

## Assessment of Self Care among Patients with Ureteric Double-J Stent: Suggested Guideline

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### Abstract

**Background:** Ureteric double J stent has been common practice in the management of various urological conditions. Ureteral stent placement is associated with some degree of morbidity in the majority of patients that ranges from generalized urinary discomfort to urinary tract infection or obstruction. **Aim of the study:** assess self-care among patients with ureteric double J stent. **Research design:** A descriptive exploratory research design. **Setting:** This study was conducted at Urosurgery outpatient clinic affiliated to EL-Fayoum University Hospital. **Subjects:** A purposive sample of 70 patients with ureteric double J stent. **Tools of data collection:** I: Structured interviewing questionnaire; **Part 1:** Patients' demographic data. **Part 2:** Patients' clinical data. **a)** Patients' medical history. **b)** Signs and symptoms assessment related ureteric double J stent. **II:** Patients' knowledge assessment questionnaire. **III:** Patients' self-care practices tool. **Results:** the study showed that, 100% of the studied patients with ureteric double J stent had unsatisfactory total knowledge. 60.0%, 77.1% - 62.9%, 64.3% and 84.3% of the studied patients had adequate level of self-care practices regarding personal hygiene, rest and sleep, compliance with treatment, infection prevention and sexual relation respectively. While, 100% of them had inadequate level of self-care practices regarding physical activity and social and work domain. **Conclusion:** Regarding self-care practices, it was found that, all of the studied patients had inadequate level of self-care practices regarding physical activity and social and work domain and most of the studied patients had inadequate level of self-care practices regarding psychological domain. While, all of the studied patients had adequate self-care practice regarding elimination. **Recommendation:** the study recommended that, implementing self-care practices educational program regarding ureteric double J stent in outpatient clinics and the urology departments.

**Keywords:** Ureteric double J stent, Patients' knowledge, Self-care, Suggested guideline.

### Introduction

Ureteral double J stents have been common practice in the management of various urological conditions (Hughes et al., 2020). Stents are typically left for a maximum of 3-6 months. If long-term stents are required exchanges (replacement) are usually due to encrustation. Ureteral stent placement is associated with some degree of morbidity in the majority of patients that ranges from generalized urinary discomfort to urinary tract infection or obstruction (Badawy et al., 2019).

Clinically, double J stents are most frequently used to resolve obstructions of the ureter. In addition, they are frequently used for obstructive pyelonephritis and acute renal colic,

after kidney and ureteral calculi treatment, for relieving obstructions related to genitourinary trauma and for urological procedures such as kidney transplantation, urethral stricture, and hydronephrosis repairs. Indications for the use of ureteral stents are increasing (Chen et al., 2020).

The American Urological Association (AUA), guidelines suggest that a double J stent may be omitted after ureteroscopic lithotripsy when "there is no ureteral injury, no anatomical obstacle to fragment clearance and a normal contralateral kidney" (Assimos et al., 2016).

The presence of ureteric stents has an impact on the patient's quality of life. More effort should be put towards improving stent design, material, and coating. The longer the stent is left in place, the more likely it is to develop complications such urinary tract infections, retained stent, sepsis and stent encrustations (Beysens & Taily, 2018).

Most patients have experience stent-related side effects, and some have complications related to double J stent. These include irritating voiding symptoms, back pain, hematuria, stent encrustation and fragmentation, stent migration, urinary tract infection, pyelonephritis, and ureteral fracture. Standard practice must include patient education, stent monitoring and removal at the appropriate time (Ramachandra et al., 2020).

The goal of double J stent education is to encourage independence and self-care, increasing health related quality of life (HRQOL) by allowing the patient to control and achieve competence in all aspects of their care such as physical activities, nutrition, elimination, rest and sleep, sexual matters, social interaction, work performance and psychological condition. Patient comfort and satisfaction increases when nurses are knowledgeable and confident (Li et al., 2021).

The renal nurse's role is support and assist the patient and their relatives to cope with ureteral stent in the best way possible and to manage its care. Nurses caring for these patients require specialist knowledge to reduce problems by prevention or anticipation and early intervention to maximize short- and long-term outcome. Patients (and relatives) who are engaged with the process are better equipped to care for themselves and this also contributes to the success of ureteral stent (Badawy et al., 2019).

The World health organization (WHO) has defined self-care as "The ability of individuals, families and communities to promote health, prevent disease, maintain

health, and to cope with illness and disability with or without the support of a health-care provider" (World Health Organization, 2014).

Self-care is beneficial for both the patient and the health care system, as it provides shorter hospital stays and lowers costs also; it provides more effective working relationships between patients and health care providers. Fine nursing can improve the self-care level of patient after surgery and promote the implementation of nursing quantitative indicators and nursing measures (Kong et al., 2019; Tian et al., 2020).

### Significance of the study

Approximately 92,000 ureteral stents are implanted every year to maintain urine flow after treatment of kidney stones, kidney transplants, and urinary incontinence (Hyde et al., 2016). Most ureteric J stents (58.9%) were used in the context of urinary calculi surgeries. As there are 80% of patients with symptoms associated with the double ureteral stent insertion including dysuria (80%), storage lower urinary tract symptoms (53.33%), hematuria (40%), flank and suprapubic pain (30%) and recurrent urinary tract infection (26.67%) (Patil et al., 2020).

Patients with ureteric double J stent are risk for expose to potential complications related to lack of knowledge regarding procedures. So the patients' education level and counseling before and after the procedure may play a significant role in reducing stent-related complications. So the nursing guidelines for patients with ureteric double J stent is essential (Patil et al., 2020).

### Aim of the Study

The study aimed to assess self-care among patients with ureteric double-J stent through:

1. Assessing patients' knowledge regarding ureteric double J stent
2. Assessing patients' self-care practices regarding ureteric double J stent.

- Suggesting self-care guideline for patients based on needs assessment regarding ureteric double J stent placement.

#### Research questions:

The current study answered the following questions:

- What is the level of knowledge among patient with ureteric double J stent?
- What is the self-care practice of patient with ureteric double J stent?

#### Operational definition:

Self-care: Assessing self-care for patients with ureteric double J stent includes physical self-care (activities, nutrition, daily monitoring of intake and output, elimination, personal hygiene, rest and sleep, adherence to the prescribed medication, prevention of ureteric double J stent complications, sexual relations), psychological domain, social interaction and work performance.

#### 1-Technical design:

The technical design included research design, setting, subjects and tools for data collection.

#### Setting:

This study was conducted at Fayoum University Hospital in Urosurgery Outpatient clinic in 1st floor, it is consisted of three partations every partation contains one bed to receive patient for examination. Clinic has one doctor and two nurses. It is received 30 patients every day for examination, diagnosis, and prescription of treatment, also refers patients if they need surgical management.

#### Research design:

A descriptive exploratory research design was used to conduct this study. Descriptive research design is a type of research design that aims to obtain information to systematically describe a phenomenon, situation, or population (Aggarwal & Ranganathan, (2019).

#### Subjects:

A purposive sample of 70 patients with ureteric double J stent who visited Urosurgery

Outpatient Clinic in EL-Fayoum University hospital and satisfied inclusion criteria.

**Inclusion criteria included the following;**

$$n = \left[ \frac{N \times p(1-p)}{\left[ N-1 \times \left( d^2 \div z^2 \right) \right] + p(1-p)} \right]$$

- Both genders male and female.
- Adult patients  $\geq 20$  years.
- Patients who was post-operative for ureteric double J stent and with first application of the stent.
- Able to communicate verbally.
- Patients who accepted to participate in the study.

#### Exclusion criteria included:

- Patients who had chronic diseases that interfere with their self-care practices as (cerebro-vascular stroke, paralysis, handicapped).
- Patients who had psychiatric disorders.

#### Tool of data collection:

Three tools were used in data collection:-(I): **Structured interviewing questionnaire:** It was developed by investigator and written in Arabic language to accomplish the purpose of the study after reviewing relevant literatures (Ferreira-Valente et al., 2011; Koprowski et al., 2016; Raja, & Joshi, 2017; Baset et al., 2020). It used to assess patients' demographic and clinical data. It consisted of two parts:

**Part (1):** Patients' demographic data sheet: This tool was used to assess demographic characteristics of patients: it composed of 6 questions. It included: age, gender, marital status, level of education, occupation and residence area.

**Part (2):** Patients' clinical data assessment: This tool was used to assess patients' present, past and family history and signs and symptoms related ureteric double J stent application. It composed of 18 closed end

questions. It composed of two parts as the following:-

a) Patients' medical history.

It composed of 18 closed end questions. It included present medical history, past medical history, past surgical history, previous hospitalization, and history of urological disorders and family history, etc.

b) Signs and symptoms assessment related ureteric double J stent: It composed of 21 closed end questions to assess ureteral-stent symptoms. It included:

i. Urinary tract symptoms: It composed of 10 questions to assess urinary symptoms after ureteric double J stent application such as frequency, urgency, dysuria, hematuria, incontinence, incomplete bladder emptying.

ii. Body pain or discomfort: it composed of 11 questions to assess body pain or discomfort in associated with stent. It included: Pain characteristics (site, onset, duration, interrupt sleep, etc) and assess pain severity by using numerical pain scale.

**(II): Patients' knowledge assessment questionnaire:-** It was developed by investigator and written in an Arabic language based on related literatures (El-Nahas et al., 2014; Koprowski et al., 2016; Betschart et al., 2017; Hsiao et al., 2019 & Bansal et al., 2020) and used to assess patient's knowledge regarding ureteric double J stent. It included 51 closed end questions which included:

**Section (A):** It was concerned with urinary system anatomy and physiology included urinary system anatomy and function of kidneys. It composed two multiple choice questions.

**Section (B):** It was concerned with ureteric double J stent basic knowledge included site of ureteric double J stent insertion and duration of ureteric double J stent removal/replacement. It composed of 15 questions (4 multiple choice and 11 true or false).

**Section (C):** It was concerned with complications of ureteric double J stent included stent fracture, encrustation and urinary tract infection. It composed of 17 questions (one multiple choice and 16 true or false).

**Section (D):** It was concerned with self-care of ureteric double J stent. It composed of 17 questions about each topic; exercise, nutrition, daily monitoring of intake and output, elimination, personal hygiene, rest and sleep, adherence to the prescribed medication and sexual relations.

❖ **Scoring system:**

The rating scale was graded as follows: the correct answer was scored one marks and incorrect answer was scored zero mark. The total score for this questionnaire was 47. The total score were summed, percentage was calculated for all participants and judged as the following:

- Satisfactory level of knowledge  $\geq 75\%$  ( $\geq 39$  correct answer).
- Unsatisfactory level of knowledge  $< 75\%$  ( $< 39$  correct answer). according statistical reports.

**III: Patients' self-care practices tool:**

It was developed by investigator based on related literatures (Khalil & Abdalrahim, 2014; Arias-Patiño et al., 2020; Baset et al., 2020) to assess patients' self-care regarding ureteric double J stent. It was written in Arabic language. It included 12 main subscales of activities practiced by the patients. It consisted of 90 statements as the following:-

**1. Nutrition:** it included 11 statements related to number of meals/day, duration between meals, compliance with prescribed therapeutic diet and fluid intake.

**2. Physical activities:** it included 12 statements related to ability to perform the activities of daily living, in addition to exercises and leisure time activities.

**3. Rest and sleep:** it included 4 statements related to rest and sleep pattern.

**4. Personal hygiene:** it included 10 statements regarding hand hygiene, oral care, grooming, bathing and showering.

**5. Daily assessment of intake and output:** it included 6 statements including measuring intake and output daily, inspection for urine characteristics.

**6. Elimination:** it included 6 statements regarding urination, defecation, perform pelvic floor exercises.

**7. Adherence to the prescribed medication:** It included 7 statements related to compliance with the prescribed medications, and avoiding over the counter medications.

**8. Prevention of ureteric double J stent complications:** it included 8 statements regarding following of the first signs of double J stent obstruction and symptoms that should be noticed and reported to the doctor.

**9. Prevention of infection:** It included 7 statements related to practices to avoid infection and monitor signs of infection.

**10. Sexual relation:** It included 6 statements related to number of times of intimacy, recommendations of resumption of sexual intercourse, problems which associated to double stent during sexual intercourse.

**11. Psychological domain:** It included 4 statements including performing relaxation technique, anxiety due to double J stent.

**12. Social interaction and work performance:** It included 9 statements related to time spent with other family members, maintaining role in the family, visits to friends, participation in social occasions and number of hours in work.

#### ❖ Scoring system:

Each statement had five responses from 1 to 5 on a five likert scale ranging from; (1) never, (2) seldom, (3) sometimes, (4) more than half the time and (5) almost always. These scores were summed and converted into a percentage score regarding ureteric double J stent. These scores were converted to percentage and categorized as the following:

- Adequate level of practices  $\geq 70\%$
- Inadequate level of practices  $< 70\%$

#### Operational design:

The operational design included preparatory phase, content validity and reliability, pilot study and field work.

##### A) The preparatory phase:

It included reviewing of related literatures, and theoretical knowledge of various aspects of the study using books, articles, internet periodicals and magazine, to develop tools for data collection.

#### Tools validity and reliability:

##### Testing validity:

The investigator assessed face and content validity of the developed tool through group of 7 experts from the Medical Surgical Nursing in Faculty of Nursing, Ain Shams University, the experts were asked to respond to each statement of the developed tool to assess its validity.

Two types of validity test used in this stage face and content validity. Face validity aimed at inspecting the tools to determine whether the tool measures what it supposed to measure. Content validity was conducted to measure appropriateness, relevance, correction and clearance of the content of tool used. The experts were four professors and three assistant professors. 86% of jury committee accepted the tool and 14% of them edited tool for appropriately and accuracy of statement such as modifications regarding patients' self-care, rearrangement of statments related nutritional self-care.

##### Testing reliability

It was tested statistically to assure that the tool is reliable before data collection. Testing the reliability of the same tool was done by using Alpha Cronbach Test. The result reliability test are  $r = (0.851)$  for patients' knowledge assessment questionnaire and  $(0.889)$  for patients' self-care practices questionnaire.

##### Pilot study:

A pilot study was applied to a group of patients (10% of the sample) 7 patients to test the applicability of the study tools, clarity,

feasibility and efficiency of the designed questionnaire, as well as to estimate the time needed to answer it and find the possible obstacles and problems that might face investigator and interfere data collection. Necessary modification was done for the study tools based on result of pilot study. Minor modifications were done regarding patients' knowledge section (B) Q1,2,3 that choices were yes or no edited for 4 multiple choices. The patients included in the pilot study were excluded from study sample.

#### **Field Work:**

Data collection was done at Urosurgery Outpatient Clinic at Fayoum University Hospital. Data collection phase was started and finished through 3 months from the beginning of November 2021 to the end of January 2022. Firstly the investigator introduced herself and explained the purpose of the study for the subjects included in the study to obtain their participation consent (oral consent). The investigator visited the selected setting two days per week, Sunday and Wednesday from 9a.m to 2pm in Urosurgery Outpatient Clinic. The investigator met about 3 patients every visit. Data collected from studied patients after ensuring that they met the criteria for selection. The study tools was filled in and completed by the investigator once from each participant in the study individually. First tool took about 10 minutes; second tool took 10-15 minutes and third tool took 15-20 minutes. Each questionnaire sheet took about 35- 45 minutes to be filled and completed. Finally data entered and statistical analysis and calculation was conducted.

#### **3- Administrative design:**

An official letter issued to them from the Faculty of Nursing at Ain Shams University explaining the aim of the study to obtain the permission for data collection to hospital and nursing directors of Urosurgery Outpatient Clinic at Fayoum University Hospital.

#### **Ethical considerations:**

**The ethical research considerations include the following:**

An ethical approval obtained from the Scientific Research Ethical Committee of Faculty of Nursing at Ain Shams University before starting the study to conduct this study after explaining its aim. In addition, informed oral consent was obtained from participants of the study. The investigator informed the objective and aim of the study to patients who was included in the study. The investigator emphasized that, the participation was voluntary, anonymity and confidentiality were assured. All patients were informed that, they were allowed to choose to participate or not in the study and they had the right to withdraw from the study at any time.

#### **4- Statistical Design:**

The data obtained and statistically analyzed and presented in numbers and percentages in tables, figures and diagrams as required and suitable statistical test was used to test the significance of results obtained. Data were extracted from the interview questionnaire and computerized in SPSS statistic for windows, version 25.0. Data analyzed was done using a software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variable, and mean and standard deviations for quantitative variables. The statistical analysis was done using the mean, Interquartile range (IQR), standard deviation, unpaired student t-test, f Test and ANOVA test. Spearman's rank correlation coefficient (r) was used to assess the degree of association between two sets of variables if one or both of them as skewed. The observed differences and associations were considered as the following:

- Non- significant (NS)  $p > 0.05$
- Significant (S)  $p < 0.05$
- Highly significant (HS)  $p < 0.01$

#### **Results:**

**Table (1):** illustrates that, 42.9% of the studied patients their age ranged from 35- 45 years, 72.9%, of them were males, 98.6% of them were married and 50.0% of them were illiterate. Regarding patients' occupation, the current study shows that 44.3% of patients were unemployed and 70.0% of them were lived in rural areas.

**Table (2):** illustrates that, 74.3% of the studied patients had initial diagnosis by stones Regarding symptoms, this table revealed that 98.6% of the studied patients had sever flank or supra pubic pain and 75.7% of them had oliguria and burning sensation during urination. Also, 45.7% of the studied patients had loss of appetite. In addition to, 75.7% of the studied patients had diagnosed by Lab investigations, US and CT and 100.0% of them took analgesic. In relation to duration of DJ placement, 37.2% of the studied patients had DJS inserted since more than 6 months and 61.42% of them had complication from DJS.

**Figure (1):** illustrates that, 11.62%, 13.95%, 30.23%, 18.60%, 20.93%, and 4.65% of the studied patients had stent fracture, stent obstruction, urinary tract infection, encrustation, forgotten stent and migration or displacement respectively.

**Table (3):** illustrates that, 100% of the studied patients had unsatisfactory level of knowledge regarding ureteric double J stent basic knowledge and complications of ureteric double J stent while, 31.4% of them had satisfactory level of knowledge regarding self-care and 100% of them had unsatisfactory total knowledge.

**Table (1):** Frequency and percentage distribution of the studied patients according to their demographic characteristics (n=70).

Demographic characteristics.	Studied patient	
	No	%
<b>1- Age (in years)</b>		
- From 18 > 35 yrs.	17	24.2
- From 35 > 45 yrs.	30	42.9
- From 45 > 60 yrs.	9	12.9
- More than 60 yrs.	14	20.0
<b>2- Sex</b>		
- Male	51	72.9
- Female	19	27.1
<b>3- Marital status</b>		
- Married	69	98.6
- Single	1	1.4
<b>4- Level of education</b>		
- Illiterate	35	50.0
- Read & write	9	12.9
- secondary education	19	27.1
- University level	7	10.0
<b>5- Occupation</b>		
- Employee	10	14.3
- Manual work	29	41.4
- Unemployed	31	44.3
<b>6- Residence</b>		
- Rural	49	70.0
- Urban	21	30.0

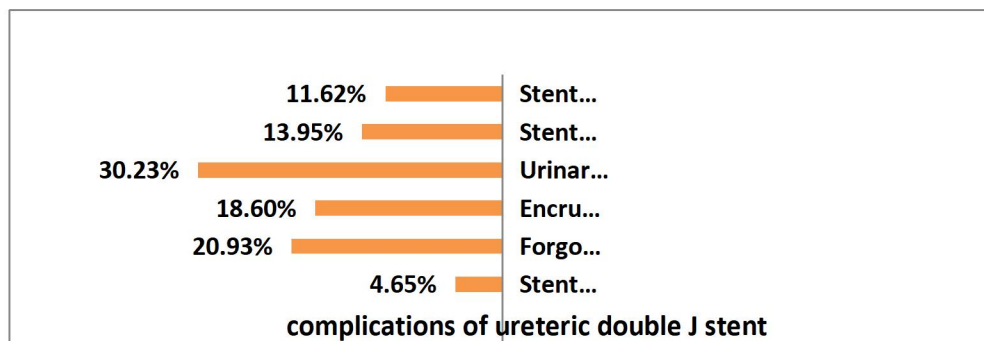
**Table (4):** illustrates that, 77.1%, 60.0%, 100%, 62.9%, 64.3% and 84.3% of the studied patients had adequate level of self-care practices regarding rest and sleep, personal hygiene, elimination, compliance with medication, infection prevention and sexual relation respectively while, 100% of the studied patients had inadequate level of self-care practices regarding physical activity, social and work domain and 92.9% of them had inadequate level of self-care practices regarding fluid balance follow up and psychological domain. **Table (5):** illustrates that, there were a statistically significance difference between patients' sex and their total self-care practice (p-value 0.014), Also, there were a statistically significance difference between patients' level of education and their total self-care practice (p-value 0.034), while there were no statistically significance difference between age, their occupation and residence area with total self-care practices.

**Table (6):** illustrates that, there were a highly statistically significant positive correlation between total knowledge and total self-care practice among patients with ureteric double J stent with  $r = 0.481$ ; p-value  $<0.001^{**}$ ).

**Table (2):** Frequency and percentage distribution of the studied patients according to their present history (n=70).

Clinical data	Studied patients	
	No	%
<b>1- Initial diagnosis</b>		
- Stones	52	74.3
- Tumor	3	4.3
- Ureteral stenosis	12	17.1
- Congenital anomalies	3	4.3
<b>2- Symptoms</b>		
- Flank pain or supra pubic pain	69	98.6
- Fever	39	55.7
- Nausea	41	58.6
- Vomiting	36	51.4
- Loss of appetite	32	45.7
- Burning sensation during urination	53	75.7
- Haematuria	34	48.6
- Oliguria	53	75.7
- Dysuria	50	71.4
<b>3- Onset of current problem</b>		
- One month > 6 months	26	37.1
- 6 months > 12 months	11	15.7
- More than one year	33	47.2
<b>4- Diagnostic and investigation methods</b>		
-Lab investigations and pelvis\ abdominal US	17	24.3
- Lab investigations , US and CT	53	75.7
<b>5- Medications</b>		
- Analgesics	70	100.0
- Anti-inflammatory	34	48.6
- Antibiotics	12	17.1
<b>6- Duration of DJ placement</b>		
- From week to 3 month	21	30
- From 3 month to 6 months	23	32.8
- More than 6 months	26	37.2
<b>7- Double J stent placement:-</b>		
- Unilateral	50	75%
- Bilateral	25	25%
<b>8- Complication from double J stent</b>		
- Yes	43	61.42

US: Ultrasonography CT: Computed Tomography

**Figure (1):** Percentage distribution of the studied patients regarding complications of ureteric double J stent.



**Table (3):** Relation between patients social dysfunction mean scores and their socio-demographic characteristics (N=100).

Items	satisfactory		Unsatisfactory	
	N	%	%	N
-Urinary system anatomy and physiology.	31	44.3	39	55.7
-Ureteric double J stent basic knowledge.	0	0.0	70	100.0
-Complications of ureteric double J stent.	0	0.0	70	100.0
-Self-care of ureteric double J stent.	22	31.4	48	68.6
<b>Total knowledge</b>	<b>0</b>	<b>0.0</b>	<b>70</b>	<b>100.0</b>

**Table (4):** Frequency and percentage distribution of level of self-care practices among patients with ureteric double J stent (n=70).

Self-care practice domains	Adequate self-care		Inadequate self-care	
	N	%	N	%
1. Nutrition	7	10.0	63	90.0
2. Physical activity	0	0.0	70	<b>100.0</b>
3. Rest and sleep	54	<b>77.1</b>	16	22.9
4. Personal hygiene	42	<b>60.0</b>	28	40.0
5. Fluid balance follow up	5	7.1	65	<b>92.9</b>
6. Elimination	70	<b>100.0</b>	0	0.0
7. Compliance with medication	44	<b>62.9</b>	26	37.1
8. Complication prevention	35	50.0	35	50.0
9. Infection prevention	45	<b>64.3</b>	25	35.7
10. Sexual relation	59	<b>84.3</b>	11	15.7
11. Psychological domain	5	7.1	65	<b>92.9</b>
12. Social and work domain	0	0.0	70	<b>100.0</b>
<b>Total</b>	<b>0</b>	<b>0.0</b>	<b>70</b>	<b>100.0</b>

**Table (5):** Differences between total self-care practice and patients' demographic data (n=70).

Item	Mean $\pm$ SD	Test of sig		
		value	p value	
Age	From 18 > 35 year	316 $\pm$ 17.97	F =1.58	0.203
	From 35 > 45 year	315.76 $\pm$ 8.3		
	From 45 > 60 year	315.11 $\pm$ 7.01		
	More than 60 year	305.64 $\pm$ 20.16		
Sex	Male	321.32 $\pm$ 11.35	t=-2.53	<b>0.014*</b>
	Female	310.94 $\pm$ 16.43		
level of education	Illiterate	308.57 $\pm$ 17.07 <sup>a</sup>	F =3.06	<b>0.034*</b>
	Read and write	314.78 $\pm$ 3.73 <sup>ab</sup>		
	Moderate education	320.95 $\pm$ 13.66 <sup>b</sup>		
	University	318.86 $\pm$ 17.34 <sup>ab</sup>		
Occupation	Employee	316.4 $\pm$ 14.99	F =0.16	0.854
	Manual work	313.31 $\pm$ 16.76		
	Unemployed	313.32 $\pm$ 15.63		
Residence area	Rural	312.61 $\pm$ 17.32	t=-0.92	0.359
	Urban	316.43 $\pm$ 11.6		

F: ANOVA test >0.05 Non significant <0.05\* significant \*statistically significance.  
Post hoc test : Means with the same superscript shows no significant difference

**Table (6):** Correlation between total knowledge score and total self-care practices among patients with ureteric double J stent (n=70).

Total self-care practice score	Total knowledge score	
	r	P-value
	0.481	<0.001**

<0.001\*\* High significant

## Discussion

Patients with DJS may develop many complications including major complications. Recent clinical evidences have suggested patient/ care giver engagement in performing self-care practices and identify early danger symptoms to reduce the risk of double J stent associated complications and improve their quality of life.

Regarding demographic characteristics of the patients under the study, more than two fifths of the studied patients with ureteric double J stent their age were ranged from 35- 45 years old. In the same context, **Metwally et al., (2021)**, reported in a study entitled "Effect of self-care practice health educational program for patients on urinary tract infection recurrence" in Tanta, that more than one third of patients their age ranged from 40-50 years old.

Considering gender, the current study result indicated that, nearly three quarters of the studied patients with ureteric double J stent were males. This finding is may be due to higher incidence of urinary out flow obstruction & urinary stones especially in men than females. This finding goes in the same line with **Ogreden et al., (2018)**, who revealed that, the majority of the studied patients were males, in a study entitled "The impact of ureteral double J stent insertion following ureterorenoscopy in patients with ureteral stones accompanied by perirenal fat stranding" in Turkey. However, this result is contradicted with **Abdelwahab et al., (2021)**, who stated that, renal stone disease affected females more than males, in a study entitled "Effect of implementing evidence-based guidelines on lifestyle modification for adult patients with renal stone undergoing ESWL procedure" in Alexandria.

Regarding marital status, the current study revealed that, the most of the studied patients with ureteric double J stent were married. This might be due to age of the study patients within marital range according to the Egyptian societal culture. This result is consistent with **Mahmoud et al., (2020)** in their study entitled "Effect of supportive educational interventions on self-care practices and

expected health outcomes among patients undergoing radical nephrectomy" in Alexandria, in which they found that, the majority of the studied patients were married.

In relation to patients' level of education, the result of this study revealed that, half of the studied patients were illiterate. This finding is may be due to poor socioeconomic background, low level of education in Egypt especially in rural area and more than two thirds of the studied patients were from rural background. This result is congruent with **Patil et al., (2020)**, who reported that, the majority of sample were illiterate in their study entitled "Forgotten ureteral double-J stents and related complications: A real-world experience" in India.

According patients' occupation, the current study showed that, more than two fifths of the studied patients were unemployed. This finding is may be due to various stent-related symptoms, such as frequency, urgency, dysuria, pain, incontinence, and hematuria and also, these symptoms negatively affect on patient's work performance and leave work. This result is incongruent with **Lin et al., (2019)**, who stated that, half of the studied patients had work in their study entitled "The risk factors and complications of forgotten double-J stents: A single-center experience" in

Regarding residence, this result revealed that, less than three quarters of the studied patients was resided in rural areas. This finding is due to in availability of tertiary health care settings. In addition to lack of education, poor sanitation, and poor media in rural areas place people at higher risk for diseases. This result is in accordance with **Mahmoud et al., (2019)** in their study entitled "Effectiveness of self-care intervention for patients with urolithiasis on their practices regarding nutrition" in Banha. Finding of this study clarified that, around two thirds of patients were lived in rural areas.

Regarding initial diagnosis of the studied patients, this result showed that about three quarters of the studied patients had ureteral obstruction by urolithiasis. This result is may be

due to poor diet. In the same context, **Gurram et al., (2018)**, whom reported in their study entitled "Ureteric double-J stent related complications: A single tertiary care center experience from South India" and found that, the majority of the stents were placed for stones postsurgical intervention and the commonest indication for stenting was urological procedures for stones either renal or ureteric stones.

In relation to duration of ureteric double J stent removal/replacement, the findings of the present study revealed that, about one third of the studied patients had ureteral double J stent inserted since more than 6 months "forgotten stents". This is may be due to low education level and poor knowledge regarding duration of double J stent placement which contributes to forgotten stent occurrence. This result is congruent with **Abdelaziz et al., (2018)**, who stated that, the majority of the studied patients with forgotten ureteral stents for more than six months and confirmed that double J stents were typically left for a maximum of 3-6 months in their study entitled "Forgotten ureteral stents: Risk factors, complications and management".

According ureteric double J stent complications, the current study showed that, more than two fifths of the studied patients had major complications regarding ureteric double J stent application. It included stent fracture, stent migration, urinary tract infection, encrustation, stone formation and forgotten stent. This finding is may be due to the incidence of stent complications increases with the duration of the stent. So, double J stent should be removed or replaced on time 3-6 months.

This result goes in the same line with the finding of the study done by **Faysal et al., (2021)** entitled "The fate of double J stent used in pyelolithotomy and uretero lithotomy" in Bangladesh. Finding of this study clarified that, nearly one third of the studied patients had stent breakage and one quarter of them had stent encrustation. Also, more than one third of the studied patients had stent migration and nearly half of them had urinary tract infection and forgotten stent.

As regard to total knowledge regarding double J stent, this study revealed that, all of the studied patients had unsatisfactory level of total knowledge regarding ureteric double J stent. Although few of them had satisfactory knowledge regarding some aspect. This may be due to that, patients didn't receive enough information from health care team about ureteric double J stent, complications and its self-care before patients discharge. Moreover increase patient illiteracy rate, coming from rural area and poor media

This finding is inconsistent with the finding of the study done by **Mangai et al., (2019)** entitled "Assessment of knowledge and prevention practices of urinary tract infection (UTI) among female students residence in university of Jos" in Nigeria, who showed that, the majority of the patients had satisfactory level of knowledge about urinary tract infection.

Regarding self-care practices, related nutrition this study revealed that, the most of the studied patients had inadequate level of self-care regarding nutrition. This finding may be due to the high proportion of illiteracy of the studied patients and live in rural areas that had lack of knowledge about healthy nutrition. This finding is congruent with **El-Sheikha (2018)**, who found that, the majority of patients had lack of knowledge about stone forming food, amount of daily fluid intake and high percentage of illiteracy in their study entitled "Assessment of health related behaviors among patients post percutaneous nephrolithotomy".

As regard to physical self-care activities, this result revealed that, all of the studied patients had inadequate level of self-care practices regarding physical activity. From the researcher point of view, this result may be due to that, range of motion and any changes in body position and may lead to body pain and discomfort.

This is in accordance with **Hsiao et al., (2019)** in their study entitled "Lower urinary tract symptoms associated with double-J stent" in Taiwan, who mentioned that, the majority of

patients had unsatisfactory level of self-care practices. This finding may be due to

Regarding adherence to the prescribed medications. This result revealed that, more than three fifths of the studied patients had adequate level of self-care practices regarding adherence to the prescribed medications. This finding may be due to their fear from recurrence of symptoms related double J stent.

This result is contradicted with **Vajpeyi et al., (2020)**, who reported that, the reasons behind a forgotten or retained stent can be attributed to inadequate counseling by poor compliance with therapeutic regimen of patient and family in their study entitled "Forgotten double-J stent: Experience of a tertiary care center".

Regarding prevention of complications, this result revealed that, half of the studied patients had inadequate level of self-care practices concerning prevention of ureteric double J stent complications. This result is goes in the same line with **Jiang et al., (2019)**, entitled "Migration of a double J stent into the inferior vena cava: A case report" in china, who stated that, the majority of patients had insufficient self-care measures for preventing ureteric double J stent problems.

As regard to prevention of infection, the current study showed that, less than two thirds of the studied patients had inadequate level of self-care practices regarding prevention of infection. This result is similar to finding of **Metwally et al., (2021)**, who found that, high rate of post-operative infection due to lack of nurses' instructions in their study entitled "Effect of self-care practice health educational program for patients on urinary tract infection recurrence" in Tanta. While, this finding is incongruent with **Abdelmowla et al., (2017)**, who reported that, the majority of patients had good monitoring for signs of infection and they had awerness regarding infection

Regarding sexual relations, this result showed that, the majority of the studied patients had adequate level of self-care practices

regarding sexual relations. This may be due to unpleasant sensations and pain during sexual intercourse and ejaculation, which could be caused by ureteral stents. Also, may be due to symptoms related to double J placement and trans-urethral surgery.

This result is incongruent with **Bolat et al., (2017)** in their study entitled "Ureterorenoscopy with stenting and its effect on male sexual function: A controlled randomised prospective study" and found that, double J catheterization seemed to have negative effect on male sexual function, especially in erectile dysfunction and ejaculatory dysfunction. The International Index of Erectile Function Questionnaire and Male Sexual Health Questionnaire score were significantly lower in patients who placed double J stent.

As regard to psychological domain, this result revealed that, the most of the studied patients had inadequate level of self-care practices regarding psychological domain, which most of patients had psychological disturbance and mental changes as anxiety, tension, depression and restlessness. This finding may be due to sensation of a foreign body inside the ureter. Furthermore, there was a string tied to the stent's distal end, which was left outside the urethra as well as the presence of adverse effects from the stent's placement, and the worry of problems.

This finding is in accordance with with **Mu et al., (2021)** in their study entitled "Effects of continuing nursing care under cognitive behavioral intervention on psychological state and living quality in patients with double J catheter after ureterolithiasis surgery" who mentioned that, higher score of patient represented a worse psychological state (depression and anxiety).

According social domain and work performance, this result showed that, all of the studied patients had inadequate level of self-care practices regarding social interaction and work performance. This finding may be due to intolerable stent discomfort. This finding is in

accordance with **Michel-Ramírez et al., (2020)**, who found that, ureteral stent-related symptoms had a negative impact on the patient's economy and reported that, more than half of patients had reduced work capacity due to the discomfort of the stent and nearly half of them were unable to work. Also, half of the patients sought medical attention for the stent-related symptoms in their study entitled "Development and validation of the ureteral stent discomfort test (USDT). A simple, effective, and easy-to-use tool for evaluating ureteral stent discomfort".

In relation to total self-care practices among patients with ureteric double J stent, this study revealed that, all of the studied patients had inadequate self-care practices levels regarding all domains of self-care practices. This finding may be due to ureteral stent-related symptoms effect on all domain score of self-care. This finding is consistent with **Bach et al., (2018)**, who reported that, there were statistically significant changes in all domain scores of self-care regarding double J stent in their study entitled "Short term external ureter stenting shows significant benefit in comparison to routine double-J stent placement after ureterorenoscopic stone extraction: A prospective randomized trial—the Fast track stent study.

Regarding the relation between total self-care practices and demographic characteristics, the current results found that, there was statistically significant relation between total self-care practices and patients' sex (p-value 0.014\*) which male patients had the poorest self-care practices versus female patients. This finding is supported by **Li et al., (2021)** in their study entitled "Effect of empowering education on refined nursing of patients with internal double J tubes after surgery for ureteral stricture" in china, who reported that, there was a positive relationship between sex and self-care practice regarding double J stent and female had more practices regarding self-care of double J stent.

Moreover, results of the current study revealed that, there was a statistically significant relation between total self-care practices and

level of education (p-value 0.034\*). This result is consistent with **Ramachandra et al., (2020)** in their study entitled "Strategies to improve patient outcomes and QOL: current complications of the design and placements of ureteric stents" in United Kingdom, who reported that, illiterate patients had the poorest self-care practices; this may be due to the importance of education in raising health awareness.

Concerning the correlation between total Knowledge and total self-care practice among the studied patients, the finding of the present study showed that, there was a positive significant relation between total knowledge level and total self-care practice with statistical significance at p-values of  $\leq 0.001$ . This finding is supported by **Mohamed et al., (2019)**, who reported that, there was a strong statistically significant positive correlation between knowledge and practices in their study entitled "self-care practices regarding prevention of urinary tract infection among secondary nursing students", in Port-Said University.

## Conclusion

**Based on the findings of the current study, it can be concluded that:**

Overall, this study concluded that, all of the studied patients had unsatisfactory total level of knowledge regarding ureteric double J stent. Regarding self-care practices, it was found that, all of the studied patients had inadequate level of self-care practices regarding physical activity and social and work domain and most of the studied patients had inadequate level of self-care practices regarding psychological domain.

While, all of the studied patients had adequate self-care practices regarding elimination, three fifths of the studied patients had adequate self-care practices regarding personal hygiene, more than three quarters of them had adequate self-care practices regarding rest and sleep. Also, more than three fifths of the studied patients had adequate self-care practices regarding infection prevention and majority of them had adequate self-care

practices regarding sexual relation. Finally, there are a highly statistically significant positive correlation between total knowledge score and total self-care practice score among patients with ureteric double J stent.

### Recommendations

**Based on the findings of the present study, the following are recommended:**

#### Recommendation related patients:

- Implementing self-care practice educational program regarding ureteric double J stent in outpatient clinics and the urology departments.
- Simple booklet written in simple Arabic language recommended to developed, and be available for all patients with ureteric double J stent included all informations about ureteric double J stent, complications and its self-care.

#### Recommendation related research:

- A similar study can be done on a large sample to generalize the findings.
- Future researches should be conducted to assess patients' knowledge and self-care regarding double J stent.

#### Recommendation related health institution:

- Hospital should follow patients by phone to inform them about removing or replacing of double J stent.
- Provide posters and simple illustrations about ureteral stent complications management should be available in every surgical department.

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