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Application of Research-Based Quality Control Circle in Setting a New Management Model and Complete Standardized Care for Continuous Bladder Irrigation After TURP

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Abstract: *Objective:* To explore the application of research-based quality control circle in setting a new standardized nursing management model for continuous bladder irrigation after transurethral resection of prostate (TURP) surgery, and to provide theoretical basis and evidence-based support for standardizing the nursing management model of continuous bladder irrigation after TURP in the Department of Urology. *Methods:* A quality control circle was established, focusing on the existing common problems of continuous bladder irrigation. The methods include implementing appropriate measures and other steps, and comparing the incidences of bladder spasms and urinary catheter obstruction, patient satisfaction, nurses' awareness of relevant knowledge, nurses' operational satisfaction, number of liquid pours (6000ml per flush), and number of open exposures before and after the activity. *Results:* Through this quality control circle activity, the incidence of bladder spasms in patients dropped from 42% to 14.3%; the incidence of urinary catheter obstruction dropped from 36% to 12.2%; patient satisfaction increased from 82% to 95.9%; nurses' knowledge awareness rate increased from 74.2% to 96.8%; nurses' operational satisfaction increased from 80.6% to 96.8%; the above differences are statistically significant ($P < 0.05$). Moreover, the number of flushing liquid pours reduced from 5 times to 1 time, and the number of open exposures reduced from 5 times to 0 times. Circle members have improved their application of quality control circle methods, team spirit, and professional knowledge. *Conclusion:* The research-based quality control circle is suitable for setting a new standardized nursing management model for continuous bladder irrigation after TURP.

Keywords: Continuous bladder irrigation; Nursing management; Project research quality control circle

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1. Introduction

The primary purpose of continuous bladder irrigation after transurethral resection of prostate (TURP) is to promptly dilute the postoperative bleeding in the prostate fossa wound and prevent blood coagulation. Block formation stimulates the trigone area of the bladder to induce bladder spasms, leading to urinary catheter obstruction [1]. Continuous bladder irrigation prevents bladder spasms, urinary catheter obstruction, and a

vicious cycle of bleeding [2]. However, there needs to be unified guidelines at home and abroad for continuous bladder irrigation after TURP. The patient's comfort level and the nurse's satisfaction with the operation are low, and the irrigation output device is effortlessly open and exposed, which can easily cause urinary tract infection. At the same time, the project novelty report shows that there currently needs to be research reports on the standardized nursing model of continuous bladder irrigation after TURP in domestic and foreign literature. Therefore, based on the above analysis, there is an urgent need to explore innovations in clinical practice to break through the status quo and standardize the irrigation position, pressure, height, speed, temperature, and flushing devices, and full-process refined nursing management is implemented to provide a basis for clinical nursing practice. This study applied the project-based quality control circle to set a new standardized nursing management model for continuous bladder irrigation after TURP and achieved specific results. This project won the first prize in the research project group of the 3rd Guangdong Provincial Hospital Quality Control Circle Competition and the third prize in the 8th National Hospital Quality Control Circle Competition.

2. Materials and methods

2.1. General information

Patients with continuous bladder irrigation after TURP in the Department of Urology were selected as the research subjects. Inclusion criteria included patients who require continuous bladder irrigation after TURP, patients who voluntarily participate in this study and sign the informed consent form, and patients who are conscious and able to cooperate to complete the operation. Exclusion criteria were those with a history of bladder or prostate surgery, those with coagulation dysfunction and blood diseases before surgery, those with severe heart, brain, liver, kidney, and other organ dysfunction, and those with combined immune system and mental illness. The following data were collected: the incidence rate of bladder spasm, the incidence rate of urinary catheter blockage, the patient satisfaction rate, the nurse-related knowledge awareness rate, the nurse satisfaction rate before improvement (July to September 2018) and after improvement (April to June 2020), and the number of flushing pours of 6000ml liquid drainage solution and number of open exposures.

2.2. Method

2.2.1. Circle

A pro-urinary circle activity group was established in July 2018, comprising 15 professionals from the Urology Department, Nursing Department, Information Department, and Equipment Department.

2.2.2. Topic selection and its significance

Circle members used brainstorming and affinity diagramming to list existing significant issues. Through a four-dimensional weighted questionnaire, circle members used the evaluation method to evaluate superior policies, urgency, feasibility, and circle capabilities. After evaluation in four dimensions, it was determined that the theme of this event was the new standardized nursing management model for continuous bladder irrigation after TURP. According to the QC-story application judgment table, it was determined that the direction of this period's activities was project research type.

The definition of subject words is as follows.

(1) TURP: It is also called transurethral resection of prostate, and is the current gold standard for surgical treatment of benign prostatic hyperplasia [3]. It is routinely performed continuously after surgery.

(2) Continuous bladder irrigation: 0.9% normal saline is connected to the side cavity of the three-lumen balloon urinary catheter with a "Y"-shaped pipeline to form the input end; the liquid storage device is

connected to the middle chamber of the three-chamber balloon catheter to form the output end, which is continuously flushed through the siphon principle [4].

(3) Full-process standardized nursing management: The flushing position, pressure, height, speed, temperature, and flushing device are standardized to implement full-process refined nursing management.

For patients, it is conducive to promoting prognosis and improving outcomes; for the nursing team, it is conducive to exploring scientific nursing management methods and improving the connotation of specialist nursing services; for the departments, it is conducive to improving the influence of the urological nursing discipline and promoting a win-win situation among doctors, nurses, and patients; for the hospitals, it is conducive to improving the quality of medical care services and increasing social effects.

2.2.3. Activity plan formulation

A quality control circle activity plan was drawn up by the 5W1H principle (six-questions analysis method), and the activity content, time, location, method, and responsible person were clarified. The period from July 2018 to July 2020 was the activity cycle.

2.2.4. Clarification of the subject

The data mining application system diagram sequentially expands on the current problems in continuous bladder irrigation care after TURP from five aspects: personnel, information, materials, methods, and systems. Based on the existing problems, the current data were collected from the three levels of patients, nurses, and departments from July 1 to September 3, 2018.

Based on the current level, the level of expectations was determined by consulting the literature and the current situation of peers, brainstorming method was used to select alternative vital points, and based on the "80/20 rule," evaluation was carried out from three dimensions: circle ability, feasibility, and importance, and 15 essential points were identified (**Table 1**), which were eventually merged into three major key points. Key point 1: Developing nursing management procedures and specifications for continuous bladder irrigation after TURP; Key point 2: Reducing the incidence of complications of continuous bladder irrigation after TURP; Key point 3: Reducing the number of drainage fluid pours and open exposure.

2.2.5. Target setting

A total of 7 goals were set by reviewing the literature and benchmark hospitals:

(1) To reduce the incidence of bladder spasm in patients from 42% to 16.7% by July 31, 2020.
(2) To reduce the incidence of urinary catheter obstruction from 36% to 14%.
(3) To increase patient satisfaction from 82% to 95%.
(4) To increase nurses' awareness rate of relevant knowledge from 74.2% to 95%.
(5) To increase nurse operation satisfaction from 80.6% to 95%.
(6) To reduce number of drainage fluid pouring times from 5 times to 1 time.
(7) To reduce number of open exposures from 5 times to 0 times.

Table 1. Evaluation from three dimensions. Evaluation mark of the degree of relationship (three-stage evaluation): strong = 5; medium = 3; weak = 1; rated by nine circle members, with a total score of 135 points. According to the "80/20 rule," a score of 108 or above is the critical point.

Object	Dimensions	Aspects	Current level	Level of expectation	Expectation gap	Attack point	Evaluation items				Whether to adopt
							Feasibility	Importance	Circle ability	Total score	
Patient level	Personnel	Incidence of bladder spasms in patients	42%	16.7%	Reduced by 25.3%	Reduced bladder spasms incidence	33	41	37	111	√
		Incidence of urinary tract obstruction in patients	36%	14%	Reduced by 22%	Reduced urinary tract blockage incidence	33	43	33	109	√
	Information	There is only one way for patients to obtain relevant knowledge and education	Mainly explained by nurses	Bedside education electronic system diversified education	–	Added bedside education electronic system	31	33	31	95	×
	Material	Number of times to pour drainage fluid for every 6L of liquid flushed from the chest bottle	5 times	1 time	Reduced 4 times	Reduced the number of drainage fluid pours	33	37	43	113	√
	Method	Flush temperature	24℃–27℃	34℃–37℃	Proper heating	Determined the appropriate rinse fluid temperature	34	42	33	108	√
	System	Patient satisfaction	82%	95%	Increased by 13%	Improved patient satisfaction	41	41	41	123	√
Nurse level	Personnel	Awareness rate of nurses' related knowledge	74.2%	95%	Increased by 20.8%	Improved nurses' awareness of relevant knowledge	43	43	41	127	√
		Nurse operation satisfaction	80.6%	95%	Increased by 14.4%	Improved nurses' operational satisfaction	41	42	43	126	√
	Information	Related operation demonstration video	0	1	1	Recorded operation demonstration video	33	37	41	111	√
	Material	Number of open exposures for pouring and draining fluid per 6L of liquid flushed from the chest bottle	5 times	0 times	Reduced 5 times	Avoided open exposure	33	42	33	108	√
	Method	Rinse speed	Adjusted based on subjective experience. Darker colors are fast; lighter colors are slow.	An objective basis provided for flushing speed	–	Added bladder irrigation and drainage fluid color comparison card for use	33	43	33	109	√
		"Bladder Flushing Treatment Card"	Failure to dynamically reflect disease observation	Ability to objectively reflect patient condition observation	–	Developed a standardized and structured "Continuous Bladder Irrigation Nursing Record Card"	37	41	35	113	√
	System	Standardized nursing guidelines for continuous bladder irrigation after TURP	0	1	1	Developed standardized nursing care guidelines	37	43	37	117	√
		Standardized operating procedures for continuous bladder irrigation after TURP	0	1	1	Developed standardized operating procedures	37	41	37	115	√
Department level	Personnel	Doctors' satisfaction with nurses' condition observation	90.28%	95%	Increased by 4.72%	Improved doctors' satisfaction with nurses' condition observation	37	41	41	119	√
	Information	Electronic "Continuous Bladder Irrigation Nursing Record Card"	0	1	1	Established an electronic "Continuous Bladder Irrigation Nursing Record Card"	33	41	37	111	√
	Material	Liquid thermostat	0	1	1	Purchased equipment	31	43	41	115	√
		Bladder therapy device	0	1	1	Purchased equipment	31	37	33	101	×
	Method	Rinse duration	2.3 ± 1.2 days	2.0 ± 0.9 days	Reduced by 0.3 ± 0.3 days	Reduced flushing time	25	43	33	101	×
	System	Comprehensive ability system training and assessment system	None	Able to integrate medical care and conduct comprehensive ability assessment and improvement	–	Established a comprehensive ability system training and assessment system.	40	41	43	124	√

2.2.6. Formulating strategies

Through brainstorming and literature review, we proposed improvement strategies for the three key points. According to the "80/20 rule," we rated the three-level scores of "1, 3, 5" from the four dimensions of feasibility, urgency, economy, and effectiveness. Nine circle members were evaluated, with a total score of 180 points. According to the "80/20 rule," a strategy with a score of 144 or above was considered the best. A total of 9 strategies were selected and finally integrated into two strategy groups: Strategy Group I: Standardized system for continuous bladder irrigation after TURP; Strategy Group II: Research and Development (R&D) and innovation of irrigation devices.

2.2.7. Research on the optimal strategy

The circle group conducted obstacle determination (**Table 2**), and gain and loss analysis (**Table 3**) on the selected policy groups and used the Process Decision Program Chart (PDPC) method to formulate policy implementation paths.

Table 2. Obstacle determination

Strategy	Key point	Obstacle determination	Determination of side effects	Elimination of obstacles and side effects	Determination	Strategy group
Developing standardized nursing guidelines for continuous bladder irrigation after TURP	1	There needs to be a relevant guide or national industry standard reference, and a large amount of literature needs to be consulted.	Increasing the workload of evidence-based research nurses.	Adding two researchers. Based on the latest progress of relevant research and clinical practice, inviting one external expert to jointly formulate a plan with medical and nursing staff.	√	I
Developing standardized operating procedures and operating assessment scoring standards for continuous bladder irrigation after TURP.	1	There is no unified standard to follow.	None.	Consulting literature and experts, fully integrating clinical practice, and be in line with benchmark hospitals.	√	I
Strengthening relevant theoretical knowledge training and skills training.	1	There is difficulty to focus on face-to-face training.	Nurses' learning abilities are inconsistent.	Inviting experts outside the circle to conduct relevant theoretical knowledge training through "Protect the World." The platform conducts online learning and increases the number of face-to-face training sessions.	√	I
Integrating medical and nursing care and using the "SBAR + CICARE" idea to conduct systematic and comprehensive training and assessment through scenario simulation.	1	There is difficulty in covering everyone.	Assessment standards are difficult to unify, and details are cumbersome.	Conducting assessments in hierarchical groups (each group consists of one doctor, one senior team leader, two responsible nurses, and one assistant nurse) and establishing an incentive mechanism.	√	I
Reviewing the search literature, introducing a color comparison card based on science and practicality, and adjusting the flushing speed according to the color number.	2	It is necessary to screen and judge scientificity and practicality.	It takes time to test the application effect clinically.	It is completed by relevant researchers in the department, evidence-based research nurses, and specialist nurses.	√	I
Purchasing a liquid thermostat and determining the appropriate temperature range of bladder irrigation fluid.	2	Acquisition of equipment is slow and lacks funds.	Equipment is put into longer use.	Actively coordinating and communicating with relevant departments to reasonably apply for funds within the department.	√	I
Designing and formulating a standardized and structured "Continuous Bladder Irrigation Nursing Record Card" that can dynamically reflect the observation of patients' complications and conditions.	2	Nurses' observation, nursing, and nursing record writing abilities are uneven.	All relevant nursing record content needs to be analyzed.	Led by specialist nurses, designed based on relevant nursing characteristics and deficiencies in nursing records. Two experts from outside the circle were also invited to thoroughly discuss and finally formulate a plan based on clinical practice.	√	I

Table 2. (continued)

Strategy	Key point	Obstacle determination	Determination of side effects	Elimination of obstacles and side effects	Determination	Strategy group
Developing and innovating continuous bladder irrigation and drainage bottles.	3	Clinical human resources are tight.	Patent application takes a long time and is difficult to promote.	The head nurse coordinates and designates personnel responsible for related matters, actively promotes patent conversion, and applies for in-hospital projects based on patents.	√	II
Developing and innovating continuous bladder irrigation and drainage lines.	3	It requires a lot of time and effort.	Clinical application involves ethical review.	Actively applying for patents and conducting ethical reviews after the patent is converted. Conducting further clinical research after passing the test.	√	II

Table 3. Advantages and disadvantages of selected strategy

Strategy group	Advantages	Disadvantages
Strategy Group I: Setting a standardized specification system for continuous bladder irrigation after TURP	Based on evidence, establishing a standardized continuous bladder irrigation system after TURP to improve patient prognosis and achieve a win-win situation for doctors, nurses, and patients.	Literature screening requires increased investment in scientific research personnel, and it takes a long time to search Chinese and English databases.
Strategy Group II: R&D and innovation of flushing devices	Making breakthroughs and innovations based on complex clinical nursing issues to improve nurses' work efficiency and save human resource costs.	Applying for a patent takes a long time. It is necessary to increase investment in human, material, and financial resources.

2.2.8. Implementation and review of optimal strategies

The implementation and review of the strategies are as follows.

(1) Setting a standardized normative system for continuous bladder irrigation after TURP

Nursing guidelines for continuous bladder irrigation after TURP was formulated from the five aspects of irrigation position, pressure, height, speed, and temperature, based on subject words + free words. A total of 7 kinds of literature were included in the combined search of Chinese and English databases, and ten pieces of evidence were extracted. It was concluded that the left and right decubitus and semi-sitting positions should be alternately adopted; the irrigation pressure is related to the flow rate of the irrigation fluid and the suspension height, and continuous flowing should be maintained; low-pressure irrigation; the appropriate irrigation height is 40–60cm [5,6]; the irrigation speed is closely related to the occurrence of postoperative bladder spasms and bleeding [7]; there is no limit to the flushing speed within 2 hours after the operation, and it will be adjusted according to the color of the flushing fluid afterward [8]. At the same time, Jiang *et al.* [9] developed a self-made color comparison card for bladder irrigation fluid in 2020. The color comparison card is divided into eight color numbers. The corresponding drip rate for colors 1 to 2 is 80–100 drops/min, the corresponding drip rate for colors 3 to 4 is 100–150 drops/min, no treatment is required, the drip rate for colors 5 to 6 is 150–200 drops/min, it is necessary to report to the doctor and strengthen hemostasis and other treatments; when colors 6 to 8 appear and poor drainage occurs, the doctor must be reported immediately, and positive pressure irrigation with a urethral catheter must be performed. If necessary, surgery can be performed to stop the bleeding. Warming the irrigation fluid is currently considered a standard practice [10]. According to an article, a meta-analysis including 7 randomized controlled trials (RCTs) concluded that the appropriate flushing temperature is 34–37°C [11]. Therefore, the department purchased a liquid thermostat.

Moreover, standardized operation procedures and operation assessment scoring standards for continuous bladder irrigation after TURP were developed, operation demonstration videos were recorded, relevant knowledge, skills operation training and post-training assessments were conducted. Additionally, a standardized and structured "Continuous Bladder Irrigation Treatment Card" that can dynamically reflect the observation of the patient's condition was developed, including the four dimensions of vital signs, input and output, irrigation and drainage conditions, and observation and treatment of complications. A comprehensive ability system training and assessment system was established, integrating medical and nursing care. They were divided into six groups in scenario simulation and use the "SBAR + CICARE" idea to conduct systematic and comprehensive ability training and assessment to form standardized and normalized bedside handover guidelines.

(2) R&D and innovation of irrigation devices

A safe continuous bladder irrigation and drainage device was designed (Patent No.: ZL 2020 2 0405117.9). Currently, the irrigation output devices commonly used in clinical practice, such as disposable chest bottles and disposable drainage bags, all have different shortcomings. The chest bottle has a small capacity, it is frequently poured and easily exposed. There is no anti-reflux device or drainage outlet, which is time-consuming and labor-intensive, thus increasing the workload. In addition to the small capacity of the drainage bag, there is a large error between the scale on the bag and the actual amount. Testing with a syringe and measuring cup shows that when the drainage fluid is > 450ml, the error is 50 ± 14ml, and the measurement is not accurate enough. In this regard, the circle team designed a safe continuous bladder irrigation and drainage device with a capacity of 7.5L, which can reduce the number of drainage fluid pours and ensure accurate measurement. The color comparison card is designed to facilitate visual observation and comparison of the color of the drainage fluid to determine the condition; a single directional valve and "cross" drain valve can achieve closed continuous bladder flushing, hence effectively preventing the drainage fluid from being exposed.

A multi-functional continuous bladder irrigation and drainage pipeline was designed (Patent No.: ZL 2019 2 0351459.4). When a patient has a blood clot and a blocked urethra, the most commonly used clinical treatment method is combining bedside manual bladder irrigation for suction and dredging. However, the urinary catheter and drainage end need to be separated, which is prone to contamination; the diameter of the syringe nipple and the three-lumen catheter interface do not match, and the operator needs to fix it by hand. Improper methods can cause urine splashing, which is easy to cause exposure, and it is also time-consuming and laborious. In this regard, the circle team designed a drainage pipeline that eliminates the need to separate the urinary tube and drainage end during dredging. The three-way design solves the problem of syringe nipple mismatch. It can ensure the closed flushing of the entire device, thus reducing the chance of contamination and improving work efficiency.

2.3. Observation indicators

The indicators observed were the incidence of bladder spasm, the incidence of urinary catheter blockage, patient satisfaction, nurses' awareness rate of relevant knowledge, nurse operation satisfaction, the number of liquid drainage fluid pours (6000ml per flush), and the number of open exposures before and after implementation. This study had 50 patients before and 49 patients after the model implementation.

2.4. Statistical methods

SPSS22.0 statistical software was used to process the data. Measurement data were expressed as mean ± standard deviation (SD), and comparisons were made using the *t* test of two independent samples. Count data

were expressed as cases and percentages, and comparisons were made using χ^2 for inspection (inspection level $\alpha = 0.05$).

3. Results

3.1. Comparison of results before and after the improvement

After implementing the organized quality control circle activity countermeasures, in terms of patients, the incidence of bladder spasms and urinary catheter obstruction was lower than before the improvement, and patient satisfaction was higher than before the improvement ($P < 0.05$), as shown in **Table 4**. Regarding nurses, the awareness rate of nurses' relevant knowledge and the satisfaction of nurses' operations were higher than before the implementation ($P < 0.05$), as presented in **Table 5**. The number of pouring and open exposure of 6000ml liquid drainage per flush were lower than before the improvement. According to the calculation formula, the target complianc e rate is above 100%.

Table 4. Comparison of patient satisfaction before and after improvement

Improvement	Incidence of bladder spasm (%)	χ^2	*P* value	Incidence of urinary catheter obstruction (%)	χ^2	*P* value	Patient satisfaction (%)	χ^2	*P* value
Before	42	9.371	0.002	36	7.604	0.006	82	4.854	0.028
After	14.3			12.2			95.90		

Table 5. Comparison of patients' awareness rate and operation satisfaction rate before and after improvement

Improvement	Awareness rate (%)	χ^2	*P* value	Operation satisfaction (%)	χ^2	*P* value
Before	74.2	6.369	0.012	80.6	4.026	0.045
After	96.8			96.8		

3.2. Intangible results

After this quality control circle activity, circle members have demonstrated significant improvement in professional knowledge, problem-solving skills, communication and coordination skills, sense of responsibility, self-confidence, teamwork, mastery of quality control circle techniques, and enthusiasm.

3.3. Additional results

Through this quality control circle activity, we applied for two utility model patents, published one paper, and extended one clinical research topic within the hospital (Project number: LCYJ2020006).

4. Discussion

This study is based on setting a new standardized nursing management model for continuous bladder irrigation after TURP. It is oriented to achieve the goal through multidisciplinary cooperation, and by the ten steps of the project research quality control circle, using evidence-based ideas to explore its application in setting a new standardized nursing management model for continuous bladder irrigation after TURP surgery. The irrigation position, pressure, height, speed, temperature, and irrigation device were standardized, thus successfully establishing a new standardized nursing management model for continuous bladder irrigation after TURP, which improved the mastery of nursing-related theoretical knowledge and operational skills of the nursing staff,

while reducing the incidence of complications in patients with continuous bladder irrigation after TURP, and improving patient prognosis and increasing satisfaction.

5. Conclusion

To sum up, the ability of all circle members to discover, analyze, and solve problems was significantly improved in using the project research-based quality control circle, and they demonstrated their charming qualities while achieving innovation.

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Disclosure statement

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References

[1] Cutts B, 2005, Developing and Implementing a New Bladder Irrigation Chart. Nursing Standard, 20(8): 48.

[2] Okorie CO, 2015, Is Continuous Bladder Irrigation After Prostate Surgery Still Needed? World Journal of Clinical Urology, 4(3): 108.

[3] Albers P, Albrecht W, Algaba F, et al., 2012, EAU Guidelines on Testicular Cancer: 2011 Update. European Association of Urology. Actas Urologicas Espanolas, 36(3): 127.

[4] Han S, 2015, The Bladder Spasm Nursing of Older Patients After Enucleation of the Prostate Gland. Chinese Medical Guide, 2015(024): 19–20.

[5] Lin Q, 2019, Nursing Progress of Continuous Bladder Irrigation After Transurethral Resection of the Prostate. Electronic Journal of Practical Clinical Nursing, 2019(42): 196–197.

[6] Kazem MM, 2010, An Improved Delivery System for Bladder Irrigation. Therapeutics & Clinical Risk Management, 2010: 459–462.

[7] Wu M, Lai X, Liu M, 2013, Effect of Core Temperature Irrigation Fluid on Bleeding and Bladder Spasm After Transurethral Electroreception of the Prostate. Chinese Medical Innovation, 10(24): 53–55.

[8] Huang H, 2011, Effects of Temperature and Speed of Irrigation Fluid on Bladder Spasm After Prostatectomy and Nursing Strategies. Chinese Modern Drug Application, 5(8): 108–109.

[9] Jiang W, Guo X, 2020, Application Study of Homemade Color Comparison Card in Continuous Bladder Irrigation Nursing After Transurethral Resection of the Prostate. Journal of Nursing Education, 35(01): 80–82.

[10] Cao J, Sheng X, Ding Y, et al., 2019, Effect of Warm Bladder Irrigation Fluid for Benign Prostatic Hyperplasia Patients on Perioperative Hypothermia, Blood Loss, and Shiver: A Meta-Analysis. Asian Journal of Urology, 6(2): 183–191.

[11] Zhao X, Qi Y, 2016, Meta-Analysis of the Effect of Bladder Irrigation Fluid Temperature on Bladder Spasm in Elderly Patients After Transurethral Resection of the Prostate. Journal of Medicine of Yanbian University, 039(003): 178–182.