Am J Transl Res 2022;14(3):1695-1704
www.ajtr.org /ISSN:1943-8141/AJTR0135165

Original Article

Specific nursing improves postoperative urine control function and the self-efficacy of patients undergoing radical prostatectomies

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Received May 12, 2021; Accepted August 30, 2021; Epub March 15, 2022; Published March 30, 2022

Abstract: Background: Radical prostatectomy is a treatment for prostate cancer (PC), but most patients suffer urinary incontinence, decreased urinary control function, and poor prognoses after the surgery. Specific nursing intervention is a nursing model based on the patients' individual conditions and disease progression. Objective: To investigate the effects of specific nursing intervention on the urinary control functions and self-efficacy of radical prostatectomy patients. Methods: From April 1, 2016 to June 30, 2019, 149 patients who underwent radical prostatectomies in our hospital were retrospectively selected for this observational study and assigned to two groups in accordance with the different nursing intervention method each patient underwent. Seventy-six patients who underwent specific nursing intervention were included in the observation group (OG), and 73 patients who underwent routine nursing intervention were included in the control group (CG). The clinical symptoms, the urodynamic indexes, the recoveries of urinary control function, the incidences of urinary incontinence, and the complications were observed in both groups. The Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS) scores were used to evaluate the unhealthy emotions. The self-efficacy scale (GSES) and SF-36 were used to evaluate the self-efficacy and the quality of life (QOL), respectively. Results: After the nursing, the improvement in the clinical symptoms in the OG was significantly better than it was in CG. The improvement in the postoperative urodynamic indexes in the OG was significantly better than it was in the CG. The recovery of urinary control function in the OG was significantly higher than it was in the CG. The incidence of urinary incontinence in OG was significantly lower than it was in the CG. The incidence of complications in the OG was significantly lower than it was in the CG. The SAS and SDS scores in the OG were significantly lower than they were in the CG. After the intervention, the patients' GSES and SF-36 scores in the OG were significantly higher than they were in the CG. Conclusion: Specific nursing intervention can ameliorate the urinary control functions and self-efficacy, reduce unhealthy emotions, and improve the QOL of radical prostatectomy patients.

Keywords: Specific nursing, radical prostatectomy, postoperative urinary control function, self-efficacy, improvement research

Introduction

Prostate cancer (PC) is a common type of carcinoma seen in the clinic, and it is also the most common cause of cancer-related deaths in men all over the world [1]. In recent years, the incidence of PC has been increasing annually due to changes in the environment, high-fat diets, and the aggravation of population aging [2]. Patients with PC have no significant clinical symptoms in the early stages. However, when the cancer tissue grows to a certain extent, the patients' urethras will be restricted, resulting in abnormal urination, and most patients will have bone metastasis, thus leading to poor prognoses [3]. At present, radical prostatectomy is a

common method of treating this disease clinically.

Studies have shown that radical prostatectomies can improve the clinical symptoms, but patients still suffer urinary incontinence, decreased urinary control, and other symptoms after surgery [4]. For patients in the middle and advanced stages, it is often difficult to achieve a complete resection using surgery, and most patients will have greater psychological barriers and psychological pressure, which will affect their therapeutic effect [5]. Therefore, while effectively treating patients, the medical staff also needs to choose reasonable and scientific nursing measures for the intervention. Previous studies have shown that routine nursing often only involves the nursing of the patients' basic disease, so it has little promotional effect on the patients' disease rehabilitation and has some defects [6]. Specific nursing intervention is a nursing mode that is based on each patient's disease conditions, treatment methods, physical conditions, and personality [7]. It is designed to communicate well with patients one-to-one, strengthen patients' awareness of diseases, eliminate their doubts, and increase their confidence in overcoming diseases [8]. It is also designed to invite patients' families to participate in the rehabilitation process, to encourage and care for the patients together with the medical staff, and make the patients feel adequate psychological support to the greatest extent [9]. Studies have shown that [10] nurses play an important role in the diagnosis and therapy of patients. They can maintain close communication with patients and play an active role in their education. Before surgery, specific nursing intervention can effectively reduce patients' anxiety, improve their prognoses and speed up their disease recovery. Other studies have shown that [11] specific nursing intervention can decrease patients' fear of postoperative rehabilitation and reduce postoperative functional decline for elderly patients with hip fracture surgery.

In this research, the patients who underwent radical prostatectomy in our hospital from April 2018 to July 2019 were included and intervened with specific nursing modes to investigate the improvement of the nursing model on the postoperative urinary control function, the self-efficacy and the QOL of the patients, so as to provide a feasible nursing plan for radical prostatectomy patients.

Materials and methods

Baseline data

From April 1, 2016 to June 30, 2019, 149 patients who underwent radical prostatectomies in the Affiliated People's Hospital of Ningbo University were retrospectively selected for this observational study and divided into two groups according to the different nursing intervention method each patient underwent. A total of 76 patients who underwent specific nursing intervention were included in the OG, with an average age of (61.48±6.57) years old and ages ranging from 40 to 65 years old. A total of 73 patients who underwent routine nursing intervention were included in the CG, with an average age of (62.04±6.09) years old and ages ranging from 42 to 67 years old.

Inclusion criteria: The patients diagnosed with PC using imaging examinations and pathological diagnoses [12]; All the patients underwent surgery in our hospital; the patients had complete baseline data and stable vital signs; The patients did not undergo any treatment before their admission.

Exclusion criteria: Patients with other malignant tumors; Patients also suffering from mental and cognitive dysfunction; Patients with heart, brain, kidney, or other serious systemic diseases; Patients with severe infectious diseases; Patients who quit the experiment halfway; Patients who were unable to cooperate with the research normally, and patients who were not interviewed.

This research was approved by the ethics committee of our hospital (no. 036). Both the subjects and their families were informed and signed the fully informed consent forms.

Nursing methods

In the CG, the patients were treated with routine nursing. After admission, the nursing staff introduced the relevant indexes of the operation and the precautions after the operation to the patient, and properly guided the patients in positive psychology. After the operation, the medical staff guided the family members to help the patient to turn over, and change the position and massage them moderately, etc., but they also closely observed the patency of the urinary catheter after the operations, and gradually helped each patient to resume drink-

ing water and eating after the anal exhaust. The patients were encouraged to get out of bed and move around early on, and the patients were encouraged to actively carry out rehabilitation training of the pelvic floor muscle after the removal of the urinary catheter.

In the OG, the patients were treated with specific nursing: (1) Psychological counseling: The nursing staff patiently communicated with the patients and their families, they invited their families to join in, they dealt with the patients' unhealthy emotions, and they gave targeted psychological counseling to improve their confidence in overcoming the disease. Postoperative information and the importance of pelvic floor muscle function training were given to the patients and their families. (2) Post-operative guidance: The medical staff guided the patient to get out of bed and move in the early stages, guided them to drink warm water 6 hours after the operation, and have a liquid diet 8 hours after operation. If the patient had no discomfort after the operation, the patient could be instructed to eat a semi-liquid diet with frequent meals with small amounts in the 24-48 hours after the operation, and then gradually a general diet was consumed. On the first day after the operation, the nursing team assisted the patients in proper bed activities (sitting up, bending knees, etc.). On the second day after the surgery, the patients were instructed to turn over and get out of bed and move according to the recovery of each patient. (3) Guidance for pelvic floor muscle training: A specific rehabilitation training program was developed for each patient: First, pelvic floor muscle exercises were carried out, and the medical staff instructed the patient to perform anal and perineal contraction exercises for 30 seconds each time, with continuous training for 10-15 times, and then rest. This was a set of exercises (three sets per day). The patients were trained continuously for 2 weeks before being instructed to practice their lying positions, sitting, etc. Then, the patients were instructed to carry out urination training, and deliberately slow down the urination speed or interrupt the urination in the process of urination. When exercising bladder function, the medical staff worked out the interval of urination for the patients according to their actual conditions. The initial interval was 0.5-1 hour, and the interval was gradually extended to 2.5-4 hours. A course of treatment was 2 weeks.

Outcome measures

Clinical symptoms: The time to first anal exhaust, the time to starting eat, the time to off-bed activity, hospitalization time, urination frequency and urinary leakage frequency were observed in both groups after the intervention.

Urodynamic indicators: After the intervention, the detrusor pressure (Pdetat Qmax), the maximum urine flow rate (Qmax), the residual urine volume (PVR), and the bladder compliance value (BC) at the filling stage were tested using urodynamics.

Effective rate in recovery of the urinary control function: The patient completely recovered the function of spontaneous urination after the intervention, and the residual urine volume of the bladder as measured by B-ultrasound was less than 100 mL, which was regarded as "markedly effective". After the intervention, the patient's micturition function was partially improved, and 1-2 urine pads were still needed every day. The residual urine volume of the bladder measured using B-ultrasound was 100-200 mL, which was regarded as "effective". After the intervention, the patient's micturition function was not improved or aggravated, and this was regarded as "ineffective". Total effective rate = (markedly effective + effective)/total cases × 100%.

Incidence of urinary incontinence: The incidences of urinary incontinence in both groups were observed and recorded after the catheter removal.

Complications: The complications in both groups were observed and recorded After the intervention.

Psychological emotion: The SAS and SDS scores were used for the evaluation [13]. The total possible SAS score is 100 points. A score of 50-70 indicates slight anxiety, a score of 71-90 indicates medium anxiety, and a score of >90 indicates serious anxiety. The higher the score, the more serious the anxiety. The total possible SDS score is 100 points. A score of 50-70 indicates slight depression, a score of 71-90 indicates medium depression, and a score of >90 indicates serious depression. The higher the score, the more serious the depression.

Table 1. Comparison of clinical baseline data between the two groups [n (%)]/(mean ± SD)

Category	OG (n = 76)	CG (n = 73)	t/χ^2	P
Average age (years old)	61.48±6.57	62.04±6.09	0.539	0.591
Body mass index (kg/m^2)	23.68±2.58	23.46±2.54	0.524	0.601
Average duration (years)	11.64±1.26	11.38±1.28	1.249	0.213
TNM staging			0.134	0.934
T1b	19 (25.00)	17 (23.29)		
T2a	25 (32.89)	26 (35.62)		
T2b	32 (42.11)	30 (41.10)		
Diet			0.313	0.575
Light	42 (55.26)	37 (50.68)		
Spicy	34 (44.74)	36 (49.32)		
Place of residence			1.081	0.298
City	47 (61.84)	39 (53.42)		
Rural	29 (38.16)	34 (46.58)		
Nation			1.075	0.299
Han nationality	51 (67.11)	43 (58.90)		
Minority nationality	25 (32.89)	30 (41.10)		
Educational background			0.608	0.435
≥ high school	35 (46.05)	29 (39.73)		
< high school	41 (53.95)	44 (60.27)		
Smoking history			0.497	0.480
Yes	58 (76.32)	52 (71.23)		
No	18 (23.68)	21 (28.77)		
Drinking history			0.270	0.603
Yes	53 (69.74)	48 (65.75)		
No	23 (30.26)	25 (34.25)		
Exercise history			0.327	0.567
Yes	40 (52.63)	35 (47.95)		
No	36 (47.37)	38 (52.05)		

Self-care efficacy: The GSES scale [14] includes 10 items, and each item is worth 1-4 points, for a total possible score of 40 points. The higher the score, the higher the patient's self-care efficacy.

QOL: The SF-36 scores were used to compare the two groups [15]. There are 8 items in the scale (general health, social function, physical function, emotional function, physiological function, physical pain, and mental health, vitality). The higher the score, the higher the QOL.

Statistical methods

SPSS 22.0 (Beijing Baiao Yijie Technology Co., Ltd., China) was used for the statistical analysis. GraphPad Prism 7 was used to illustrate the data. The enumeration data were represented as the number of cases/percentage [n (%)], and chi-square tests were used to compare the count data in the two groups. When the theoretical frequency in a chi-square test was less than 5, continuous correction chi-square tests were used. The measurement data were represented as the means ± standard deviations (mean ± SD), and the inter-group comparisons were compared using independent sample T tests. Paired T tests were used for the intra-group comparison before and after the intervention. A difference was statistically significant when $P<0.05$.

Results

Baseline data

There were no significant differences in the general baseline data such as average age, body mass index, average duration, TNM staging, diet, place of residence, nation, educational background, smoking history, drinking history, or exercise history between the OG and CG (all $P>0.05$) (**Table 1**).

Improvement of the clinical symptoms in both groups after the intervention

After the intervention, the clinical symptoms were observed in both groups. The results indicated that the time to first anal exhaust, the time to eat, the time to off-bed activity, the hospitalization durations, the urination frequency, and the urinary leakage frequency of the patients in the OG after the intervention were significantly lower than they were in the CG (**Table 2**).

Comparison of the urodynamic indexes between the two groups after the intervention

The urodynamic indexes were observed in both groups. The results showed that the postoperative Pdetat Qmax and Qmax indexes in the OG

Table 2. Improvement of the clinical symptoms in both groups after the intervention (mean ± SD)

Grouping	n	The first anal exhaust time (d)	The first time of starting to eat (d)	The first time of leaving bed (d)	Hospitalization time (d)	Urination frequency (times)	Urinary leakage frequency (times)
OG	76	2.69±0.27	1.75±0.14	2.41±0.26	8.59±0.76	14.31±1.49	7.34±0.71
CG	73	3.77±0.31	4.06±0.47	5.83±0.57	14.68±1.25	20.17±2.05	11.07±1.05
t	-	22.700	41.000	47.430	36.090	20.020	25.490
P	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table 3. Comparison of the urodynamic indexes between the two groups after the intervention (mean ± SD)

Group	n	Pdetat Qmax (cmH_2O)	Qmax (mL/s)	PVR (mL)	BC (mL/cmH_2O)
OG	76	95.53±9.24	6.62±0.67	81.64±8.49	14.48±1.29
CG	73	71.26±7.05	3.34±0.38	159.87±15.04	18.24±1.57
t	-	17.970	36.560	39.300	16.000
P	-	<0.001	<0.001	<0.001	<0.001

Table 4. Comparison of the recovery of urinary control function between the two groups after the intervention [n (%)]

Group	n	Marked effect	Effective	Ineffective	Total effective rate (%)
OG	76	43 (56.58)	31 (40.79)	2 (2.63)	74 (97.37)
CG	73	25 (34.25)	39 (53.42)	9 (12.33)	64 (87.67)
χ^2	-	-	-	-	5.121
P	-	-	-	-	0.023

Table 5. Comparison of the incidence of urinary incontinence between the two groups after the intervention [n (%)]

Group	N	Incidence of urinary incontinence	
		Yes	No
OG	76	4 (5.26)	72 (94.74)
CG	73	17 (23.29)	56 (76.71)
χ^2	-	-	9.991
P	-	-	0.001

were significantly higher than they were in CG, but the PVR and BC were significantly lower than they were in the CG (all P<0.05) (**Table 3**).

Comparison of the recovery of urinary control function between the two groups after the intervention

After the intervention, the urinary control function was observed in both groups. The results showed that the total effective rate of urinary control function was 97.37% in the OG and 87.67% in the CG. The comparison showed that the effective rate in the recovery of urinary control function in the OG was significantly higher than it was in the CG (P<0.05) (**Table 4**).

Comparison of the incidence of urinary incontinence between the two groups after the intervention

After the intervention, the urinary incontinence was observed in both groups. The results showed that the incidence of urinary incontinence was 5.26% in the OG and 23.29% in the CG. The comparison revealed that the incidence of urinary incontinence in OG was significantly lower than it was in CG (P<0.05) (**Table 5**).

Incidence of complications between the two groups after the intervention

After the intervention, the complications were observed in both groups. The results revealed that the incidence of complications was 9.21% in the OG and 23.29% in the CG. The comparison revealed that the incidence of complications in the OG was significantly lower than it was in CG (P<0.05) (**Table 6**).

Comparison of the SAS and SDS scores between the two groups before and after the intervention

After the intervention, the unhealthy emotions were observed in both groups. The results revealed that there was no significant difference in the SAS and SDS scores between the two groups before the intervention (all P>0.05). After the intervention, the SAS and SDS scores of the patients in the two groups were significantly lower than they were before the interven-

Table 6. Comparison of the incidence of complications between the two groups after the intervention [n (%)]

Group	n	Nausea and vomiting	Thrombus	Urinary tract infection	Amyotrophy	Total incidence rate (%)
OG	76	4 (5.26)	2 (2.63)	1 (1.32)	0 (0.00)	7 (9.21)
CG	73	7 (9.59)	5 (6.85)	3 (4.11)	2 (2.74)	17 (23.29)
χ^2	-	1.019	1.479	1.112	2.111	5.460
P	-	0.312	0.223	0.291	0.146	0.019

tion (all P<0.05), and the SAS and SDS scores of the patients in the OG were significantly lower than they were in the CG (all P<0.05) (**Figure 1**).

Comparison of the GSES scores between the two groups before and after the intervention

After the intervention, the self-management skills were observed in both groups. The results showed that there was no significant difference in the GSES scores between the two groups before the intervention (P>0.05). After the intervention, the GSES scores of the patients in the two groups were significantly higher than they were before the intervention (all P<0.05), and the GSES scores of the patients in the OG were significantly higher than they were in the CG (P<0.05) (**Figure 2**).

Comparison of the SF-36 scores between the two groups after the intervention

After the intervention, the QOL was observed in both groups. The results showed that the SF-36 scores (general health, social function, physical function, emotional function, physiological function, physical pain, and mental health and vitality) of the patients in the OG were significantly higher than they were in the CG after the intervention (all P<0.05) (**Table 7**).

Discussion

Most patients with PC have no obvious symptoms in the early stages, and most of them are diagnosed by chance during an examination [16]. Radical prostatectomy is an effective treatment for PC. With the continuous improvement of medical technology, most patients can be cured [17]. However, the patients' self-control ability of urine and self-care ability are reduced after the surgery [18], which brings a heavy psychological burden to patients. Moreover, the patients' recovery from the disease is slow, which affects their confidence in the recovery and seriously reduces their QOL [19]. Therefore, the corresponding nursing intervention measures are very important in improving the prognoses of radical prostatectomy patients.

In this study, we used specific nursing to intervene in the urine control abilities, the self-care efficacy improvement, the unhealthy emotions, and the QOL of radical prostatectomy patients. The results revealed that the patients' diseases were significantly improved after the nursing intervention. Studies have shown that early eating and getting out of bed are important links in the postoperative rehabilitation of patients [20]. The results of this study showed that the first anal exhaust time, the time to start eating, the time of off-bed activity, the hospitalization times, the urination frequency, and the urinary leakage frequency of the patients in the OG were significantly lower than they were in the CG after the intervention, indicating that specific nursing intervention can help patients improve eating, getting out of bed, urination, and other conditions, so as to promote the recovery of the patients' diseases. Studies have revealed that [21] radical prostatectomy patients have dysfunction of the urethra and bladder, which can lead to overactivity of the detrusor and a loss of contractility, and urodynamic examination is one of the methods used to check patients' clinical effectiveness. The results of this research revealed that the postoperative Pdetat Qmax and Qmax indexes in the OG were significantly higher than they were in the CG, while the PVR and BC were significantly lower than they were in the CG, indicating that specific nursing can promote positive and correct intervention activities for patients, so as to promote their recovery of pelvic floor function and muscle tissue, enhance the anal contractility, reduce the adverse stimulation to the patient's urinary tract after surgery, thereby improving the urodynamic indicators of patients. Studies have revealed that [22] urinary incontinence is one of the most common postoperative complications after radical pros-

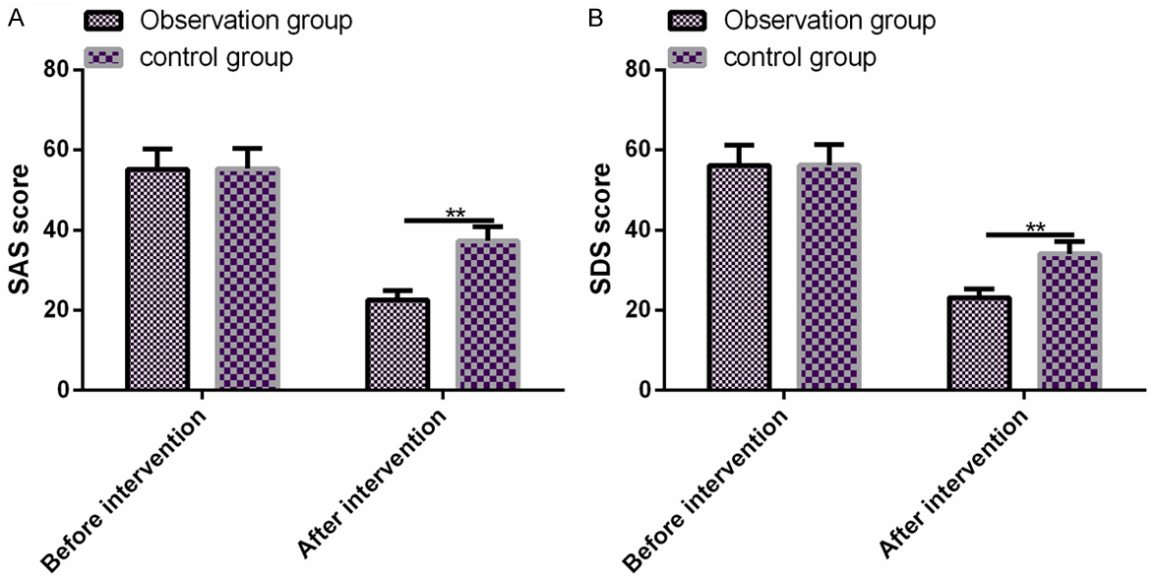

Figure 1. Comparison of the SAS and SDS scores between the two groups before and after the intervention. A. Before the intervention, there was no difference in the SAS score between the two groups. After the intervention, the SAS scores in OG were evidently lower than that in the CG. B. Before the intervention, there was no difference in the SDS scores between the two groups. After the intervention, the SAS scores in OG were evidently lower than they were in CG. Note: *<0.05 *vs.* before the intervention, **<0.01 *vs.* the two groups.

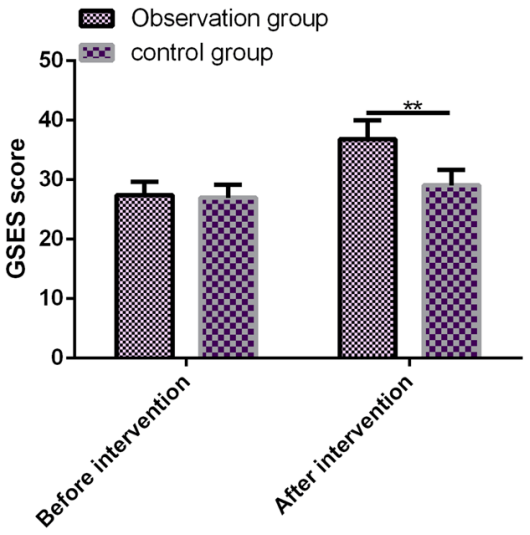

Figure 2. Comparison of the GSES scores between the two groups before and after the intervention. There was no difference in the GSES scores between the two groups before the intervention. After the intervention, the GAES scores in OG were evidently higher than they were in the CG. Note: *<0.05 *vs.* before the intervention, **<0.01 *vs.* the two groups.

tatectomy. If it is not treated immediately and effectively, it will also lead to urinary system infections, ulcers around the urethral orifice, and other complications, seriously affecting the QOL of patients. Research by Sayner and Nahon [23] has revealed that training the pelvic floor muscles can reduce the incidence of postoperative urinary incontinence, and it can also help to control the blockage of the middle urethra for radical prostatectomy patients. This result was similar to our study: the incidence of urinary incontinence in the OG was significantly lower than it was in the CG, indicating that specific nursing can guide patients to train their pelvic floor muscles, enhance the elasticity and strength of the pelvic floor muscles, and promote the recovery of bladder function to a certain extent, thus effectively reducing the incidence of urinary incontinence. In this research, the incidence of complications in the OG was significantly lower than it was in the CG, indicating that specific nursing interventions can effectively promote patients' disease recovery and reduce the incidence of postoperative complications.

Studies have revealed [24] that cancer patients are prone to depression. For example, the fear of cancer, uncertainty about the treatment, financial burdens, and treatment-related physical deterioration are all factors that cause depression. Research [25] has shown that cognitive behavioral therapy can increase confi-

Table 7. Comparison of the SF-36 scores between the two groups after the intervention (mean ± SD)

Group	Cases	General health	Social function	Physical function	Emotional function
OG	76	90.46±9.05	85.44±8.05	91.17±9.08	85.46±8.11
CG	73	72.58±7.49	64.27±6.13	72.27±7.19	71.15±7.04
t	-	13.110	18.010	14.050	11.480
P	-	<0.001	<0.001	<0.001	<0.001

Physiological function	Physical pain	Mental health	Vitality score
85.19±8.03	85.46±8.25	90.04±8.94	91.26±9.08
60.58±6.05	73.05±7.11	66.18±6.14	71.98±7.12
21.060	9.818	18.920	14.380
<0.001	<0.001	<0.001	<0.001

dence, ameliorate unhealthy emotions, and improve postoperative QOL for radical prostatectomy patients. This was similar to the results of our study: patients had higher levels of negative emotions after surgery, and the SAS and SDS scores of the patients undergoing specific nursing in the OG were significantly lower than they were in the CG. This may be due to the fact that specific nursing was designed to help patients to establish a better understanding of diseases, and uses targeted intervention to regulate patients' emotions, thus relieving their unhealthy emotions, and improving cooperation with the treatment and their confidence in treating diseases. Studies have revealed that patients' perceptions of their own abilities can have an impact on their thinking modes and emotional response, while the evaluation of self-efficacy can provide important confidence for the intervention effect of patients [26]. Studies [27] have revealed that it is very important to know the patients' self-care ability after radical prostatectomy, because it will affect the choice of actions to be taken, the patients' persistence in achieving their goals and so on. However, the results of this research revealed that the GSES scores of the patients in the OG were significantly higher than they were in the CG after the intervention, indicating that specific nursing can eliminate the doubts and fears caused by the ignorance of disease. Through targeted disease publicity and postoperative behavioral training, patients' cognition of self-motivation was improved and the patients' confidence in conquering the disease was enhanced, so as to promote the patients to actively cooperate with the treatment and to make their own behavioral changes to overcome the disease. Studies have revealed [28] that radical prostatectomy has a serious impact on the postoperative QOL of patients, and the health-related QOL is a multi-dimensional structure, which involves related aspects of patients' lives, so it is necessary to pay attention to the QOL after radical prostatectomy. In studies by Wang et al. [29], effective nursing intervention can alleviate the postoperative adverse events and improve the postoperative QOL for patients undergoing PC surgery. This is similar to the results of this study: the SF-36 scores in the OG were significantly higher than they were in CG. This may be due to the fact that this nursing intervention improved the patients' negative emotions and reawakened their perseverance. Besides, the incidence of complications and urinary incontinence was reduced after the nursing, which promoted the recovery of the patients' diseases in all aspects and thus improved their postoperative QOL.

Although this study revealed that specific nursing can bring great benefits to patients undergoing radical prostatectomies, there is still room for improvement. For example, we can further analyze the risk factors affecting the recovery of radical prostatectomy patients, which will help nurses to identify which risk factors need to be focused on in particular. In the future, we will gradually carry out supplementary research from the above perspectives.

To sum up, specific nursing intervention can ameliorate the urinary control function and the self-care efficacy, reduce unhealthy emotions and improve their QOL for radical prostatectomy patients.

Disclosure of conflict of interest

None.

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