

Effect of Nursing Instructions on Quality of Recovery for Patients undergoing Ureteroscopy

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Abstract

Background: Ureteroscopy is an important diagnostic and therapeutic procedure. Nursing education is an essential part in reducing postoperative complications and improve recovery following ureteroscopy. **Aim:** Evaluate the effect of nursing instructions on quality of recovery for patients undergoing ureteroscopy. **Methods:** A quasi-experimental design was used for a sample of 120 male and female adult patients underwent ureteroscopy at Urology and Nephrology Assiut University Hospital. Patients divided on random basis equally into study and control groups (60 patients for each). Nursing instructions following ureteroscopy (brochure) were introduced to patients of study group while patients of control group allocated to routine hospital nursing instructions. Patients were followed up for 3 weeks. Tools: Assessment questionnaire for patient undergoing ureteroscopy, EuroQol-5 dimension, visual analogue scale of the EQ-5D-5L, the 28-item of the La Monica–Oberst patient satisfaction scale. **Results:** A statistically significant improvement regarding pain level and health-related quality of life were found among the study group than among the control group with statistically significant different with ($p < 0.001$). Also, the incidence of postoperative urinary tract infection in the study group was significantly lower than among the control group with ($p < 0.01$). **Conclusion:** Nursing instructions significantly showed positive effect on improving pain level and quality of life, lowering incidence of urinary tract infection, and increasing satisfaction level among study group patients. **Recommendation:** Brochure for patients about ureteroscopy nursing instructions should be available in the urology hospitals.

Keywords: Nursing Instructions, Quality of Recovery & Ureteroscopy

Introduction

Ureteroscopy (URS) is an important diagnostic and therapeutic procedure among urology practice. In 1912, Hugh Hampton Young discovered this procedure, accidentally during passed rigid pediatric cystoscope into patient's dilated ureter. Since that time, it became the technique of choice for managing ureter diseases, not only that related to maneuverability but also that related to efficiency and patients' safety (Ridyard et al., 2016).

Ureteroscopy is a tool to examine the upper urinary tract performance which passed from the urethra to the bladder, and then directly into the ureter. It is commonly used for the diagnosis and treatment of renal pelvis or ureteral stones which is the most common conditions which require URS therapeutic intervention with different ureter and upper urinary tract lesions as urothelial cancers and ureteric strictures (Steeve and Olivier, 2018; Wasson et al., 2022).

However, therapeutic effects of URS on patients showed great improvement in quality of life (QoL)

post-surgery as it affects postoperative pain level which is the frequent postoperative problem which associated with URS and negative emotions, such as anxiety and depression. Also, Urinary tract infection (UTI) is a potentially life-threatening complication that may occur after URS (Chawong et al., 2022; Harper et al., 2022; Unno et al., 2023).

Patients undergoing URS have psychological needs including sense of security and safety in order to relieve fear of complications, anxiety and to cope with the health condition. Also, patients undergoing URS have educational needs, as they need knowledge about the post-procedure precautions, period of hospitalization, infection precautions and discharge instructions (Seklehner et al., 2015; Abdeldayem et al., 2017).

Patient education is an important factor for best management of post-procedural symptoms. Patients undergoing URS must receive consistent information and discharge instructions to be ready for the transition from hospital to home care. Effective discharge guidance increases patient confidence in

home care, improves health, and makes them feel safe and comfortable. An important role of nurses is to provide patients with specific guidelines and information regarding medications, daily activities, and provide dietary advice (Nettina, 2014).

Significance of the study

Many unnecessary complications following URS could be avoided through patients' education concerning different aspect of care. Therefore, our study was conducted for providing such group of patients with the needed knowledge about URS in a trial to improve the quality of recovery and patients' satisfaction after URS. The results of this study may also help nurses consider the importance of providing urological patients undergoing URS with the information they need to return to their previous independence condition.

Aim of the study

To evaluate the effect of nursing instructions on quality of recovery for patients undergoing ureteroscopy.

Research hypotheses

1. After applying the nursing instructions, pain level, health-related quality of life, and patients' satisfaction will be improve among the study group patients than among the control group.
2. After implementation of the nursing instructions, the incidence of postoperative UTI will be also lower among the study group patients than among the control group.

Operational definitions

Quality of recovery: It included pain level, QoL, and postoperative UTI.

Patients and Methods

Research design: Quasi experimental design was utilized to conduct the current study.

Study variables: Independent variable "nursing instructions", dependent variables "pain level, QoL of recovery, postoperative UTI, and patients' satisfaction".

Setting: Current study conducted in the department and outpatients clinics of urology at Urology and Nephrology Assiut University Hospital.

Sample size: A sample size of '120' patients was calculated using the G-Power software. 60 patients in each group. Computed size of the test difference between "two independent means two-tailed ". 95% power, 0.8 effect size, and 0.05 error.

Patients: Purposive sample of 120 adult patients undergoing URS. Randomly divided into two groups: study and control. "Odd" numbers considered the control group (60 patients) and "even" numbers was the study group (60 patients). Patients in the study group were presented with a nursing

guide/instructions (brochure), while patients in the control group allocated to the routine/regular hospital care. Patients with a history of URS, renal failure, chronic UTI and chronic comorbidities were excluded from the study.

Inclusion criteria: Patients undergoing URS for managing ureteric stricture or stone or both with aged (between 18-65 years old) from both sexes were included in the study.

Exclusion criteria: Patients with a history of URS, renal failure, chronic UTI and chronic comorbidities were excluded from the study.

Tool I: Patients assessment questionnaire:

It developed by the researchers after reviewing different related literatures and divided into 3 parts: The first part included patients' basic demographic data (age and gender).

The second part included the medical data as the indication of URS, past history of urolithiasis, preoperative UTI, and preoperative double J stent.

- The third part included factors associated with postoperative UTI.

Tool II: The EuroQol-5-dimensions health-related quality of life questionnaire:

It is a self-report questionnaire adopted for measuring the health-related quality of life through 5 domains: (pain/discomfort, mobility, self-care, usual activities, and anxiety/depression). Every dimension scored on 5-level, severity ranking from no problems (1) to extreme problems (5). Decrease in domain scores indicate better in health-related quality of life. This questionnaire also accompanied by visual analogue scale which provide patients self-assessment report for their own health status in a range from "0 = worst possible health status" to "100 = best possible health status" (EuroQol Research Foundation, 2019).

Tool III: Pain visual analogue scale:

It is self-reported measurement adopted for measuring pain intensity/severity through handwritten mark on "100 mm line" represent continuum from [0 to 100]. Zero means no pain, [1-19] very low or low pain, [20-39] mild, [40-59] moderate, [60-79] high and [80-100] very high. A higher score means greater pain intensity (Katz & Melzack, 1999).

Tool IV: The 28-item of La Monica-Oberst patient satisfaction scale:

It was developed by La Monica et al., (1986). It was adopted for measuring patients' satisfaction level about nursing care provided. It composed of 28-item; divided into 2 subscales; interpersonal support/good impression (14 items) and dissatisfaction (14 items). Patients' response format 5 points, the 5-point response ranging from (5) strongly agree to (1) strongly disagree. Scoring of negative items reversed

while the scores of the total scale and dimensions within scale calculated by summing appropriate items. A high score means high satisfaction level. The potential range of scores (28 to 140).

Tools validity: Content of the study was reviewed by "3" experts (2 staff of medical-surgical nursing and 1 urologist) to ensure validity and it was approved. Very minor modifications for the content of the study tools were done to ensure visibility and clarity of sentences.

Tools reliability: The EuroQol-5-dimension health-related quality of life questionnaire (tool II) with internal consistency according Crohnbach's alpha "0.76 ". The test-retest reliability of pain visual analogue scale (tool III) was "0.71- 0.94" for describing pain severity/intensity. The coefficient alpha for the 28-item of La Monica-Oberst patient satisfaction scale (tool IV) was "0.97".

Ethical considerations: The Faculty of Nursing Ethical Committee approved the current study research design. In addition, the director of urology department also approved the current study research design after explaining the content and purpose of the research. Each patient informed about their right to refuse or discontinue participation in the study at any time. The study nature and aim were explained to every patient to gain their participants and cooperation prior to taken their informed consent. Privacy, confidentiality, and anonymity were assured.

Pilot study: It was done on 10%" (12 patients); [6 patients from each group], to test the clarity, relevance and appropriateness of the current study tools as well to estimate the time required to fill in the tools. Very minor changes were required, so that patients enrolled in the pilot study were added to the overall current study sample.

Procedure: Study sample encompasses all the eligible patients who consented to/enrolled in the study during the 10-month period from February 2022 to November 2022. After receiving the formal approval to conduct the study from the director of urology department at Urology and Nephrology Assiut University Hospital. The researchers met the studied patients and collected the baseline preoperative data using study tools (I "part 1, 2", II, and III).

The base line assessment: every patient was interviewed individually by researchers with attendance of one family member/caregiver. The time required to complete fill in the study tools ranged from "35 - 40" minutes according to responses of the studied patients.

Control group patients allocated to regular hospital instructions and care while study group patients provided with detailed nursing instructions (one session) by the researchers in addition to the routine

hospital instructions and care, the session lasting from 50 to 60 minutes for explanation and answering questions. A copy of the written nursing instructions (brochure) was given to every patient in the study group.

Nursing instructions for patients undergoing URS (brochure):

The researchers developed the nursing instructions (brochure) in a simple Arabic language after reviewing the related literature based on patients identified needs assessed during the base line assessment. Nursing instructions helped patients to minimize pain, postoperative UTI, improved QoL of recovery and patients' satisfaction level. The brochure content answered the following questions based on patients identified needs in order to improve patients' condition following URS:

- What is URS?
- What to expect after URS?
- What to expect when back home?
- What can do during the first week after URS?
- When should call the hospital or physician?
- What about the follow-up appointment?

The researchers instructed the study group patients about URS meaning, necessary instructions which reduce pain, UTI and how to improve QoL of recovery. It included discharge instructions for patients about rest, activity, diet, bowel, bathing and medications. Problems/manifestations that seek immediate medical care were also included.

Follow up was done in urology outpatients' clinics. Patients were followed up for a period of 3 weeks following URS. At the end of follow up period (after 3 weeks) patients were attended to the urology outpatients' clinics to evaluate their QoL of recovery (tool II), pain intensity (tool III), incidence and factors associated with postoperative UTI (tool I, part 3) and satisfaction level with nursing care (tool IV).

Statistical analysis: Comparison between the two groups regarding preoperative criteria and factors associated with postoperative UTI presented as quantitative variables presented as mean \pm SD and analyzed by student t-test, while categorical variables presented as frequency (%) and analyzed by Pearson Chi square test. Comparison between the two groups regarding pain visual analogue scale, QoL, and La Monica-Oberst patient satisfaction scale, all variable presented as mean \pm SD and analyzed by student t-test. Comparison between the two groups regarding incidence of postoperative UTI and methods of detection of postoperative UTI presented as frequency (%) and analyzed by Pearson Chi square test. P. value less than 0.05 considered statistically significant. Statistical analysis of data done with (IBM SPSS 26.0 software).

Results

Table (1): Comparison between the two groups regarding preoperative criteria

Variables	Control group N = 60	Study group N = 60	P. value
Age in years	45.75 ± 13.87	48.28 ± 12.79	0.300
Sex			1
• Male	49 (81.7%)	49 (81.7%)	
• Female	11 (18.3%)	11 (18.3%)	
Past history of urolithiasis	12 (20 %)	17 (28.3%)	0.286
Preoperative UTI	8 (13.3%)	6 (10%)	0.570
Preoperative double J stent	9 (15%)	7 (11.7%)	0.0561
Indication of URS			0.119
• Stones	43 (71.7%)	36 (60%)	
• Stricture	15 (25%)	16 (26.7%)	
• Stones and stricture	2 (3.3%)	8 (13.3)	

Student t-test

Pearson Chi square test

Non-significant P > 0.05

Table (2): Comparison between the two groups regarding pain visual analogue scale

Variable	Control group N = 60	Study group N = 60	P. value
Pain visual analogue scale			
Preoperative	78.9 ± 6.2	80.5 ± 5	0.126
Postoperative	17 ± 8.2	12.8 ± 3.8	< 0.001**
Difference	61.9 ± 9.7	67.8 ± 7.2	< 0.001**

Student t-test

Non-significant P > 0.05

** Statistically significant P < 0.001

Table (3): Comparison between the two groups regarding quality of life

Variables	Control group N = 60	Study group N = 60	P. value
The EuroQol-5 Dimension health-related quality of life			
Preoperative	18 ± 2.1	17.7 ± 2.3	0.360
Postoperative	7.9 ± 2.3	6.9 ± 2.1	0.018*
Difference	10.2 ± 0.8	10.8 ± 1.9	0.022*
Visual analogue scale of QoL			
Preoperative	54.8 ± 4.8	54.6 ± 5.1	0.854
Postoperative	77.5 ± 7.9	84.9 ± 6.3	< 0.001**
Difference	22.8 ± 7.3	30.3 ± 7	< 0.001**

Student t-test

Non-significant P > 0.05

* Statistically significant P < 0. 01

** Statistically significant P < 0. 001

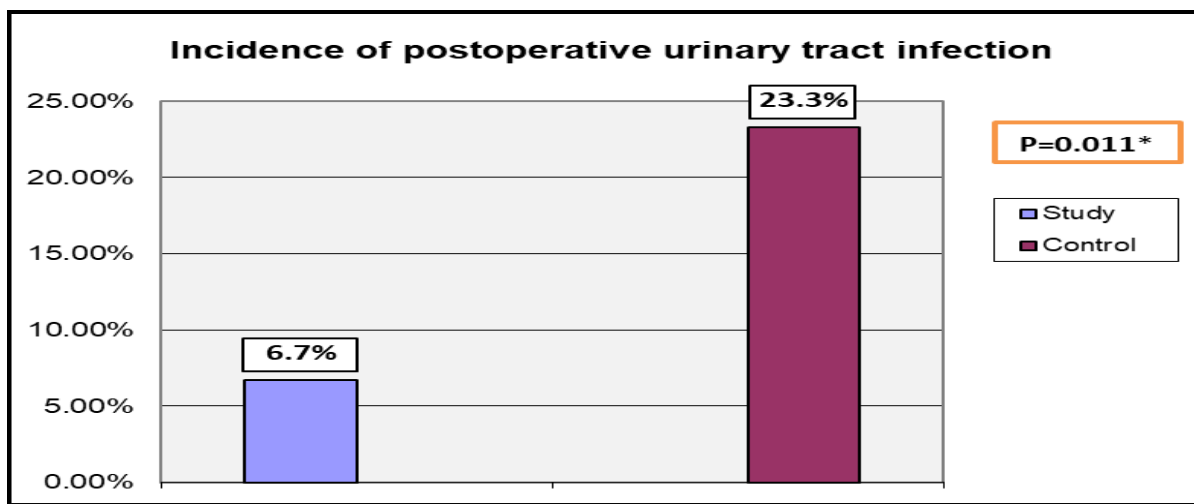


Figure (1): Comparison between the two groups regarding incidence of postoperative urinary tract infection

Table (4): Comparison between the two groups regarding methods of detection of postoperative urinary tract infection

Variable	Control group N = 14	Study group N = 4	P value
Methods of detection of postoperative UTI:			
• By patients themselves	5 (35.71%)	4 (100%)	0.023*
• During follow up period	9 (64.28%)	0.0	

Pearson Chi square test

* Statistically significant $P < 0.01$ **Table (5): Statistical analysis of factors associated with postoperative urinary tract infection.**

Variables	Postoperative urinary tract infection		p value
	Yes N = 18	No N = 102	
Age in years	51.94 ± 13.36	46.15 ± 13.21	0.102
Sex			0.129
• Male	17 (94.4%)	81 (79.4%)	
• Female	1 (5.6%)	21 (20.6%)	
Past history of urolithiasis			0.698
• Yes	5 (27.8%)	24 (23.5%)	
• No	13 (72.2%)	78 (76.5%)	
Preoperative UTI			0.474
• Yes	3 (16.7%)	11 (10.8%)	
• No	15 (83.3%)	91 (89.2%)	
Preoperative double J stent			0.125
• Yes	6 (33.3%)	18 (17.6%)	
• No	12 (66.7%)	84 (82.4%)	
Group			0.011*
• Control	14 (77.8%)	46 (45.1%)	
• Study	4 (22.2%)	56 (54.9%)	

Student t-test Pearson Chi square test Non-significant $P > 0.05$ * Statistically significant $P < 0.01$ **Table (6): Comparison between the two groups regarding La Monica–Oberst patient satisfaction scale**

Variable	Control group N = 60	Study group N = 60	P value
La Monica–Oberst Patient Satisfaction Scale	69.7 ± 3.8	70.5 ± 5	0.350

Student t-test

Non-significant $P > 0.05$

Table (1): Patients that participated in this study were ("98" 81.7%) male and ("22" 18.3%) female with mean age 47.02 ± 13.34 years old. The indication for URS was urolithiasis among 79 patients representing (65.9%), ureteric stricture in 31 patients representing (25.8%) and both stones and stricture were among 10 patients representing (8.3%). History of urolithiasis was among 29 patients representing (24.2%), while UTI was in 14 patients representing (11.7%) and double J ureteric stent in 24 patients representing (20%). There was no statistically significant difference between the two groups regarding preoperative criteria.

Table (2): There was no statistically significant difference between the two groups regarding

preoperative pain using visual analogue scale, but postoperatively, there was a statistically significant difference between the two groups after the implementation of the nursing instructions. As the mean and (±SD) of pain visual analogue scale decreased significantly from 79.7 (±5.7) preoperatively to 14.9 (±6.7) postoperatively among the study group with statistically significant difference between the two groups with ($p < 0.001$) after the implementation of the nursing instructions.

Table (3): For all the patients included in the study, there was no statistically significant difference between the two groups regarding preoperative health related quality of life and visual analogue scale of quality of life. Postoperative, there was

a significant improvement of health-related quality of life. The mean and (\pm SD) preoperative QoL were 17.9 (2.2) versus to 7.4 (\pm 2.3) postoperatively with ($p < 0.001$) after the implementation of the nursing instructions. The same was found regarding the mean and (\pm SD) of the visual analogue scale of quality of life which increased from 54.7 (\pm 4.9) preoperatively to 81.2 (\pm 8) postoperatively with ($p < 0.001$) after the implementation of the nursing instructions.

Figure (1): Postoperative UTI occurred in 18 (15%) patients (14 among the control group and 4 in the study group). The incidence of postoperative UTI in the study group was (6.7%) which significantly lower than the control group (23.3%) with ($p = 0.011$) after the implementation of the nursing instructions.

Table (4): The 4 patients who had postoperative UTI in the study group reported the infection by themselves, versus 5 of 14 patients among the control group. Postoperative UTI in the remaining 9 patients was detected during follow up. Thus, there was statistically significant difference between the two groups regarding the method of detection of postoperative UTI ($p = 0.023$).

Table (5): No statistically significant difference regarding factors associated with the occurrence of postoperative UTI; as sex, history of urolithiasis, preoperative UTI and preoperative double J stent with ($p > 0.05$).

Table (6): Both study and control groups were satisfied with the nursing care offered, however the satisfaction was higher among the study group than among the control group. No statistically significant difference was found between the two groups regarding La Monica–Oberst patient satisfaction scale score with ($p = 0.350$).

Discussion

Ureteroscopy is a type of minimally-invasive treatment. Nursing education is an essential part in reducing many postoperative complications and improve recovery following URS (Wason et al., 2022).

As regard to pain as a main symptom among patients with urolithiasis or ureteric stricture, the present study demonstrated that patients in both groups (study and control) suffered from pain during the preoperative period as a base line data. This pain and the other effects of the disease interfered with patients' abilities to perform daily activities, in addition to increase patients' anxiety due to lack of sufficient information about the disease and URS as a method of treatment. From the researchers' point of view all these factors may be the reason behind why QoL was affected preoperatively among the both groups.

The current study results were in the same line with Patel et al. (2017) who stated that urolithiasis have a significant effect on patient QoL. They added that in spite of this effect, only limited studies examined patients QoL with urolithiasis, all showed a decrease in QoL but each having variable results. Moreover, study of Seklehner et al. (2015) mentioned that nearly all of study cases were expressed fear and anxiety from potential complications before and during URS.

Regarding the effect of the nursing instructions on quality of recovery for patients after URS, the current study revealed that following the application of the nursing instructions there was obvious significant reduction in the pain level and health-related quality of life among the study group than among the control group. From researchers' opinions of view this may be due to containment of the nursing instructions with the all needed information, where the researchers guided the patients about their diet, water intake, psychological support to relieve anxiety/depression, URS-related knowledge, and discharge guidelines within the nursing instructions content. In addition to, continuous follow-up through telephone for the study group patients by the researchers weekly for 3 weeks to ensure following of the patients to the nursing instructions at home.

Within this regard the study of Lewis et al. (2014) and study of Ignatavicius & Workman, (2013) reported that before URS cases had insufficient medical knowledge about the disease, management, procedure advantages and the prescribed medications. Following URS, patients cop with the changes of lifestyle, eating the prescribed diet and complications were the most educational needs for such group of patients.

Qing-Xia, (2016) and Hamed & Gaballah, (2020) supported the present study results and indicated that their designed of nursing instructions had a positive effect on patient recovery after URS and on patients' QoL. Similarly, Abdelaa et al. (2016) developed and validated a patient information booklet about URS, they found that anxiety and discomfort decreased thorough patient education and concluded that a well-informed patient would enjoy a better life and incur fewer costs.

Also, Zhang et al. (2019) examined the important of applying comprehensive nursing interventions including care and guidance during the perioperative period among patients undergoing URS, they clarified that theses interventions could effectively alleviate negative emotions (anxiety and depression), postoperative pain, and enhance the QoL.

In the same line with the above results Lua et al. (2020) examined the effects of systematic nursing interventions on the psychological state and

postoperative complications of patients undergoing URS and found that taking care of patient's mental health and given patiently explanation could effectively improve the psychological state and decrease the incidence of postoperative complications.

Related to postoperative UTI, the incidence of infection among the study group was significantly lower than the control group, with statistically significant difference between the two groups regarding the detection method of postoperative UTI, where study group reported the infection by themselves while the UTI among control group was detected during follow-up period.

From researchers' opinions of view this may be due to the effect of nursing instructions where study group patients were advised to have adequate daily drinking of water to increase urine output and excrete the deposited crystals that could help in decreasing UTI, also they were instructed to come back regularly to the hospital for follow-up and were instructed about early signs and symptoms of UTI that enabled them to report the infection by themselves.

In this regard **Chawong et al. (2022)** found that the most patients during visiting the emergency department after URS were complaining of pain, other common causes for patient's revisit were pyrexia, UTI, and hematuria. Also, **Kefu et al. (2018)** investigated unplanned 30-day encounters after URS, their study results showed that the unplanned patient-initiated clinical phone calls, emergency department visits, and readmissions, was pain as being the most common complaint during the encounters.

The study of **Wang (2018)** supported the current study, in which he examined the effect of preoperative nursing guidance which include; care of complications, health education and follow up intervention and found that all such actions improved surgery effect, decrease surgery complications, shorten hospitalization period and increase patient satisfaction level. Also, **Zhang et al. (2019)** reported that care and guidance for patients undergoing URS decreased incidence of UTI.

Regarding patients' satisfaction the current study showed that study and control groups satisfied with nursing care offered, however the satisfaction level was higher among the study group than the control group.

From the researchers' opinions of view this may be because of the nursing instructions which helped in improving pain level and QoL. Also, those patients their satisfaction with nursing care were improved.

In the same line with our study **Kefu et al. (2018)** reported that appropriate perioperative patient

counseling and adequate pain management improve treatment quality and patient satisfaction. Also, **Shin & Park, (2015)** found that patients that received comprehensive nursing interventions including care and guidance during the perioperative period not only had significantly higher satisfaction than those receiving conventional nursing, but also had more willingness for further consultations.

Conclusion

Nursing instructions for patients underwent URS had a statistically significant positive effect on improving pain level and health-related quality of life, lowering the incidence of UTI, and increasing satisfaction with nursing care among study group patients than the control group.

Recommendations

1. An orientation program should be prepared for patients undergoing URS.
2. Brochures and simple illustrations about URS management should be available for patients in hospitals.
3. Patients' education should be an essential part of nurses' duty in all hospitals.

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