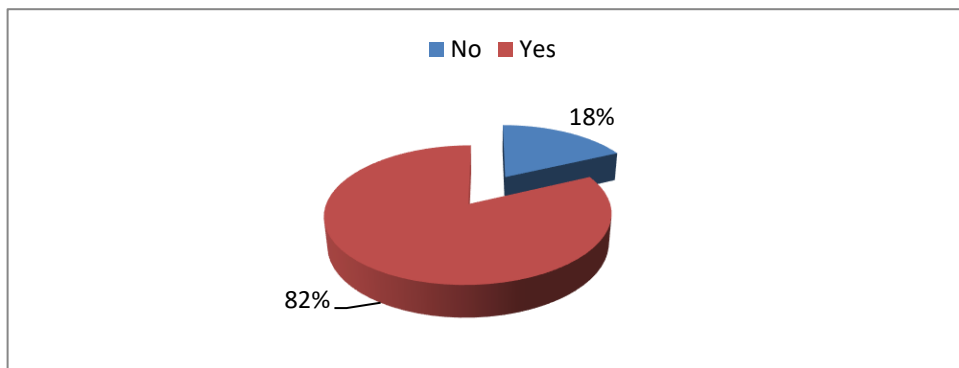| Personal data	N	%
Age 20 > 30 30 > 40 40 > 50 ≥50	20 21 6 3	40.0 42.0 12.0 6.0
Sex: Male Female	17 33	34.0 66.0
Level of education		
Nursing diploma	13	26.0
Nursing technical institute	18	36.0
Health technical institute	7	14.0
Bachelor of Nursing	12	24.0
Years of Experience		
1 <5	15	30.0
5 <10	21	42.0
≥10	14	28.0

Figure (1): Attending training courses among the studied nurses regarding percutaneous nephrostomy tube

Table (2): Nurses' knowledge scores regarding percutaneous nephrostomy tube **pre and post-coaching intervention program (n=50).**

Nurses' knowledge	Pre-coaching intervention program				Post-coaching intervention program				P – value
	Unsatisfactory (<75%)		Satisfactory (≥75%)		Unsatisfactory (<75%)		Satisfactory (≥75%)		
	No.	%	No.	%	No.	%	No.	%	
Anatomy and physiology of the urinary tract	20	40.0	30	60.0	5	10.0	45	90.0	.001*
General knowledge about percutaneous nephrostomy tubes	29	58.0	21	42.0	6	12.0	44	88.0	.001*
Knowledge about post-operative nursing care for percutaneous nephrostomy patients	18	36.0	37	64.0	4	8.0	46	92.0	.001*

Chi-square test was used; highly significant at < .001;

Table (3): nurses' knowledge score percentage distribution regarding nursing coaching pre and post-coaching intervention **program (n=50).**
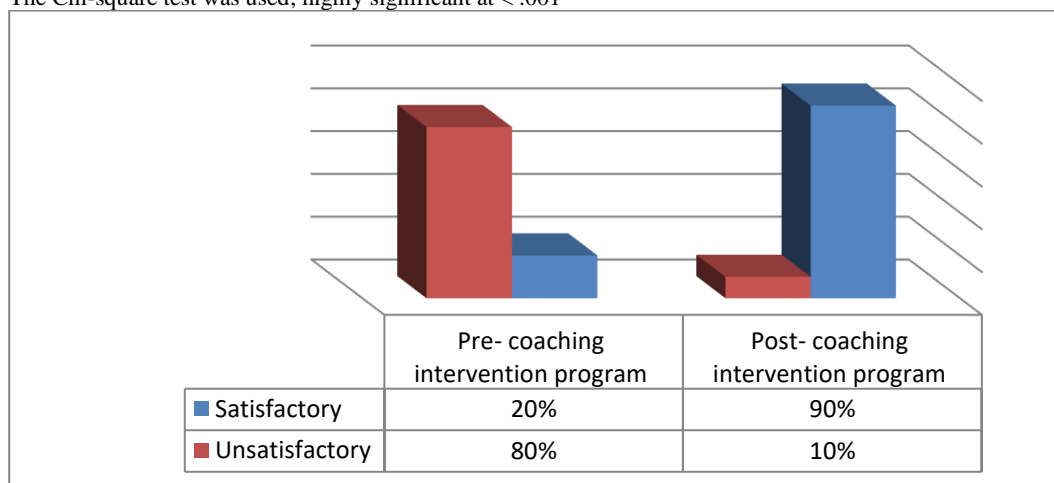
Nurses' knowledge regarding nursing coaching	Pre-coaching program				Post-coaching program				P – value
	Unsatisfactory (<75%)		Satisfactory (≥75%)		Unsatisfactory (<75%)		Satisfactory (≥75%)		
	No.	%	No.	%	No.	%	No.	%	
Coaching definition	40	80.0	10	20.0	3	6.0	47	94.0	.000*
Nursing coaching	35	70.0	15	30.0	4	8.0	46	92.0	.000*
Coaching Steps	34	68.0	16	32.0	5	10.0	45	90.0	.000*
Effective coaching in nursing practice	32	64.0	13	26.0	4	8.0	46	92.0	.000*
Coaching Benefit	36	72.0	14	28.0	0	0.0	50	100.0	.000*

The Chi-square test was used; highly significant at < .001

Table (4): Compassion between the nurses' practice scores regarding care for patients undergoing percutaneous nephrostomy tube **pre-post coaching intervention program (n=50).**

Nurses' knowledge regarding nursing coaching	Pre-coaching program				Post-coaching program				P – value
	Incompetent (<75%)		Competent (≥75%)		Incompetent (<75%)		Competent (≥75%)		
	No.	%	No.	%	No.	%	No.	%	
Immediate postoperative nursing care of (PCN) patient	33	66.0	17	34.0	5	10.0	45	90.0	.000*
Performing hand washing	35	70.0	15	30.0	4	8.0	46	92.0	.000*
Assessing and monitoring vital signs	31	62.0	19	38.0	3	6.0	47	94.0	.000*
Wound care and irrigation of (PCN)	34	68.0	26	32.0	6	12.0	44	88.0	.000*
Instructions before discharge	30	60.0	20	40.0	4	8.0	46	92.0	.000*
Removal of (PCN)	32	64.0	18	36.0	3	6.0	47	94.0	.000*

The Chi-square test was used; highly significant at < .001

	Pre- coaching intervention program	Post- coaching intervention program
■ Satisfactory	20%	90%
■ Unsatisfactory	80%	10%

Figure (2): Total level of practice regarding percutaneous nephrostomy tube among the studied nurses pre and post-coaching intervention program (n=50).

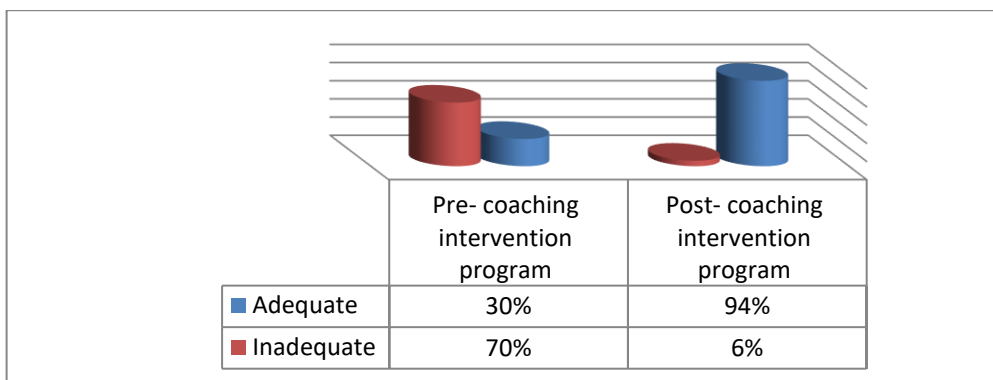|	Pre- coaching intervention program	Post- coaching intervention program
■ Adequate	30%	94%
■ Inadequate	70%	6%

Figure (3): Total level of knowledge regarding percutaneous nephrostomy tube among the studied nurses pre and post-coaching intervention program (n=50).
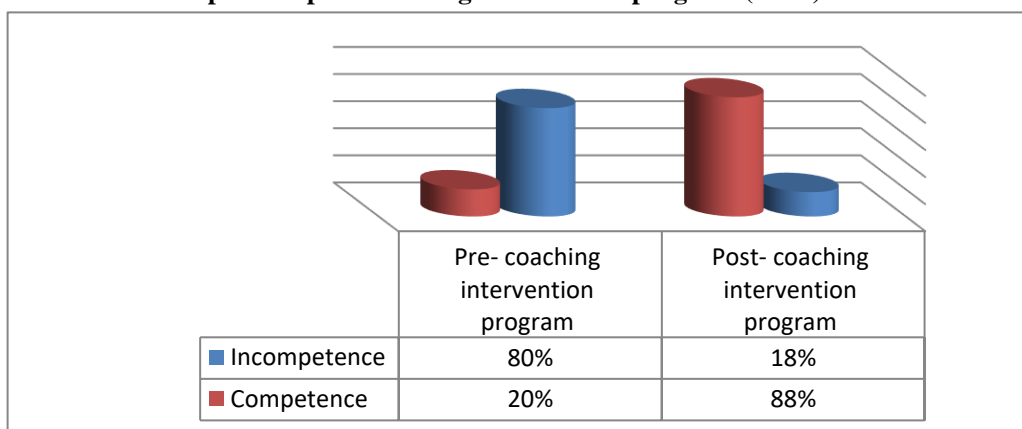

	Pre- coaching intervention program	Post- coaching intervention program
■ Incompetence	80%	18%
■ Competence	20%	88%

Figure (4) Nurses' total level of coaching practices using the Coaching practices rating scale as a self-evaluation instrument

Table (5): Correlations between total nurses' knowledge and practice, regarding the care of patients undergoing percutaneous nephrostomy tube pre-post coaching intervention program

			Pre-coaching intervention program		Post-coaching intervention program	
			Knowledge	Practice	Knowledge	Practice
Pre-program	Knowledge	R	1			
		P-value				
	Practice	R	0.254	1		
		P value	0.026*			
Post-program	Knowledge	R	0.372	0.219	1	
		P value	0.001**	0.072		
	Practice	R	0.373	0.122	0.093	0.053-
		P - value	0.002**	0.318	0.448	0.677

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

Table (6): Correlation between nurses' total knowledge, practice, and their personal characteristics among

Demographic characteristics		Knowledge	Practice
Age	R	-.167-	-.107-
	P – value	.342	.442
Educational level	R	**-.556**	.025
	P – value	**.001****	.876
Years of experience	R	.068	**-.352**
	P – value	.619	**.017***
Residence	R	.048	**-.501**
	P – value	.745	**.001****

**. Correlation is significant at the 0.01 level

Discussion

Nursing coaching is defined as a cooperative relationship that aims to improve the nurses' skills and understanding of the performance requirements for the role of the nursing supervisor and the nurses (**Batson & Yoder, 2020**). It is believed to be an essential quality that healthcare organizations should foster in nurse administrators in order to progress the nursing staff and attain a high level of dedication (**Pousa, 2020; Steelman & Wolfeld., 2020**).

The nephrostomy tube offers an alternate means of accessing the kidney in circumstances where a retrograde stent is not an option. Nurses must be informed about wound care, fluid management, infection control, and tube and bag management to provide long-term nephrostomy care and maintenance. A plan for replacing or removing tubes regularly, as well as knowing who to contact in case of emergencies, are other things that nurses must make sure patients have access to. These nurses are therefore required to engage in a course on the management of patients who have percutaneous nephrostomies (**Martin & Baker, 2020**).

Clinical coaching can help nurses in many different situations. It makes it easier for the nurse to provide comments, set objectives, and monitor their advancement (**Kabeel**, **2020**). The organization and the professional development of nurses both depend on the coaching practice in the nursing field (**Bleich, 2020**). Therefore this study was done toevaluate the impact of coaching intervention program on nurses' performance regarding caring for patients undergoing percutaneous nephrostomy tube.

The purpose of this study was to evaluate how well nurses performed concerning the percutaneous nephrostomy tube after implementing the coaching intervention program. Following the implementation of the coaching intervention program, the results of the current study showed a significant improvement in the knowledge and practices of the nurses, hence increasing nursing performance. The established hypothesis was realized as a result of these results, which also supported the applied coaching intervention program's importance.

Based on the personal data provided by the study nurses, less than half of them were in the age range of 20 to 30. According to (**Abdelfattah, et al., 2020**), the majority of the nurses under study were between the ages of 20 and less than 30. This conclusion is consistent with their findings. Furthermore, this result aligns with the findings of a study conducted by **Jihad & Reda (2020)**, which revealed that the age range of the study participants was between 23 and 27 years old. In terms of gender and educational attainment, female nurses made up almost three-quarters of the study participants, and a significant proportion of them held degrees from nursing technical institutes. The current outcome differs from the research (**Abdelfattah, et al., 2020**) who claimed that the highest proportion of the study nurses were females and had diploma degrees in nursing.

About years of experience, over two-fifths of the nurses included had worked for less than ten years. According to the researchers, this result might have been influenced by the

fact that the majority of the study's staff nurses were new graduates and young. The majority of nurses had five to ten years of experience, according to a paper examined by **Abdulfathah et al. (2020).** This finding is consistent with that finding. This might be a result of the fact that junior nurses made up the bulk of the study participants.

A training workshop was attended by respecting nurses, but most of the nurses who signed up for the trial did not. Attending an in-service educational program, according to researchers, always refreshes nurses' knowledge, enhances staff abilities, and gives them the capacity to act rationally in an emergency. According to **Finkelman & Kenner** (**2020**), professional education and training had an impact on nurses' knowledge, which is consistent with this viewpoint. The results of the current study, which indicated that very few nurses took part in urology-related in-service training, are consistent with the findings **(Jihad & Reda, 2020).**

The results of the study demonstrated that the nurses' knowledge levels were higher in the post-coaching intervention program. With notable differences in post-knowledge scores between pre and post-coaching intervention program interventions, the results show that most of them had sufficient levels of knowledge regarding percutaneous nephrostomy tubes. This result could be explained by the coaching intervention program's assistance to nurses in maintaining and enhancing their understanding of percutaneous nephrostomy tubes. A number of factors, including the fact that most of the nurses who joined the study had never taken part in a training program before, the lack of courses on the percutaneous nephrostomy tube in their nursing curricula, and the lack of an Arabic source for knowledge updates, could be responsible for this result, according to researchers. Once the coaching intervention program was put into place, though, this percentage increased and the majority of the nurses became more focused and knowledgeable about percutaneous nephrostomy.

Researchers view this as evidence of the positive impact that coaching intervention program application has on increasing nurses' knowledge and improving their understanding of percutaneous nephrostomy tube management. Only program attendance is an independent predictor that positively affects the practice score, much like knowledge does. This finding aligns well with that of **Jihad & Reda** (**2020**), who found that during the pre-test stage of the coaching intervention program's implementation, nurses' knowledge of nursing management of patients with percutaneous nephrostomy tubes was low, but that their knowledge had improved to a high level by the time of the post-test. Moreover, the results he obtained are in line with the study conducted by (**Abdelfattah, et al., 2020**) that mentioned that half of the participating nurses had 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 coaching intervention program.

The present study's findings demonstrated a noteworthy distinction in nurses' comprehension of nursing coaching following a coaching intervention program; knowledge scores were considerably lower before the program than following it. It supported the coaching intervention program's efficacy in the researcher's opinion.

The current study's results showed that, only one-fifth of the nurses in the study had a satisfactory overall level of knowledge about percutaneous nephrostomy tubes during the pre-implementation phase of the coaching intervention program. This knowledge improved after the program's implementation, with highly statistically significant differences observed after the program's implementation. From the perspective of the researcher, this can be the result of their lack of knowledge regarding the management of patients undergoing percutaneous nephrostomy tubes. Not only do they have too much work, but they also need to refresh their knowledge of important health issues and lack enthusiasm to learn more. Another aspect that could be contributing to nurses' ignorance is the lack of continuous supervision, evaluation, and collaboration amongst varied members of the healthcare team.

The current study's results indicate that there was a substantial difference in the way nurses practiced percutaneous nephrostomy tubes before and after participating in a coaching intervention program. From the perspective of the researchers, it demonstrated the beneficial outcomes of the coaching intervention program. The lack of a coaching program provided by the nurses' company to support their role as coaches and meet the expectations they are coaching serves as evidence for this finding. These findings aligned with those of **Eid & Abou Ramadan (2020)**, who examined the effect of a coaching education program on nurses' self-efficacy and found that, before the program, all nurses possessed low levels of general and cross-cutting coaching expertise.

This result could be explained by the fact that nurses were able to successfully learn about new nursing techniques as a result of the coaching program's assistance in helping them understand the principles of nursing coaching. The desire of nurses to learn about coaching in a clinical context was also higher. This result was in line with (**Elnagar et al., 2020**), who stated that after the training, all of the nurses who were assessed had increased their coaching knowledge. Furthermore, (**Abdalla et al., 2022**) found that more than two-thirds of the research participants had adequate levels of coaching expertise following the program's implementation.

The total practice level of the nurses concerning percutaneous nephrostomy tubes before and after the coaching intervention program was disclosed by the study's findings. Prior to receiving the coaching intervention program, the majority of the study nurses had inadequate practice levels; however, this percentage rose to fewer than one-third after the program. According to the researchers, this demonstrated both the efficacy of the coaching intervention program and the fact that it was an effective strategy for improving nurses' percutaneous nephrostomy tube practices. According to (**Jihad & Reda, 2020**), most of the nurses who took part in the study did not feel that they were managing patients with percutaneous nephrostomy tubes to the satisfaction of their standards 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.

Pre- and post-coaching intervention program nurses' overall practice level with percutaneous nephrostomy tubes was demonstrated by the study's findings. After receiving the coaching intervention program, the percentage of study nurses who possessed a competent practice level improved to the majority from less than one-fifth before. This could be the case due to the fact that nurses' practices are immediately impacted by their knowledge, which is also the basis for practice and required to achieve ideal practices (**Ammentorp & Kofoed., 2020**) who "Examined the impact of coach training on the self-efficacy of neonatal nurses", a finding supports this study. In their pilot research, they discovered that coaching is a procedure that fosters individual development and equips students with knowledge and practice to help them realize their full potential. The continuous feedback offered for each measurement in this coaching program, they continued, may have aided in the confidence-building and skill-acquisition of nurses.

This finding might be related to the coaching technique's usefulness as a tool for staff development, helping nurses advance both professionally and as individuals. The majority of the nurses in the study performed well following program intervention, according to **Mohamed & Elsisi's (2020)** findings, which were consistent with this one.

Based on the research findings, the study's conclusions demonstrated that, before the coaching intervention program, there was a moderately positive correlation between knowledge and practice scores regarding percutaneous nephrostomy tubes and a fair positive correlation between the studied sample's knowledge scores and their practice scores. Furthermore, a strong association was found between the tested sample's knowledge before the coaching intervention program and their knowledge and practice scores following the program. This demonstrated the positive effects of the coaching intervention program. The fact that thorough knowledge forms the

basis of appropriate practice may have contributed to this discovery, and it also served to underline the need to strengthen 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 it can help them to practice well, which is reflected in their patient care.

Oyira et al., (**2020**) provided additional clarification, pointing out that nurses at the University of Calabar Teaching Hospital are significantly impacted by their level of education when it comes to providing high-quality nursing care. According to research by this finding, nurses' knowledge and practice levels exhibited a positive correlation with the adoption of instructional guidelines related to the management of patients with percutaneous nephrostomy tubes (**Abdelfattah et al., 2020**).

Conclusion:

Based on the results of the study, it can be said that the coaching intervention program enhanced the coaching skills of nurses and their performance in terms of patient care for patients receiving percutaneous nephrostomy tubes. The total knowledge and total practice scores of the study's participating nurses showed a highly statistically significant favorable correlation before and after they were given the educational guidelines about the percutaneous nephrostomy tube.

Recommendations:

The results of this study suggest that the following actions be taken into account: -

- Nurses should continuously implement the coaching intervention program to help them improve as coaches and performers when providing care for patients undergoing percutaneous nephrostomy tubes.

- Nurses need to be aware of the pre-discharge instructions for patients undergoing percutaneous nephrostomy tubes and should communicate these to them.

- To generalize the findings, the current study must be repeated with a broader sample of nurses in other situations.

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