Assiut Scientific Nursing Journal
http://asnj.journals.ekb.eg http://www.arabimpactfactor.com
DOI: 10.21608/asnj.2023.245309.1706 http://olddrji.lbp.world/indexedJournals.aspx
https://vlibrary.emro.who.int/journals/assiut-scientific-nursing-journal

Effect of Applying Nursing Instructions Brochure on Outcomes for Patients Undergoing Cystoscopy

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Abstract
Background: Cystoscopy is one of the most frequent urological procedures. **Aim:** To evaluate the effect of applying nursing instructions brochure on the outcomes of patients undergoing cystoscopy. **Research design:** Quasi-experimental research design. **Setting:** The study was conducted at Assiut University Urology Hospital (male, female urology departments and outpatients). **Sample:** One hundred patients were divided into two equal groups; study and control groups. **Tools:** (I): **Patient assessment form**. **Part (I):** Socio-demographic data for the Patient, Part (II): Medical data, Part (III): Patient knowledge assessment form. **Tool II: Beck anxiety inventory. Tool (III): Patient satisfaction questionnaire**. **Results:** the majority of both groups had never a cystoscopy. Prostate enlargement affected more than 25% of the study group, while hematuria affected 32% of the control group. **Conclusion:** Significant improvement in knowledge, anxiety, and satisfaction level for study group after applying nursing instructions brochure. **Recommendation:** Nursing instructions brochure for patients undergoing cystoscopy should be available for patients undergoing cystoscopy.

Keywords: Cystoscopy, Nursing Instructions Brochure & Patients Outcomes.

Introduction:
Cystoscopy is a procedure that enables doctor to examine the lining of bladder and the tube that carries urine out of body (urethra). A hollow tube (cystoscope) equipped with a lens is inserted into urethra and slowly advanced into bladder. **(Paul et al., 2022)**

Cystoscopy is one of the most needed urological procedures; it could make most of patients irritable. **(Mark et al., 2020).** Although flexible cystoscopies are typically performed, rigid cystoscopy is still mandatory in many cases. **(Ogrinc et al., 2019)** Most office cystoscopies are done to make diagnoses. Gross or microscopic hematuria is one of the most frequent causes for a patient to be referred to an urologist. (**Alexander et al., 2019) & (Anan et al., 2020).**

Any history of urinary system malignancies, particularly urethral and bladder cancer, are another frequent reason for routine cystoscopy makes cystoscopy necessary for lower urinary tract check. Obstructive voiding symptoms, irritable voiding symptoms, urine incontinence, chronic pelvic pain syndrome, or recurrent UTIs are more indications for performing cystoscopy. Any injury that raises the possibility of lower urinary tract trauma requires a cystoscopy (**Davids & Frenken, 2018).**

Contraindications of cystoscopy are rather simple to identify. The surgery would be contraindicated if there are any signs of acute urinary tract infection. Urethral stricture is also a contraindication for performing cystoscopy **(Fu et al, 2020)**

Before performing the process, informed consent must be obtained. Before cystoscopy, urinalysis and urine cultures are frequently carried out. In the absence of patient-related risk factors, antibiotic use for routine diagnostic cystoscopy is not advised by the AUA best practice policy statement on antimicrobial prophylaxis. The skin should be cleansed with an antiseptic solution before the treatment. It is not advised to use alcohol-based solutions or chlorhexidine gluconate on the genitalia because they both have the potential to harm mucosal membranes. All skin surfaces are suitable for use with aqueous-based iodophor-containing preparations like Betadine, which are most frequently used for preparation. **(Suzanne et al., 2018)**

A lubricating gel is injected into the urethra after the antibacterial has been applied. You can apply a simple or lidocaine gel. Nurses must disclose problematic situations or complications right away. **(Cadish, 2019)**

Urinary tract infection, hematuria, dysuria, and injuries to the bladder or urethra are a few of the cystoscopy's minor risks. Bleeding and bladder blockage are the two procedures' most immediate side effects. There is a recognized potential instrumentation problem known as the development of an iatrogenic urethral stricture. **(Gonzalez et al., 2019)**

The nurse is responsible for monitoring vital signs and reporting any major changes. Following the procedure, urology-trained nurses take over the patient's care. Any undesirable incidents or issues must be reported right away by the nurse. When these issues emerge, nurses should be familiar with the protocol for calling the urologist. Prior to release, the nurse must plan the patient's education and notify the clinical team leader of any misunderstandings so they may offer additional support. **(Bschleipfer et al., 2019)**

Significance of the study

About 200 patients at the Assiut University Urology Hospital in 2021 had cystoscopies, according to patient records. In order to increase patients' knowledge, satisfaction, and decrease degree of anxiety during cystoscopy procedures, we are trying to develop nursing instructions brochure.

Operational definitions:

- Nursing instructions brochure: It alludes to the teachings, counsel, and recommendations given by a qualified nurse or researcher that the patient is required to heed in order to enhance understanding, reduce anxiety, and increase patient satisfaction for patients having a cystoscopy.
- Outcomes: measurement based on comparisons of the patient's knowledge, degree of anxiety, and satisfaction with respect to outcome measures between the two groups (study and control).

Aim of the study:

1. Assess knowledge for patients undergoing cystoscopy.
2. Design and implement nursing instructions for patients undergoing cystoscopy.
3. Evaluate the effect of applying nursing instructions on outcomes (improve knowledge, minimize anxiety level and improve satisfaction) for patients undergoing cystoscopy.

Research hypothesis:

- The post mean knowledge scores will be higher among patients in the study group than those in the control group.
- The anxiety level will be reduced among patients in the study group than those in the control group.
- The post mean satisfaction scores will be higher among patients in the study group than those in the control group.

Subjects and Methods:

Research design

Quasi experimental research design. (Study and control groups).

Setting:

The study conducted at Urology University Hospital (male, female urology departments and outpatients).

Sample size:

G power analysis to estimate the sample size was performed based on the result of previous study." Effect size 0.80%, type I error 0.05%, type II error 0.20 with Confidence interval (CI) 95%. A total sample size of 100 participants is required.

Sample:

A sample of one hundred voluntary study participants, ages ranging from twenty to sixty-five, were having cystoscopies. Two equal groups—the study group and the control group each with 50 patients were created from this sample. Routine hospital care was provided to patients in the control group. While patients in the study group received ordinary hospital care along with brochure of nursing instructions.

Inclusion criteria:

Patients undergoing cystoscopy for managing urethral and bladder cancer or both with aged (between 18-65 years old) from both sexes were included in the study

Exclusion criteria:

- Patients, who were not able to receive, understand or respond to instructions.
- Patients with renal failure, acute urinary tract infection, ureter stricture and chronic comorbidities were excluded from the study.

Tools:

Tool (I): Patient assessment form:

It was developed by the researcher based on current national and international literatures. It includes three parts:

Part (I): **Socio-demographic data for the patient as** (age, gender, occupation, marital status, residence, level of education).

Part (II): Medical data as: It was included patient's previous cystoscopy and causes of cystoscopy.

Part (III): Patient knowledge assessment form:

The researcher created it in order to evaluate patient' knowledge regarding meaning of cystoscopy, indications, pre cystoscopy preparation, post cystoscopy care, discomfort, and complications.

Tool (II): Beck Anxiety Inventory (BAI): (Beck et al., 1988)

It was once used to assess patients' anxiety levels. The sum of the 21 items is used to determine the final score. 0 to 21 is considered low anxiety. 22 to 35 indicate moderate anxiety. A score of 36 or higher indicates perhaps dangerously high anxiety levels.

Tool (III): Patient Satisfaction Questionnaire: (Larsen et al., 1979)

It used to assess level of satisfaction for patients. Total scores range from 8 to 32, with the higher number indicating greater satisfaction.

Procedure:

- An approval from Ethical Committee in the Faculty of Nursing was obtained.

- Permission to conduct this study was obtained from the head of Urology University Hospital after explaining the aim and nature of the study to them to obtain their cooperation.
- Four stages of the study were carried out: (preparatory phase, planning phase, implementation phase and evaluation phase).

Phase (I) Preparatory phase:

A comprehensive assessment of previous and present local and international literature pertaining to the different facets of the issues was conducted through the use of books, articles, periodicals, and magazines. The number of patients in the urology department at Assiut University Urology Hospital was evaluated in relation to the planned study setting. An end-of-phase pilot study was conducted.

Tools Validity:

Five specialists reviewed the research tools' material to establish it. Three experts from Assiut University, two in urological medicine and three in medical-surgical nursing evaluated the tools for readability, comprehension, thoroughness, and application. Only minor adjustments were needed, and those were made.

Ethical consideration:

- Research proposal approved from Ethical Committee with IRB no: **1120230489** on November 27, 2022 in the faculty of nursing at Assiut University.
- Study subjects are not at risk during the application of the research
- The study adheres to ethical principles in clinical research
- Patients or guidance who are willing to participate in the study have given written consent after being informed of its nature and purpose
- Confidentiality and anonymity have been guaranteed; and study subjects have the right to withdraw from the study at any time without giving a reason.
- Study subject privacy was taken into account when gathering data.

Pilot study:

Pilot study was conducted on 10% (10) of the study sample patients undergoing cystoscopy to test feasibility, clarity and applicability of the tools then necessary modifications was carried out. The research sample did not include any of the patients who were involved in the pilot study.

Phase (II) Planning phase:

Applying nursing instructions brochure:

The researcher created it using basic Arabic language and visuals, drawing from a review of pertinent literature and readily available resources in the form of a brochure with nursing instructions. The content included information regarding meaning of cystoscopy, indications, pre cystoscopy preparation, post cystoscopy care, discomfort, and complications.

Phase (III) Implementation phase:

- Data collection lasted for 6 months through the period from February 2023 to July 2023
- Patient's agreement for voluntary participation was obtained after explanation of the purpose and nature of the study.
- The sample was divided randomly into two groups (study and control group).
- Each patient participating in the study was interviewed individually by the researchers to assess the patient's demographic characteristics, medical data, knowledge, anxiety, and satisfaction level for patients using tool (I, II, III) it was completed before and one week &one month after cystoscopy for both groups.
- The time required to complete the study tools ranged from "20 - 30" 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 30 to 45 minutes for explanation and answering questions.
- Each patient in the study group was provided a written, colored, and illustrated brochure filled with pictures and the researchers contact information (i.e. phone numbers) for any questions.

Phase III: Evaluation phase:

Following the patients' discharge from the hospital, an evaluation was conducted. Using tools (I part three, II, and III), the researchers followed up with the patients in the urology outpatient clinic one week and one month following the cystoscopy for both groups in order to assess their level of knowledge, anxiety, and satisfaction.

Limitations of the study:

1. Some patients not adhering to follow-up appointments
2. More than one fifth of patients illiterate

Statistical design

The data were examined for homogeneity, variances, and normality using the Anderson-Darling test before to undertaking any statistical analysis. While mean and standard deviation (Mean, SD) were employed to convey continuous data, numbers and percentages were used to represent categorical variables. The strength of the linear relationship is measured by Pearson correlation in one-way ANOVA and independent sample T-test. Something was deemed statistically significant when a two-tailed $p < 0.05$. IBM SPSS 20.0 was used to conduct all of the analyses.

Results

Table (1): Distribution of studied groups related to socio-demographic data (n=100):

Items	Study Group		Control Group		F-test	P-value
	No. (n=50)	%	No. (n=50)	%		
Age:						
30 to < 40	5	10.0	4	8.0		
40 to < 50	9	18.0	7	14.0		
50 to < 60	13	26.0	15	30.0	0.655	0.601
60 to < 65	23	46.0	24	48.0		
Mean ± SD	**54.9 ± 8.1**		**55.7 ± 7.5**			
Range	**36.0 - 65.0**		**37.0 – 65.0**			
Gender:						
Male	45	90.0	43	86.0	1.509	0.543
Female	5	10.0	7	14.0		
Marital status:						
Single	0	0.0	2	4.0		
Married	46	92.0	44	88.0	0.256	0.840
Divorced	2	4.0	1	2.0		
Widow	2	4.0	3	6.0		
Level of education:						
High education	10	20.0	7	14.0		
Secondary	5	10.0	4	8.0		
Read and write	16	32.0	16	32.0	0.269	0.141
Primary education	5	10.0	10	20.0		
Illiterate	14	28.0	13	26.0		
Occupation:						
Employee	18	36.0	18	36.0		
Farmer	16	32.0	12	24.0		
Housewife	5	10.0	7	14.0	0.095	0.377
Industrial worker	5	10.0	9	18.0		
Manual worker	6	12.0	4	8.0		
Residence:						
Rural	23	46.0	24	48.0	0.142	0.533
Urban	27	54.0	26	52.0		

Independent sample T-test ** Statistically significant differences (p < 0.05)*

Table (2): Distribution of studied groups related to medical data of patients:

Items	Study Group		Control Group		F-test	P-value
	No. (n=50)	%	No. (n=50)	%		
Previous Cystoscopy:						
Yes	14	28.0	11	22.0	1.900	0.493
No	36	72.0	39	78.0		
Causes of Cystoscopy						
Hematuria	9	18.0	16	32.0		
Urinary retention (inability to urinate)	6	12.0	3	6.0		
Refractory overactive bladder	0	0.0	3	6.0		
Prostate enlargement	15	30.0	14	28.0	0.394	0.119
Bladder cancer	11	22.0	9	18.0		
Urethral strictures	4	8.0	2	4.0		
Bladder stones	3	6.0	2	4.0		
Ulcerations inside the urethra or bladder	0	0.0	0	0.0		
Chronic cystitis	2	4.0	1	2.0		

Independent sample T-test ** Statistically significant differences (p < 0.05)*

Table (3): Distribution total of knowledge levels for studied groups (study and control) (n=100).

Items	Study Groups (n=50)						Control Group (n=50)						P-value 1	P-value 2	P-value 3
	Pre		Post One Week		Post One Month		Pre		Post One Week		Post One Month				
	No	%	No	%	No	%	No	%	No	%	No	%			
Satisfactory level (≥60%)	3	6.0	48	96.0	46	92.0	1	2.0	5	10.0	3	6.0	0.729	0.000 ***	0.000 ***
Unsatisfactory level (<60%)	47	94.0	2	4.0	4	8.0	49	98.0	45	90.0	47	94.0			

Independent sample T-test ** statistically significant differences (p < 0.05)*

P-value1: relation between pretest of the study group & pretest of the control group

P-value2: relation between post one week test of the study group & post one week test of the control group

P-value3: relation between post one month test of the study group & post one month test of the control group

Table (4): Distribution of score anxiety level for studied groups (study and control) (n=100).

Items	Study Group (n=50)						Control Group (n=50)						P-value1	P-value2	P-value3
	Pre		Post One Week		Post One Month		Pre		Post One Week		Post One Month				
	No	%	No	%	No	%	No	%	No	%	No	%			
Low Anxiety (0 – 21)	2	4.0	9	18.0	39	78.0	1	2.0	3	6.0	1	2.0	0.340	0.000 ***	0.000 ***
Moderate Anxiety (22 – 35)	8	16.0	37	74.0	10	20.0	5	10.0	6	12.0	11	22.0			
Potentially concerning levels of Anxiety (>36)	40	80.0	4	8.0	1	2.0	44	88.0	41	82.0	38	76.0			

Independent sample T-test ** Statistically significant differences (p < 0.05)*

P-value1: relation between pretest of the study group & pretest of the control group

P-value2: relation between post one week test of the study group & post one week test of the control group

P-value3: relation between post one month test of the study group & post one month test of the control group

Table (5): Relation between studied groups related to patients' satisfaction questionnaire:

Items	Study Groups		Control Group		P-value
	Mean ± SD	Range	Mean ± SD	Range	
Before applying nursing instructions brochure	**12.3 ± 1.4**	**11.0 – 16.0**	**12.5 ± 1.6**	**11.0 – 16.0**	**0.446**
One week after applying nursing instructions brochure	**28.5 ± 0.9**	**27.0 – 30.0**	**12.2 ± 1.3**	**11.0 – 17.0**	**0.000 *****
One month after applying nursing instructions brochure	**28.5± 0.8**	**27.0 – 30.0**	**12.3 ± 1.4**	**11.0 – 16.0**	**0.000 *****

Independent sample t-test * Statistically significant differences (p < 0.05)

Table (6): Pearson correlation between study and control groups related to Knowledge, Beck Anxiety Inventory BAI Scale and Satisfaction Questionnaire (CSQ-8, v. TMS-180S) scale:

Group			Knowledge	BAI	CSQ
Pre	Knowledge	Pearson Correlation	1	0.643**	0.744**
		Sig.	-	0.156	0.152
		N	100	100	100
	BAI	Pearson Correlation	0.643**	1	0.580**
		Sig.	0.156	-	0.074
		N	100	100	100
	CSQ	Pearson Correlation	0.744**	0.580**	1
		Sig.	0.152	0.074	-
		N	100	100	100
Post one week	Knowledge	Pearson Correlation	1	0.662**	0.853**
		Sig.	-	0.000***	0.000***
		N	100	100	100
	BAI	Pearson Correlation	0.662**	1	0.799
		Sig.	0.000***	-	0.000***
		N	100	100	100
	CSQ	Pearson Correlation	0.853**	0.799	1
		Sig.	0.000***	0.000***	-
		N	100	100	100
Post one month	Knowledge	Pearson Correlation	1	0.736**	0.857**
		Sig.	-	0.000***	0.000***
		N	100	100	100
	BAI	Pearson Correlation	0.736**	1	0.832**
		Sig.	0.000***	-	0.000***
		N	100	100	100
	CSQ	Pearson Correlation	0.857**	0.832**	1
		Sig.	0.000***	0.000***	-
		N	100	100	100

The correlation is significant at the 0.01 level.

Table (7): Relationship between anxiety level and socio-demographic characteristics of study groups:

Items	Study Groups					
	Before applying nursing instructions brochure		One week after applying nursing instructions brochure		One month after applying nursing instructions brochure	
	F-test	P-value	F-test	P-value	F-test	P-value
Age	4.180	0.021*	5.955	0.005*	0.422	0.658
Gender	0.671	0.516	0.993	0.378	5.959	0.005*
Marital status	0.465	0.631	1.954	0.153	1.843	0.142
Level of education	29.873	0.000	36.899	0.000***	1.417	0.253
Occupation	2.009	0.145	5.007	0.011*	0.686	0.509
Residence	3.339	0.044*	2.503	0.093	1.144	0.327

One way ANOVA ** statistically significant differences ($p < 0.05$)*

Table (8): Relationship between Satisfaction Questionnaire (CSQ-8, v. TMS-180S) scale scores and socio-demographic characteristics of studied groups

Items	Study Groups						Control Group					
	Before applying nursing instructions brochure		One week after applying nursing instructions brochure		One month after applying nursing instructions brochure		Before applying nursing instructions brochure		One week after applying nursing instructions brochure		One month after applying nursing instructions brochure	
	F- test	P-value	F-test	P-value	F-test	P-value	F-test	P-value	F-test	P-value	F-test	P-value
Age	0.881	0.483	0.995	0.404	1.709	0.178	1.185	0.330	0.499	0.736	0.486	0.746
Gender	1.206	0.321	0.175	0.912	1.603	0.202	1.085	0.375	1.086	0.375	0.650	0.630
Marital status	1.095	0.371	0.431	0.732	1.085	0.365	1.765	0.153	1.177	0.334	1.496	0.219
Level of education	1.363	0.262	0.467	0.707	1.845	0.152	1.937	0.121	3.044	0.026	1.643	0.180
Occupation	1.186	0.330	3.254	0.030*	0.128	0.943	0.709	0.590	1.598	0.191	0.988	0.424
Residence	1.378	0.257	0.812	0.494	0.556	0.647	0.737	0.572	2.339	0.069	1.321	0.277

One way ANOVA ** statistically significant differences (p < 0.05)*

Table (9): Relationship between patients' Beck Anxiety Inventory BAI Scale scores and medical data of studied groups:

Items	Study Groups						Control Group					
	Before applying nursing instructions brochure		One week after applying nursing instructions brochure		One week after applying nursing instructions brochure		Before applying nursing instructions brochure		One week after applying nursing instructions brochure		One week after applying nursing instructions brochure	
	F-test	P-value	F-test	P-value	F-test	P-value	F-test	P-value	F-test	P-value	F-test	P-value
Previous Cystoscopy	2.531	0.090	4.435	0.017*	1.341	0.271	0.940	0.398	1.551	0.223	0.859	0.430
Causes of Cystoscopy	1.253	0.295	0.602	0.552	0.389	0.680	0.124	0.883	0.711	0.497	0.730	0.487

One way ANOVA ** Statistical significant differences (p < 0.05)*

Table (10): Relationship between Satisfaction Questionnaire (CSQ-8, v. TMS-180S) scale scores and medical data of studied groups:

Items	Study Groups						Control Group					
	Before applying nursing instructions brochure		One week after applying nursing instructions brochure		One week after applying nursing instructions brochure		Before applying nursing instructions brochure		One week after applying nursing instructions brochure		One week after applying nursing instructions brochure	
	F-test	P-value	F-test	P-value	F-test	P-value	F-test	P-value	F-test	P-value	F-test	P-value
Previous Cystoscopy	0.540	0.707	0.166	0.919	1.000	0.401	0.876	0.486	0.221	0.925	0.722	0.582
Causes of Cystoscopy	0.471	0.757	0.934	0.432	0.771	0.516	1.274	0.294	0.135	0.969	0.578	0.680

One way ANOVA ** Statistical significant differences (p < 0.05)*

Table (1): Demonstrates that the highest percentage of studied groups (study and control) 46%, 48% their ages ranged between 60 < 65 years, mean of their age were (54.9 ± 8.1, 55.7 ± 7.5) Most of both groups 90%, 86% were male, married. Highest percentages of studied groups read and write and employee. Regarding to residence more than half of studied groups were urban.

Table (2): Shows that; the majority of both groups had never a cystoscopy. Prostate enlargement affected

more than 25% of the study group, while hematuria affected 32% of the control group.

Table (3): Demonstrates that while the study group had satisfactory knowledge following the administration of nursing instructions, the majority of the patients under study had unsatisfactory understanding prior to applying those instructions. There is highly statistical difference between study and control group post one week and one month regarding knowledge scores with p-value (0.000***).

Table (4): Demonstrates that after using the nursing instructions for a month, 75% of the study group experienced less anxiety. Regarding the anxiety level scores of patients, there is a significant statistical difference between the study and control groups one week and one month after the implementation of nursing instructions, with a p-value of (0.000***).

Table (5): Shows that: There was improvement in total score of satisfaction level by increasing the patients' knowledge. There is highly statistical difference between study and control group one week and one month post application of nursing instructions regarding satisfaction level.

Table (6): Shows that there was no correlation between knowledge and anxiety level while there was statistically significant between anxiety and satisfaction level at (0.074) P. value for studied groups pre application of nursing instructions. There was a highly statistically significant and positive correlation between knowledge, anxiety, and satisfaction level at (0.000***) P. value for studied groups post one week and month of application of nursing instructions.

Table (7): Shows that, there were highly statistical difference between level of education and anxiety level of study group post one week application of nursing instructions with p-value (0.000).

Table (8): Shows there was no statistically significant difference between sociodemographic and satisfaction level for studied patients

Table (9): Indicates that there was statistically significant difference between previous cystoscopy and anxiety level of study group post one week application of nursing instructions brochure at p-value **(0.017*)**

Table (10): Shows there was no statistically significant difference between medical data and satisfaction level for studied patients.

Discussion:

Cystoscopy is an invasive diagnostic procedure that allows the urethra, bladder, and ureteral orifices to be seen directly. **(Paul et al., 2022)**

Regarding level of knowledge for the studied patients, most of them had unsatisfactory level of Knowledge pre application of nursing instructions while the study group had satisfactory level of knowledge after application of nursing instructions. This result agreed with **(Mark et al., 2020)** who reported that majority of patients had improved understanding of their procedural results and post cystoscopy follow up plans after implementation of a summative patient handout. From researchers' opinions of view this may be due to containment of nursing instructions brochure with the needed information for patients about cystoscopy, indication, preparation, procedure, after procedure care, how to relieve discomfort, complications, pre discharge instructions.

Regarding the anxiety level for studied groups, three quarters of study group had low anxiety after one month after application of nursing instructions. In the same line with the above results (**Elif et al., 2018)** reported that after cystoscopy, anxiety levels were significantly lower in the intervention groups than in the control group.

Also, **(Abdelaa et al., 2016)** developed and validated a patient information booklet about cystoscopy; they found that anxiety and discomfort decreased through patient education. Similarly, **(Zhang et al., 2019)** examined the important of applying comprehensive nursing interventions including care and guidance during the perioperative period among patients undergoing cystoscopy, they clarified that theses interventions could effectively alleviate anxiety. From the researchers' point of view anxiety may be due to lack of sufficient information about the disease and cystoscopy as a method of treatment.

There was an improvement in total score of satisfaction level by increasing the patients' knowledge. The present study result was supported by **(Mohammed et al., 2019)** who reported that the study group was more satisfied with the overall standard of nursing care than the control group following the adoption of nursing preparations. This result corroborated the findings of **(Rajeswarit, 2011),** who found that study group patients' satisfaction with nursing care was higher than that of the control group.

The present study results revealed that there was a highly statistically significant difference and positive correlation between knowledge, anxiety, and satisfaction level for studied groups post one week and month of application of nursing instructions. These results supported by **(Khalil et al., 2021)** They observed that there was a statistically significant difference in the patients' level of knowledge in the study group between the pre- and post-application of the pre-operative nursing instructions. According to our findings, the majority of patients lacked the necessary knowledge prior to applying the preoperative nursing instructions, which suggests that the patient's health care team did not provide them

with enough information. According to the researcher, it's critical that the patient understands every aspect of his condition because this reduces worry and improves patient satisfaction.

Also **(Abdelaa et al., 2016)** developed and validated a patient information booklet about cystoscopy, they found that anxiety and discomfort decreased thorough patient education.

The current study was supported by **(Zhang et al. 2019)** who examined the important of applying comprehensive nursing interventions including care and guidance during the perioperative period among patients undergoing cystoscopy, they clarified that theses interventions could effectively alleviate negative emotions (anxiety and depression) and improve satisfaction.

Also, the present study was accordance with **(Abdelmowla et al., 2023)** who 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 anxiety. 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.

The present study clarified that there was highly statistical difference between level of education and anxiety level of study group post one week application of nursing instructions. The study disagreed with **(Ellis et al., 2015)** who stated anxiety was higher in younger, female, and unmarried patients. Also, **(Stephan et al., 2016)** Women, patients aged sixty-five years, depressive patients and those being examined with rigid devices had higher rates of anxiety prior to cystoscopy. In my point of view patients with low education suffer from high anxiety level because they have not sufficient information about procedure. These results disagreed with **(Paneis et al., 2023)** who demonstrated that younger and more anxious patients may need more counseling before cystoscopy.

As regard satisfaction level and sociodemographic characteristics, there was no statistically significant difference between sociodemographic and satisfaction level for studied patients. This study results agreed with **(Mohammed et al., 2019)** who demonstrated that there are no statistically significant relationships between the demographic traits of age, sex, and educational attainment and patients' satisfaction. This conclusion also supported the findings of **(Sen, 2017)** who found that patient happiness and nursing care quality differ statistically but that there are no significant relationships between patient satisfaction and any demographic factors other than age group.

Previous cystoscopy factor had high effect on study group knowledge pre application of nursing instructions by highly statistically difference. While previous cystoscopy factor had high effect on post one month control group's knowledge by highly statistically difference. This study results agreed with **(Mark et al., 2020)** who stated that following a local cystoscopy, the use of a summative patient handout enhanced patients' comprehension of their procedure outcomes and post-cryoscopy follow-up schedules. From the researchers' point of view previous cystoscopy gain experience and knowledge about procedure for patients.

Finally, based on this study previous cystoscopy factor influenced on post one week study group's anxiety by statistically significant difference. The study results disagreed with **(Xavier et al., 2017)** who stated information provided before cystoscopy was demonstrated to have a negative impact on patient perception of anxiety. my interpretation of this result previous knowledge about procedure decreases anxiety level for patients as they have information about preparation, time of procedure, complications and how to prevent, how to treat discomfort and instructions before discharge.

Conclusion:

Significant improvement in knowledge, anxiety, and satisfaction level for patient in the study group after application of nursing instructions brochure.

Recommendation:

- Nursing instructions brochure for patients undergoing cystoscopy should be available at Urology University Hospital.
- Future research should be applied on large sample in different places.

Implications:

Nursing practice:

Nurses are the health staff members who interact with patients undergoing cystoscopy Therefore, nurses should act as an active member in supporting these patients by enabling them to acquire a sufficient knowledge regarding preparation for cystoscopy, causes for cystoscopy, cystoscopy procedure, post procedure instructions, complications

Nursing education:
As for nursing education implications, the implementation of nursing instructions brochure can be a reference framework that would be taught in basic and continuing education programs.

Acknowledgement:
The researchers would like to sincerely thank all patients who participated in this study for their cooperation during the study. Additionally, the researchers would like to express their sincere gratitude for the medical team at urology departments and outpatients for their commitment and cooperation in facilitating the data collection process to conduct the current study.

Conflict of interest:
'The Authors declare that there is no conflict of interest

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