

## Day Case Ureteroscopic Lithotripsy Procedure: Outcomes of Creating Awareness on Patients` Satisfaction

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### Abstract

**Aim:** This study aimed to evaluate the outcomes of creating awareness on patients` satisfaction with day case ureteroscopic lithotripsy procedure. **Subjects and Method :** A quasi-experimental design was utilized for the conduction of this study in the Uro-Surgery Department and Urology Outpatients` Clinics at Minia Nephrology and Urology University Hospital and EL- Demerdash Surgical Hospital affiliated to Ain Shams University . A purposive **sample** of (80) adult and old age patients involved both genders underwent ureteroscopic lithotripsy and taken from the above mentioned settings . **Tools of data collection** were: 1) Patients` interviewing questionnaire (pre / post / follow up tests) to assess the studied patients` knowledge as regards ureteroscopic lithotripsy procedure. 2). An observation checklist (pre / post / follow up tests) to evaluate studied patients` practices in relation to care activities of ureteroscopic lithotripsy procedure. 3) Hamilton Anxiety Rating Scale (pre / post/ follow up tests) to assess anxiety level. 4) Numerical pain scale (pre / post / follow up tests) to assess pain severity level. 5) Patients` health condition assessment ( Post / follow up tests . 6) Patients` satisfaction assessment sheet (post- test) to assess the satisfaction level. **Results:** More than half of the studied patients were male , above 40 yrs. and overweight. There were unsatisfactory level of patients` awareness ( knowledge and practices ) , added to elevated pain and anxiety levels pre guidelines . **Conclusion :** On light of the current study results , it can be concluded that the educational guidelines for patients with ureteroscopic lithotripsy procedure had a positive effect on creating awareness (knowledge and practices) and health condition outcomes : relieving of anxiety and pain levels , condition progress and improving satisfaction level. **Recommendations:** Further studies should be carried out on a large number of patients with ureteroscopic lithotripsy for evidence of the results and generalization.

**Key words:** Ureteroscopic lithotripsy (URSL) - Awareness - Satisfaction - Day case surgery

### Introduction

Ureteroscopy is minimally invasive surgical treatment options for patients with proximal ureteral stones whereas a small

telescope is passed through the ureter to remove a stone which requires fragmentation with a laser then removed with a grasping device. A urethral stent is a soft hollow tube to permit urine pass from kidney down ureter into bladder and commonly used at end of the procedure

to keep the ureter open. A “string” is typically left attached to the stent and dangles out urethra to remove stent 2-5 days or up to 4 weeks post-operatively . Along with laser lithotripsy, an impressive 95% or more of the patients were stone free after a single procedure . Ureteroscopy was first described in 1912 , but its use was not widely accepted until the late 1970’s, at which time it became a standardized procedure. Outcomes of the procedure include stone clearance rate, treatment time, procedural time, complications and costs (**Vincent & Bird, 2015 and Chris et al., 2013**).

In the United State, urinary stones account for about 328,000 hospital admissions each year. The occurrence of urinary stones occurs predominantly in the third to fifth decades of life and affects men more than women. About half of patients with a single ureter stone have another episode within 5 years (**Tasian et al., 2016**). In Egypt, the incidence of ureteroscopic lithotripsy procedures in Uro Surgical Department at Minia Nephrology and Urology University Hospital were approximately 600 procedures through the year 2015.

Ureteroscopic lithotripsy was still the preferred treatment modality for managing ureter stones at many hospitals and achieves an immediate stone-free state in a high percent of patients. So it is still controversial which treatment is clinical preferred .It provided better efficacy of higher post-treatment stone free rate, lower repeat treatment rate and higher patients' satisfaction on the ureteral calculi treatment . Ureteroscope is passed through natural body orifices and involve no skin incisions. It is an outpatients` procedure , post surgery patient will be taken to the recovery room and once pain is controlled and pass urine , the discharged started from the recovery room to home (**Vincent & Bird , 2015 &Akram et al., 2011** ) .

There are two types of ureteroscopes, rigid and flexible. Rigid ureteroscopes, are firm and preferred for treatment of stones lodged in the lower ureter which can usually be accessed in a straight path. Moreover, stones located in the upper ureter and/or kidney; often require flexible ureteroscopes that accommodate to the shape of the ureter and renal collecting system. Though more difficult to maneuver, flexible scopes allow the urologist to inspect nearly the entirety of the inner kidney to find stones, treat them, and remove them using a variety of techniques (**Tammet al., 2014 &Cooper et al., 2011**) .

The role of ureteroscopy over the last ten years has undergone a dramatic evolution due to improvements in ureteroscopic size, deflection capabilities, video-imaging, miniature baskets and instruments and in lithotripsy (stone breakage) with the advent of holmium laser. Surgeries are now done using small ureteroscopic technology for over 25% of all kidney stone. Potential risks and complications of ureteroscopic lithotripsy include: stent pain, ureteral injury, stricture, avulsion, hematuria and infection (**Seklehner et al., 2014 & Aboumarzouk et al., 2012**).

Day case surgery offers a safe and cost effective care, provides patients with familiar environment on home, reduces the waiting list time, favoring for the doctor and patient alike. Various studies found that, patients have been very happy with the day-care surgery and reporting that 87% of them are relieved to return to the workplaces earlier and there is a strong element of “let’s get it over with fast” and return home (**Nettina, 2014 & Smeltzer et al., 2011**).

Patients’ satisfaction referred as an expression of patient’s overall judgment on the quality of care particularly in the aspect of interpersonal process. According to

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American Nurses Association defined as patients' opinion of care received from nursing staffs during hospitalization. Patients' satisfaction with medical / nursing care has been reported as the most important predictor of the overall satisfaction with hospital care and an important goal of any health care organization ( **Karim et al. , 2016 & Kleefstra et al., 2012** ) .

Awareness is a key factor for optimal management. Patients' undergoing ureteroscopic lithotripsy needs to receive knowledge. A practical discharge advice will increase patients' confidence in management at home. It is vital to provide patients with certain guidelines about the analgesic regimen, returning to daily activities and dietary advice....etc. (**Lewis et al., 2014**). Health related knowledge is the degree to which patients have the capacity to understand basic health information and services needed to appropriate health decisions, lifestyle, seek medical care and take advantage of preventive measures. It helps to prevent complications and achieve desirable outcomes. Many studies are defined health related practices as activities performed by patients to improve the health and wellness added to minimizing disease and its adverse events (**Dewit et al., 2016 and Ignatavicius & Workman, 2013**) .

### **Significance of the study:**

Studies within the past ten years have determined that ureteroscopic lithotripsy is the preferred approach for treatment of symptomatic ureteric stone diseases, because it is not only safe but also associated with fewer post-operative complications, decreased morbidity and overall cost (**Chris et al., 2013**). Ureteroscopic lithotripsy manipulation of a stone is a commonly applied method of stone removal. The success rate of ureteroscopy is over 90% for the majority of stones that are treated this way. Successful stone clearance depends on

size and location of stone (**Moore et al., 2014**).

Today, day surgery includes concepts of care other than immediate discharge of patient after initial recovery from the anesthesia. A combination of new developments in surgical technique and technology, changes in hospital resources allocations and patient demands for quicker treatments have placed day surgery at the forefront of modern management. In addition, patients want treatment that is safe, efficient, effective and provides the least possible disruption to the lives, so day surgery gives patients -focused care (**Bucher et al., 2014**).

### **Aim of the Study:**

This study aimed to evaluate the outcomes of creating awareness on patients' satisfaction with day case ureteroscopic lithotripsy procedure. This aim was achieved as follows:

- Assess patients' awareness (knowledge and practices) as regards ureteroscopic lithotripsy.
- Assess patients' levels of pain and anxiety
- Identify patients' satisfaction level with ureteroscopic lithotripsy
- Develop and implement educational guidelines for the studied patients.
- Evaluate its effect on their awareness and satisfaction level added to health condition outcomes.

### **Hypothesis:**

It was hypothesized that, creating awareness had a positive effect on patients' satisfaction with day case ureteroscopic lithotripsy procedure.

## 2. Subjects and method:

### Operational definitions:

Awareness: means patients' knowledge and practices

Creating: means educational guidelines through theoretical and practical sessions.

### Research design:

A quasi-experimental design was utilized to conduct this study

### Setting:

The present study was conducted in the Uro-Surgery Department and Urology Outpatients' Clinics at Minia Nephrology and Urology University Hospital and EL-Demerdash Surgical Hospital affiliated to Ain Shams University.

### Subjects:

A purposive sample of (80) adult and old age patients from both genders having ureteroscopic lithotripsy from the above mentioned settings. They were taken as follows:

- EL- Demerdash Hospital = 50 patients
- Minia Hospital = 30 patients

They were selected according to the sensitive analysis in relation to the number of patients with ureteroscopic lithotripsy within the year 2015 in the previous settings, according to the statistical department which affiliated to the settings with the following criteria:

### Inclusion criteria:

- Adult and old age patients with ureteral calculus undergoing ureteroscopic lithotripsy,
- No other co-morbidities (e.g. renal failure, cancer, cerebrovascular stroke...etc.).
- Accept to participate in the study

### Tools of data collection:

#### ■- Patients' interviewing questionnaire (pre/post follow up tests).

It was designed by the researchers in light of the relevant and related literatures and written in simple Arabic language . Data obtained were related to:

- **Characteristics of patients under the study** included (age, sex, marital status, educational level and occupation).
- **Patients' knowledge assessment sheet** : It included definition / causes of ureter stone, signs and symptoms of ureter stone, ureteroscopic lithotripsy procedure : definition, benefits, complications, contraindications, pre procedure preparations (investigations, informed consent, fasting and operative site preparation), post procedure care (early ambulation , pain reliever, position, diet and exercises) . Moreover, discharge guidelines (hygiene, drugs, diet, sexuality, follow up, immediate physician visit, work and physical activities).

#### Scoring system:

Answers of the studied patients' were scored as (1) for correct and (zero) for

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incorrect. The total score was sorted into either satisfactory level (60% and more) or unsatisfactory (less than 60%).

### II - An observation checklist (pre / post / follow up tests) :

It was adopted from (Smeltzeretal, 2011 , Bucher et al., 2014 and Lewis et al. , 2014) , developed and filled by the researchers to evaluate studied patients' practices in relation to ureteroscopic lithotripsy (position, ambulation, hygienic measures, infection control, deep breathing, coughing and extremity exercises.

Scoring system: A correct practice was scored as (1), while the incorrect (zero). It was sorted into either inadequately done (less than 70%) or adequately done (70% and more).The total score was classified as satisfactory = 70 – 100, or unsatisfactory = less than 70.

### III - Patients` condition outcomes:

#### - Hamilton Anxiety Rating Scale (pre / post / follow up tests) :

It was developed by Hamilton (1959) and modified by the researchers. This scale formed of thirteen variables: anxious mood, tension, insomnia, cognitive changes, depression, somatic (sensory), cardiovascular, respiration, gastrointestinal, genitourinary, autonomic symptoms, somatic (muscular) and the behavior at the interview. Testing reliability of the scale items using alpha cronbach test = 0.83.

Scoring system:

Answers of studied patients were numbered from (0-3) scores and the total score ranged from 0-39. The following classifications of anxiety levels were adapted: No (zero), mild (0 - less than 23), moderate (23 - less than 29) and severe (29 - 39).

**-Numerical pain scale (Pre / post / follow up tests):** It was based on Jacques (2011) to measure severity of pain. It was composed of a line divided by numbered points from (0-10).

Scoring system:

Patients' answers were categorized pain level as follows: No (zero), mild (0 - less than 4), moderate (4-less than 7) and severe (7 - 10).

#### - Patients` health condition assessment: (Post / follow up tests)

It was developed by the researchers in light of the relevant and related literatures to assess health conditions of the studied patients on follow up visit to out patients' Clinics post procedure. It included diet control, drugs adherence, pain reliever, absence of infection, resume physical activities and maintain follow up visit.

Scoring system:

Each item was scored as "0" for no and "1" for yes. The total score was categorized as satisfactory = 60 – 100, or unsatisfactory = less than 60.

#### IV-Patients` satisfaction assessment sheet (post- test).

It was based on Kleefstra et al. (2012) and composed of a core questionnaire for the assessment of patient` satisfaction for general day care (COPS-D). It was consisted of six dimensions: Admission procedure (3 items), nursing care (2 items), medical care (2 items), information (4 items), autonomy (3 items) and discharge and aftercare (3 items).

The COPS-D contains 17 questions. The answer was sorted by a 5-point Likert-scale (1 = unsatisfied, 2 = somewhat satisfied, 3 = rather satisfied, 4 = quite satisfied and 5 = very satisfied). The total score was calculated as follows:

17 questions × 5 point Likert-scale = 85  
High satisfaction (51 - 85) and  
Low satisfaction (Less than 51).

### **Content validity:**

It was ascertained by a group of experts from Urology Department and Medical–Surgical Nursing Department. Their opinions were elicited regarding to the tools format layout, consistency and scoring system. Contents of the tools were tested regarding to the knowledge accuracy, relevance and competence.

### **Ethical considerations:**

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In the planning stage approval was obtained from directors of the above mentioned setting. All patients were informed about the study and their rights according to medical research ethics that they were free to decide whether or not they would participate in the study. Then a written informed consent was obtained from each patient who agreed to participate in the study.

### **Pilot study:**

A pilot trial was carried out on 10% of the total study sample to test the clarity and practicability of the tools, in addition to subjects and settings. Pilot subjects were later included in the study as there were no radical modifications in the study tools.

### **Procedure:**

- Purpose of the study was simply explained to patients who agreed to share in the study prior to any data collection .
- The researchers started to collect data from the studied patients in the Uro Surgery Department and Urology Outpatients` Clinics using the pre constructed tools.
- Data were collected by the researchers 2 days/week, at morning / afternoon shift, added to through follow – up visit.

- The pre admission guidelines were designed based on analysis of the actual patients` needs in pre - test .
- The content was written in simple Arabic language, consistent with the relevant literatures, met patients` needs and level of understanding.
- The educational guidelines were presented in theoretical and practical sessions.
- Patients were divided into small groups including 5 – 6 and repeated sessions included all patients, each group obtained 4 sessions (2 theories and 2 practices). Furthermore, each patient was guided by simple written instructions and orientation about the aim and prepared outlines .
- Theoretical sessions were applied by lectures and group discussions, using data show and poster as a media. It was taken in 2 sessions (each session for 45 minutes) and covered the following items about ureroscopic lithotripsy procedure: definition, benefits, complications, contraindications , pre / post - procedure care. Moreover , discharge guidelines ( Fluid intake , hygiene , pain reliever , drugs , diet , follow up , immediate physician visit , travelling , sexuality , work , physical activities , signs and symptoms of infection ).
- Practical sessions were applied by demonstration, re- demonstration, pictures and video. It was given in 2 sessions (each session for one hour) and covers the following items : Position , ambulation , hygiene and exercises ( deep breathing , coughing and extremity )
- Patients were informed to be in contact with the researchers by telephone for any guidance.
- Patients were assessed either individually or in groups that entail 5-6 according to their physical and mental readiness.
- Evaluation of the guidelines effect as follows:

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- Patients` knowledge and practices by using post – test (immediately after guidelines sessions ) and follow- up test (2 months later) by using the same tools.
- Patients` levels of pain and anxiety added to health condition outcomes using post test (within first month post procedure) and follow up test (after two months later) by the same tools .

### Statistical Design:

The data collected were organized, sorted, tabulated and analyzed using Statistical Package for Social Sciences (SPSS). They were presented in tables and charts using numbers, percentages, means, standard deviations and T – test . Level of significance was threshold at 0.05.

### Results:

**Table (1) Characteristics of the studied patients (n=80)**

Items	Patients (No )	%
<b>Age / yrs</b>		
≤ 40 years	35	43.7
>40 years	45	56.3
<b>Gender</b>		
Female	21	26.3
Male	59	73.7
<b>BMI</b>		
Under weight (Less than 18.5 kg)	12	28.8
Normal weight (18.5 – 25 kg)	23	15.0
Over weight (More than 25 kg)	45	56.2
<b>Marital status</b>		
Single	28	35.0
Married	52	65.0
<b>Education</b>		
Illiterate/ Primary	33	41.2
Secondary	25	31.3
University	22	27.5
<b>Job</b>		
Employee	53	66.3
Not employee	27	33.7

**Table (1):** Shows studied patients' characteristics. Results revealed that more than half of them were male ,employee , married , had the age above 40 years and over weight (73.7 , 66.3 , 65.0 , 56.3 & 56.2 respectively) . As regards education, two fifths (41.2) of them were illiterate and/ or had primary level .

**Table (2): Presentation of studied patients` satisfactory knowledge regarding ureteroscopic lithotripsy care in pre/post -tests**

Items	Patients (n=80)		
	Pre	Post	Follow- up
Physical activities	20	57	69
Exercises	22	52	66
Hygiene	23	54	65
Pain relieve	16	63	69
Therapeutic diet / fluid	20	52	70
Anxiety relieve	14	55	72
Praying	11	59	75
Infection control	19	56	69
Work adjustment	14	57	73
Sexuality	16	55	68
Immediate doctor advice	23	57	75
Follow – up visits	19	58	73
Discharge instructions	21	57	77
$\bar{X}$ No $\pm$ SD	<b>18.1 <math>\pm</math> 3.8</b>	<b>56.2 <math>\pm</math> 3.0</b>	<b>70.3 <math>\pm</math> 3.3</b>
T – value	T1 between pre & post tests = <b>70.6*</b>		
	T2 between post & follow- up tests = <b>28.7*</b>		

\*Significant at  $p < 0.05$

**Table (2):** Clarifies studied patients` satisfactory knowledge about ureteroscopic lithotripsy procedure care in pre/post tests . Results noticed significant improvement in patients` knowledge regarding post and follow - up tests (Mean = 56.2  $\pm$  3.0 & 70.3  $\pm$  3.3 respectively) compared to pre – test (18.1  $\pm$  3.8), with t – test = 70.6 & 28.7 respectively),  $p < 0.05$ .

**Table (3): Presentation of studied patients` satisfactory practices regarding ureteroscopic lithotripsy care in pre/post- tests**

Items	Patients (n=80)		
	Pre	Post	Follow- up
- Ambulation / Position	17	59	70
- Infection control measures	13	48	69
- Exercises	19	56	68
- Hygienic method	17	64	72
$\bar{X}$ No $\pm$ SD	<b>16.3 <math>\pm</math> 3.1</b>	<b>54.3 <math>\pm</math> 5.7</b>	<b>69.0 <math>\pm</math> 1.0</b>
T – value	T1 between pre & post tests = <b>52.7*</b>		
	T2 between post & follow- up tests = <b>22.9*</b>		

\*Significant at  $p < 0.05$

**Table (3):** Shows patients` satisfactory practices regarding ureteroscopic lithotripsy procedure care in pre/post- tests . Results found significant improvement in patients` practices regarding post and follow - up tests (Mean = 54 .3  $\pm$  5.7 & 69.0  $\pm$  1.0 respectively) compared to pre – test (16.3  $\pm$  3.1), with t – test = 52.7 & 22.9 respectively),  $p < 0.05$ .

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**Table 4: Presentation of anxiety and pain levels among the studied patients in pre/post - tests(n=80)**

Pain Level	Patients		
	Pre	Post	Follow – Up
	%	%	
Mild	12.0	27.0	73.0
Moderate	25.0	61.0	23.0
Sever	63.0	12.0	4.0
<b><math>\bar{X}</math> % <math>\pm</math> SD</b>	<b>18.5 <math>\pm</math> 9.1</b>	<b>44.1 <math>\pm</math> 24.0</b>	<b>48.0 <math>\pm</math> 35.0</b>
Anxiety Level			
Mild	11.0	35.0	85.0
Moderate	15.0	55.0	12.0
Sever	74.0	10.0	3.0
<b><math>\bar{X}</math> % <math>\pm</math> SD</b>	<b>13.0 <math>\pm</math> 2.8</b>	<b>45.0 <math>\pm</math> 14.1</b>	<b>48.5 <math>\pm</math> 51.6</b>

**Table (4):** Reveals studied patients' anxiety and pain levels in pre/post- tests. Concerning pain level, significant improvement was indicated in post test then follow – up test (Mean =  $44.1 \pm 24.0$  &  $48.0 \pm 35.0$  respectively) compared by pre test  $18.5 \pm 9.1$ . As regards anxiety level, significant improvement was indicated in post test then follow – up test ( $45.0 \pm 14.1$  &  $48.5 \pm 51.6$  respectively) compared by pre test  $13.0 \pm 2.8$

**Table (5): Presentation of studied patients' satisfaction level as regards ureteroscopic lithotripsy care in post- test**

Items	High patients' satisfaction (n=80)		Low patients' satisfaction (n=80)	
	No	%	No	%
Pre-admission visit	56	70.0	24	30.0
Admission	59	73.7	21	26.3
Operative room	65	81.2	15	18.8
Nursing care	66	82.5	14	17.5
Medical attention	70	87.5	10	12.5
Information	65	81.2	15	18.8
Autonomy	62	77.5	18	22.5
Discharge and aftercare	70	87.5	10	12.5
<b><math>\bar{X}</math> No <math>\pm</math> SD</b>	<b>63.3 <math>\pm</math> 4.6</b>		<b>16.7 <math>\pm</math> 4.7</b>	
<b>% of Mean</b>	<b>79.1%</b>		<b>20.9%</b>	
<b>T – value</b>	<b>t = 64.7*</b>			

\*Significant at  $p < 0.05$

**Table (5):** Reveals studied patients' satisfaction level as regards ureteroscopic lithotripsy procedure care in post -test. As indicated, majority of them were satisfied for the following :Discharge and aftercare, medical attention and nursing care (87.5, 87.5&82.5 respectively). In addition, mean of patients with high satisfaction was  $62.8 \pm 4.5$  compared to  $17.1 \pm 4.5$  with low satisfaction.

**Table (6): Presentation of patients` health condition assessment in post -tests (n=80)**

Items	Patients` assessment (satisfactory level )	
	Post	Follow – up
Diet control	62	66
Pain relieve	59	80
Absence of infection and hematuria	48	62
medication adherence	69	75
Resume physical activities	20	73
Maintain follow up visits	80	61
$\bar{X}$ No $\pm$ SD	51.6 $\pm$ 19.2	71.2 $\pm$ 7.1
of Mean %	64.5%	89.1%
T – value	t = 8.6*	

**Table (6):** Shows satisfactory level of patients` health condition assessment in post /follow up tests. As noticed all of them were maintain follow up visits, ( 69 ) adhere to medication and ( 62 ) control diet in post - test added to all of them had pain relieve in follow up test. Moreover, mean of progress among patients in follow up test was higher.

#### **Discussion:**

Studies within the past ten years have determined that ureteroscopic lithotripsy is the preferred approach for treatment of symptomatic ureteric stone diseases, because it is not only safe but also associated with fewer post-operative complications, decreased morbidity and overall cost (*Chris et al., 2013*). The current study aimed to evaluate the outcomes of creating awareness on patients` satisfaction with day case ureteroscopic lithotripsy procedure.

Concerning study patients` characteristics, more than half of them were male, had the age above 40 yrs. and overweight. This finding was supported by *Akram et al. (2011)* who stated that, male patients were most of the study subjects and the age of patients undergoing ureteroscopic lithotripsy procedure was more than 40 years. Ureteric stones prevalence is relatively high, occurring in approximately 12% of men and 7% of women. The risk is increased with a past history of ureteric stone or with positive family history. Most patients present between 30 and 60 years of age, with peak

incidence between 35-45 years old (*Tasianet al., 2016* ).

*Aboumarzouk et al. (2012)* clarifies that more obese patients are presenting with urinary calculi. Numerous studies have shown that obesity increases the risk of nephrolithiasis specifically, the risk of uric acid and calcium oxalate stones increases in obese people because the defect in ammonia excretion leads to low pH. On the same context as regards the educational level, two fifths of the studied patients were illiterate and/ or had primary level. *Alwan & Alhusuny (2014)* reported that, more than one third of the study patients were illiterate. In the same line, as regards the marital status, more than half of studied patients were married. This finding was supported by *Oyetunde&Famakinwa (2014)*. In addition, concerning the job, more than half of them were employee . *Cooper et al. (2011)* supported the previous result

Considering patients` satisfactory knowledge and practices as regards ureteroscopic lithotripsy care. Results revealed significant improvement in post-

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tests. This finding may be interpreted as education has a vital role in improving patients' awareness. **Akramet al. (2011)** stated that, patients should have enough information pre surgery to enhance the life post - surgery. **Dewit et al. (2016)** emphasized that patients with ureteroscopic lithotripsy need information pre surgery such as diagnostic tests, physical preparations and management added to post surgery such as position, food and fluids, ambulation, pain relive, exercises and schedule of follow up. **Lewis et al. (2014)** stressed on the importance of learning patients about ureteroscopic lithotripsy procedure and post surgery discomforts and complications .

In addition **Ignatavicius & Workman (2013)** stated that, patients required information about post procedure expectations, follow up and drug management. Significant number of patients did not have knowledge on post procedure precautions, hospitalization period, infection and discharge instructions, so they should be provided with instructions pre procedure. **Oyetunde & Famakinwa (2014)** recognized that all patients experienced a decrease in energy and activities during the first weeks post - surgery because they fear to engage in usual activities and fear from occurrence of complications. So, they need appropriate preoperative preparations and more information.

**Maville & Huerta (2012)** stated that post surgery , majority of patients did not experience limitation of daily activities and full recovery of needed less than two weeks in most patients undergoing ureteroscopic lithotripsy . **Nettina (2014)** recommended that the nurse should educate the patient how to perform leg, ankle and foot exercises every 1 to 2 hours while awake to maintain good blood circulation , depending on ambulatory status and physician's preference.

In relation to pain level among the studied patients in pre -test, results revealed that more than half of them had severe pain. **Tamm et al. (2014)** mentioned that patients' pre- surgery expressed a sudden flank pain which lasting more than 30 minutes and described it as stabbing pain. **Jacques (2011)** stated that moderate stabbing pain was described by majority of patients as recurrent flank pain.

As regards anxiety level among the studied patients, results revealed that more than three fifths of them had a sever anxiety. **Seklehner et al. (2015)** stated that, nearly all of subjects expressed fear of potential complications pre-procedure and less than half of them reported fear of complications even after a successful procedure. **Jawaidet al. (2011)** reported that anxiety was indicated in more than two thirds of patients under the study.

Considering satisfaction level, the present findings noticed that studied patients were satisfied for the following: Pre-admission visit , admission, operative room, nursing / medical care, information , autonomy and discharge . The highest satisfactions were related to discharge and aftercare, medical attention and nursing care while pre-admission visit and admission were lowest. **Kleefstra et al. (2012)** found that highest satisfaction score was found for clinical skills of nurses. **Karim et al. (2016)** reported that, a vast majority of the respondents had good level of satisfaction toward nursing care and patients' satisfaction increased after day case intervention.

As regards patients' health condition assessment post -surgery, higher improvement was indicated among them in follow up test compared to pre. **Hinkle & Cheever (2014)** found that, many patients experienced problems and/or concerns after discharge that required making a non-routine visit to a health facility.

### **Conclusion:**

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On light of the current study results , it can be concluded that the educational guidelines for patients with ureteroscopic lithotripsy procedure had a positive effect on creating awareness (knowledge and practices) and health condition outcomes: relieving of anxiety and pain levels, condition progress and improving satisfaction level .

### **Recommendations:**

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- Awareness programs should be held for patients with ureteroscopic lithotripsy procedure
- Continuous health needs and satisfaction assessment for such group of patients
- Written instructional guidelines should be given for patients scheduled for ureteroscopic lithotripsy procedure.
- Further studies should be carried out on a large number of patients with ureteroscopic lithotripsy procedure for evidence of results and generalization .

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