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Randomized Clinical Trial

Peplau's interpersonal relationship theory combined with bladder function training on patients with prostate cancer

Xiao-Hui Yang, Li-Fen Wu, Xiao-Yu Yan, Ying Zhou, Xue Liu

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Abstract

BACKGROUND

Prostate cancer is a major disease impacting men's health worldwide. Peplau, who is known as "the mother of psychiatric society," developed an interpersonal relationship theory for nursing. Implementation of this theory in practice has been shown to positively impact patients' quality of life and reduce adverse symptoms after surgery.

AIM

To investigate the effects of a nursing model based on Peplau's interpersonal relationship theory combined with bladder function training on patients with prostate cancer.

METHODS

Eighty-nine patients with prostate cancer who underwent transurethral resection of the prostate (TURP) participated in this study. These patients were admitted to The First Affiliated Hospital of Soochow University or Dushu Lake Hospital Affiliated to Soochow University between January 2020 and April 2021. Patients were randomized into either the Peplau nursing group ($n = 44$) or a routine nursing group ($n = 45$). The routine nursing group received routine care and bladder function training, while the Peplau care group received care that integrated concepts from the Peplau interpersonal relationship theory as well as bladder function training. The urinary incontinence symptoms of the two groups were recorded, and the respective International Prostate Symptom Scores (IPSS), Functional Assessment of Chronic Illness Therapy- Spiritual Well-Being (FACIT-

Sp) scores, and quality of life (QOL) scores for each group were compared before and after three months of nursing intervention.

RESULTS

During the intervention period, the duration of urinary incontinence, frequency, number and amount of urinary incontinence were significantly greater in the routine nursing group compared to the Peplau care group ($P < 0.05$). The indicators of the routine nursing group were 7.13 ± 2.42 days, 8.23 ± 2.75 times, and 1.24 ± 0.42 L, while those of the Peplau care group were 4.74 ± 1.85 d, 4.21 ± 1.26 times, and 0.56 ± 0.11 L, respectively. After three months of intervention, the mean IPSS score of the routine nursing group was significantly reduced ($P < 0.05$), while the mean FACIT-Sp and QOL scores were significantly increased ($P < 0.05$). The mean IPSS score in the Peplau nursing group was significantly lower compared to the routine nursing group, while the FACIT-Sp and QOL scores were higher ($P < 0.05$).

CONCLUSION

A nursing model based on Peplau's interpersonal relationship theory combined with bladder function training can significantly improve prostate function and urinary symptoms, resulting in the restoration of physiological function and improvement in the QOL of patients with prostate cancer following TURP.

Key Words: Peplau interpersonal relationship theory; Bladder function training; Prostate cancer; Quality of life; Nursing

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Core Tip: Prostate cancer is the most common non-skin cancer in men worldwide. This study investigated the effects of a nursing model based on Peplau's interpersonal relationship theory combined with bladder function training on patients with prostate cancer. Total 89 post-surgical patients with prostate cancer were randomized into either the Peplau nursing group or the routine nursing group. After three months of nursing care, various indicators, such as Functional Assessment of Chronic Illness Therapy- Spiritual Well-Being scores and quality of life scores, were examined. Results suggested that the type of combined nursing model can significantly improve physiological function and urinary symptoms.

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INTRODUCTION

Prostate cancer is an epithelial malignant tumor that occurs in the prostate. Its incidence is closely related to genetic factors and increases with patient age, peaking at 70–80 years of age. In addition, factors such as frequent sexual activity and consumption of a high-fat diet can increase a man's risk of prostate cancer[1]. In 2012, the incidence of prostate cancer in China was approximately 9.92 per 100000, ranking sixth in the incidence of malignant tumors in men[2]. Prostate cancer has no obvious symptoms in the early stages. As the disease progresses, it can gradually cause symptoms such as dysuria, frequent urination, urinary urgency, and urinary incontinence. Furthermore, metastatic symptoms, such as hematospermia, hematuria, and impotence, may begin to arise. Transurethral resection of the prostate (TURP)[3] is an effective treatment method for prostate cancer. For this procedure, transurethral insertion of an electron microscope is utilized to remove the protruding part of the prostate. TURP has become the gold standard for prostate cancer treatment, since it causes limited surgical damage and generally results in rapid patient recovery. However, factors such as pain caused by surgical trauma, psychological pressure, and economic burden may impact the treatment effects, making it difficult for the patient to adhere to treatment. Therefore, medical staff must provide reasonable nursing measures to assist the patient throughout the completion of treatment in order to improve prognosis. Providing patients with appropriate bladder guidance training is an effective means of improving urinary function, but it must be combined with other practical nursing measures to cover the entire treatment cycle[4].

The nursing model utilized for this study was based on Peplau's interpersonal relationship theory[5], which was created by the outstanding nursing theorist Hildegard E. Peplau, known as the "mother of psychiatric society." This model explores the dynamic relationship between nursing staff and patients. It is divided into four periods: recognition, determination, progress, and resolution. Doctors and patients require mutual respect, mutual promotion, and common growth and development. Nurses play multiple roles in this process, including the roles of educators, resource providers, consultants, spokesmen, and leaders. This study applied elements of Peplau's interpersonal relationship theory in combination with bladder function training to support patients with prostate cancer TURP postoperative and explored its impact on patients' adverse symptoms and quality of life (QOL) after surgery. It is intended to provide more theoretical foundations for the development of clinical nursing disciplines.

MATERIALS AND METHODS

General information

Eighty-nine patients with prostate cancer who underwent TURP were admitted to The First Affiliated Hospital of Soochow University or Dushu Lake Hospital Affiliated to Soochow University between January 2020 and April 2021. The patients were 54–82 years of age, with a mean age of 70.26 ± 6.45 years. Patients presented with a mean Gleason score of prostate cancer[6] of 5.78 ± 1.76 , and a mean prostate-specific antigen (PSA) level of 13.84 ± 2.78 ng/mL. There were 55 cases of adenocarcinoma, 22 cases of epithelial cancer, 8 cases of squamous cell carcinoma, and 4 cases of other cancers. A random number table was used to divide the patients into either the Peplau nursing group ($n = 44$) or the routine nursing group ($n = 45$). The patients in the routine nursing group received routine nursing care, while patients in the Peplau nursing group received Peplau nursing intervention in addition to routine nursing care. There was no significant intergroup difference in general data, including age, international prostate symptom score (IPSS), or tumor stage ($P > 0.05$). Clinical data were comparable between the two groups (Table 1). The patients and their family members were informed of the study's purpose and agreed to participate.

The inclusion criteria were as follows: (1) meet the diagnostic criteria of prostate cancer[6]; (2) PSA < 20 ng/mL, Gleason score[7] ≤ 7 points, and clinical stage of T1-T2c; (3) undergo TURP before receiving nursing care; and (4) having availability of complete medical records. The exclusion criteria were as follows: (1) heart, liver, or kidney abnormalities, coagulation dysfunction, other malignant tumors, systemic immunity, or severe infection; (2) cognitive dysfunction or mental illness with inability to complete the questionnaire independently; and (3) diagnosis of other diseases that cause dysuria, urinary incontinence, or other symptoms, such as bladder or urethral stones.

Methods

The two groups of patients received nursing care in addition to routine drug and bladder training treatment. The Peplau nursing group was engaged in a nursing model based on Peplau's interpersonal relationship theory. The nursing process lasted for three months, and the specific nursing measures were as follows.

Routine nursing group: (1) Health education: Regularly provided thematic publicity and education activities to patients and their families; distributed knowledge manuals; introduced disease mechanisms, including diagnosis, treatment, postoperative complications, and prevention and treatment measures for postoperative complications; emphasized rehabilitation exercises; provided reasonable medication and treatment according to the doctor's advice; (2) Postoperative care: indwelled and fixed the urinary catheter postoperatively, flushed the bladder one day later, observed the drainage fluid daily, helped to control patient pain, and provided rehabilitation training guidance; (3) Dietary guidance: Instructed patients to consume more cellulose-rich foods, such as wheat bran, grains, beans, *etc.*; encouraged patients to consume a light diet, to avoid spicy and irritating foods, and to avoid smoking and drinking alcohol; (4) Telephone follow-up: Maintained telephone follow-up after the patient was discharged. The frequency of follow-up was twice per month for 30 min each time; and (5) Family support: Guided the patient's family members to offer positive encouragement and to help the patient improve his confidence in overcoming the disease; formulated a health training instruction book for each patient's individual situation.

Bladder function training: Medical staff guide patients to carry out bladder function training, including pelvic floor training, bladder function training and acupoint massage. (1) Pelvic floor training: This included an anal contraction exercise (contraction of the tailbone and pubic muscle) and urination interruption training (the entire urination process was completed across multiple stages) so that patients could choose a comfortable posture, including supine, sitting, or standing positions. During the training period, patients listened to comfortable and relaxing music, and the training was performed five times a day for 0.5–1 h. Medical staff used anal examination to evaluate the training effect, and success was identified if a sense of tightening was observed; (2) Bladder training: Distributed intake and output record books to track daily water consumption, drinking time, eating time, and urination time. Patients

Table 1 Basic characteristics of the two groups of patients

Basic characteristics	Age (yr)	Gleason score	PSA (ng/mL)	Tumor type			
				Adenocarcinoma	Epithelial cancer	Squamous cell carcinoma	Other
Routine nursing group (<i>n</i> = 45)	70.36 ± 7.21	5.69 ± 1.55	13.34 ± 2.63	26	12	5	2
Peplau nursing group (<i>n</i> = 44)	70.16 ± 5.66	5.86 ± 1.96	14.36 ± 2.87	29	10	3	2
<i>t</i> / χ^2 value	0.143	0.467	1.749	0.834			
<i>P</i> value	0.887	0.642	0.084	0.841			

PSA: Prostate specific antigen.

were coached to gradually extend the urination time by 10–15 min to increase bladder contractility; and (3) Manipulative massage: This was conducted according to the theory of Chinese medicine, to massage the Neiguan, Sanyinjiao, Zusanli, Qihai, Zhongji, Yanglingquan acupoints as well as additional acupoints by pointing, pressing, kneading, and applying pressure to each acupoint. Massage was performed for two minutes three times a day. The patient was asked to inhale when pressing and to exhale when relaxing.

The nursing model based on Peplau's interpersonal relationship theory involved the following: (1) Cognitive period: The patient first enters the hospital, lacks disease insight, and is prone to panic, irritability, depression, and other emotions. Nursing staff need to closely monitor the patient's condition and understand the patient's social background, economic basis, and psychological dynamics. Patients need to be provided with a sense of safety and familiarity through warm reception, use of appropriate words and deeds, and introduction to the hospital. They may need to be managed differently according to their individual mental states. Effective psychological cues, evidence-based explanations, and therapeutic behaviors can be used to treat patients. Nursing staff must also provide psychological support by teaching patients or family members to recognize and discover current problems and seek solutions; (2) Confirmation period: As the relationship between the nurse and the patient evolves, the nurse must promote the patient's enthusiasm and initiative to intervene. Nurses must gain the trust of the patient by strengthening communication, providing professional assistance, and developing a nursing plan in conjunction with the patient to encourage patients to resist negative emotions, to guide them through their own abilities to manage problems, to arrange a small number of activities for patients to complete during the day, and to schedule examinations at a suitable time; (3) Progressive stage: Nursing staff use the hospital and a variety of available resources to build a broader health support system for patients, such as a detailed schedule of activities based on the timeline. Nurses should ensure that patients can strictly follow the schedule, arrange reasonable daily meals, help standardize medication habits and methods, and teach common methods for managing pain. Then, nurses will transition the above-mentioned care measures from supervision to self-management, gradually leading the patients to develop interest in satisfying their own sense of disease control; and (4) Resolution period: Long-term hospitalization will cause patients to become accustomed to identifying as patients, which can result in serious dependence on nursing staff, making it difficult to return to society. Before leaving the hospital, the nurse must provide discharge guidance and interpersonal development training for monitoring dependence on nursing staff, providing sufficient recovery information, encouraging participation in group activities to replace the one-to-one nurse-patient relationship, enhancing patient independence, and increasing communication with family members, among other tasks, to lay the foundation for a safe and smooth discharge.

Observation indicators

Symptoms of urinary incontinence: During the nursing period, the urinary incontinence conditions of the two groups of patients were recorded, including duration, frequency, and amount of urine produced. Urinary incontinence was judged by the one-hour urinary pad test, recommended by the International Continence Society. This specific method involves placing a urinary pad in advance. After the bladder is empty, the patient drinks 0.5 L of plain water within 15 min, walks for 30 min, sits down and stands up 10 times during the last 15 min, coughs 12 times, runs in place for 1 min, picks up 5 small objects from the ground, washes his hands with tap water for 1 min, and records urine leakage.

IPSS[8] comparison: IPSS was utilized preoperatively and three months postoperatively to score the prostate function of the two groups. The same nursing staff was utilized for all of the scoring. There are seven items on the scale that evaluate the patient's urine storage period, urination period, prostate stimulation, and urinary tract obstruction. There are 5 maximum points for each item and a maximum

total of 35 points. Patient symptoms are rated as mild at 0–7 points, moderate at 8–19 points, and severe at ≥ 20 points.

Comparison of Functional Assessment of Chronic Illness Therapy Spiritual Well-Being Scale Scores [9]: The same nursing staff utilized the Functional Assessment of Chronic Illness Therapy Spiritual Well-Being Scale (FACIT-Sp) before and three months following nursing care to assess the patients' psychiatric symptoms. This scale assesses the patient's belief, meaning, and peace in three dimensions using a five-level scoring method for a total of 15 points. The higher the score, the better the patient's mental health symptoms.

QOL score[10] comparison: Furthermore, the nursing staff utilized the QOL scale for the two groups of patients before and three months after nursing care was provided. The scale covers 12 dimensions, including appetite, spirit, sleep, fatigue, pain, family understanding and cooperation, colleague understanding and cooperation, own cancer awareness, treatment attitude, daily life, quality side effects, and facial expressions. It adopts a five-level scoring system with a maximum score of 60 points. QOL ratings are as follows: extremely poor, < 20 points; poor, 21–30 points; average, 31–40 points; better, 41–50 points; and excellent, 51–60 points. The higher the patient score, the better the QOL.

Statistical analysis

The statistical analysis was performed using SPSS 15.0. The count data are expressed as percentages. The pairwise comparison was performed using the χ^2 test, the measurement data are described as mean \pm SD, and the independent sample *t*-test was used for intergroup comparisons. Statistical significance was set at $P < 0.05$, and values of $P < 0.01$ were considered significant.

RESULTS

Symptoms of urinary incontinence

The Peplau nursing group's urinary incontinence times, frequency, and volumes were significantly lower compared to those in the routine nursing group ($P < 0.05$) (Table 2).

Comparison of IPSS and FACIT-Sp scores

The IPSS scores of both groups of patients decreased significantly ($P < 0.05$) after three months of nursing care, while the FACIT-Sp scores increased significantly ($P < 0.05$). After nursing, the Peplau nursing group had a lower IPSS score than the routine nursing group, while the FACIT-Sp score was significantly higher ($P < 0.05$) (Table 3).

QOL score

There was no significant intergroup difference in QOL scores before the intervention ($P > 0.05$). After the intervention, the scores of the two groups significantly increased ($P < 0.05$), and the QOL score of the Peplau nursing group was significantly higher than that of the routine nursing group ($P < 0.05$) (Table 4).

DISCUSSION

Prostate cancer is a common ailment of the male reproductive system. In the early stage, it mostly manifests as urinary urgency and frequent urinary tract irritation. If it is clinically misdiagnosed as a disease, such as prostatitis or benign prostatic hyperplasia, the crucial treatment period may be missed [11]. TURP is a common treatment that is widely used for patients with prostate cancer. However, it is difficult to ignore the physical and psychological trauma caused by surgical treatment. Furthermore, after TURP surgery, the patient is prone to urinary incontinence, decreased bladder function, poor mental state, decreased immunity, and significantly decreased QOL due to urethral sphincter and functional disorders. Instructing patients to complete bladder function training regularly and quantitatively can significantly improve urinary system function and urinary tract symptoms [12].

It is important to restore physiological function after TURP. At the same time, psychological states and treatment environments of patients cannot be ignored. The nursing model based on Peplau's interpersonal relationship theory [13] provides patients with in-depth communicative exchanges. The model utilizes interpersonal communication at the core and organically combines three key factors: rehabilitation, environment, and nursing. Patients and medical staff establish a relationship of mutual participation and cooperation and successively begin tasks such as clarifying problems, setting goals, providing services, and dissolving relationships. Song *et al* [14] applied this model to the nursing work of patients who underwent surgery for non-small cell lung cancer and found that patient mood, QOL, and nursing satisfaction were significantly improved. With the development of nursing research,

Table 2 Comparison of incontinence by group

Group	<i>n</i>	Duration (d)	Frequency (times/d)	Amount (L)
Routine nursing group	45	7.13 ± 2.42	8.22 ± 2.75	1.24 ± 0.42
Peplau nursing group	44	4.75 ± 1.84	4.20 ± 1.21	0.56 ± 0.11
<i>t</i> value		5.220	8.827	10.395
<i>P</i> value		0.013	0.000	0.000

Table 3 Comparison of international prostate symptom score and Functional Assessment of Chronic Illness Therapy Spiritual Well-Being Scale scores by group (mean ± SD, scores)

Group	<i>n</i>	IPSS score		<i>t</i> value	<i>P</i>	FACIT-Sp score		<i>t</i> value	<i>P</i> value
		Before	After			Before	After		
Routine nursing group	45	26.68 ± 3.54	17.20 ± 2.64	14.421	0.000	5.46 ± 1.46	7.47 ± 2.45	4.158	0.000
Peplau nursing	44	25.87 ± 3.96	11.75 ± 2.05	21.863	0.000	5.68 ± 1.54	10.48 ± 3.17	9.051	0.000
<i>t</i> value		1.037	10.860			0.678	5.027		
<i>P</i> value		0.302	0.000			0.499	0.000		

IPSS: International prostate symptom score; FACIT-Sp: Functional Assessment of Chronic Illness Therapy Spiritual Well-Being Scale.

Table 4 Comparison of quality of life scores by group (mean ± SD, scores)

Group	<i>n</i>	QOL score		<i>t</i> value	<i>P</i> value
		Before	After		
Peplau nursing	44	20.11 ± 3.22	32.80 ± 3.89	16.089	0.000
Routine nursing group	45	20.07 ± 3.94	45.53 ± 4.61	28.179	0.000
<i>t</i> value		0.061	14.070		
<i>P</i> value		0.951	0.000		

QOL: Quality of life.

models based on Peplau's interpersonal relationship theory have become invaluable to clinical nursing.

Studies have shown that patients with prostate cancer experience reduced bladder compliance, weakened sphincter flexibility, and urinary incontinence due to local tissue damage, increased catheterization time after TURP surgery, and compression of the hemostatic balloon[15]. At the same time, psychological disorders influenced by cancer diagnosis and surgical intervention also contribute to poor outcomes for bladder and prostate function. The results of this study showed that the IPSS score of both groups decreased significantly after nursing care ($P < 0.05$). The IPSS scores of patients in the Peplau nursing group were significantly lower than those in the routine nursing group ($P < 0.05$), and bladder indexes, such as urinary incontinence time, frequency, incidence, and urine volume, were significantly lower compared to those in the routine nursing group ($P < 0.05$). The results show that the combination of a nursing model based on the Peplau interpersonal relationship theory and bladder function training can significantly improve patients' prostate and bladder functions and contribute to the maintenance of normal physiological function. Training of the bladder and pelvic floor muscles can increase the tension of the pelvic floor muscles, retrain the urethral muscles, and improve urinary incontinence symptoms. Training of the sphincter of the levator urethra, anal muscles, and coccygeal muscle activates the blood vessels and nerves in the tissue, enhances the metabolic circulation, and accelerates recovery of the focused tissue[16].

In conjunction with physical training, a nursing model based on Peplau's interpersonal relationship theory includes a complete nursing system that focuses on the interaction between patients and nursing staff. In the awareness period, nurses and patients should fully communicate with each other, clarify problems that the patients are facing or will face, and find solutions with the joint efforts of patients, nurses, and family members. During the confirmation period, nurses and patients trust each other.

Nurses should mobilize patient enthusiasm and initiative to ignite a sense of belonging and self-control by participating in nursing plans and exchanging conditions. In the advanced stage, the nursing staff should mobilize the patient's social support system to the greatest extent to maintain an adaptation to the treatment. In this situation, a variety of nursing measures are adopted to impact the patient's psychological state and treatment compliance. During this process, the nursing staff must listen patiently, resolve misunderstandings, and understand and support the patient's interest in self-care. During the solution period, the medical staff tries to decrease patient dependence, increase independence, and expand the scope of communication. The entire nursing process revolves around the interpersonal relationship between nurses and patients.

Results of this study also showed that the FACIT-Sp and QOL scores of the two groups of patients were significantly increased after three months of nursing care ($P < 0.05$), with the two scores of the Peplau nursing group being statistically higher ($P < 0.05$). This indicates that combined care can have a very positive effect on improving patient mood and QOL. Routine nursing interventions mostly rely on "infusion" health education. Patients complete nursing tasks step-by-step and tend not to understand the connotations and essence of nursing. They then demonstrate poor compliance with the plan of care, which negatively impacts the effects of nursing. A nursing model based on Peplau's interpersonal relationship theory combined with bladder function training expands the patient's spiritual level based on physical training. The two combined measures complement each other and result in complementary advantages. This model builds interpersonal relationship bridges for patients so that they will not feel isolated during the treatment process, which helps to reduce fear. The nursing staff plays multiple roles, such as leaders and consultants, in the nursing process. This involves establishing a close relationship with the patient, always paying attention to his physical and psychological states, formulating a targeted and continuous nursing strategy, activating the patient's treatment atmosphere, acknowledging his state of concern and respect, and improving his QOL while receiving treatment.

In addition, effective psychological nursing communication with patients with prostate cancer is an important means of alleviating unhealthy emotions, creating a friendly and familiar admission atmosphere, and familiarizing patients with the hospital treatment environment as soon as possible. This helps patients recognize their role early within the process. The nurse establishes a health support system for patients, providing them with comprehensive nursing measures to promote satisfaction and a sense of integration. Nurses help patients expand their interpersonal relationships upon ending the one-on-one nurse-patient relationship and facilitate a smooth return to society. Of course, emotional support and experience exchanged between patients and their families, between patients, and between family members can also alleviate patients' negative emotions. Improving negative emotions is a necessary prerequisite for achieving significant improvement in physical function so that the patient's mental state and QOL can also improve significantly.

Based on Peplau's interpersonal relationship theory, the nursing model is not only used for interpersonal communication, but it also provides a unique perspective for various fields of clinical nursing, clarifies the roles of nurses and patients during treatment, and broadens the functions of the nursing staff in the nursing process. Bladder function training targets physical training for specific symptoms and is an effective means for improving bladder and prostate function. Although this study provides useful information to the field, limitations, such as sample size and scope, should be acknowledged. Thus, additional research is needed to for further development of clinical nursing work.

CONCLUSION

The combination of bladder training with a nursing model based on Peplau's interpersonal relationship theory can significantly improve prostate function and urinary system symptoms in patients with prostate cancer. This research is important to the field because it provides a combination of interventions that can help relieve negative emotions and improve QOL in these patients.

ARTICLE HIGHLIGHTS

Research background

Prostate cancer is the most common noncutaneous cancer affecting men today. It largely affects men in the fifth and sixth decade of life. Transurethral resection of the prostate (TURP) is an effective treatment method for prostate cancer, but it may result in pain, psychological pressure, and economic burden for patients. Therefore, medical staff must provide effective care measures to assist patients in completing their treatment and improving their prognoses.

Research motivation

This study intends to provide more theoretical foundations of a nursing model for patients with prostate cancer and to verify whether the combined care model has research value.

Research objectives

This is a new attempt to demonstrate the application of Peplau's interpersonal relationship theory combined with bladder function training to improve prognoses for patients with prostate cancer.

Research methods

In our study, 89 patients with prostate cancer were randomized into a Peplau nursing group ($n = 44$) and a routine nursing group ($n = 45$) following TURP. Patients in the routine nursing group received routine care and bladder function training, while patients in the Peplau care group received care based on the Peplau interpersonal relationship theory. The urinary incontinence symptoms, international prostate symptom score (IPSS), functional assessment of chronic illness therapy-spiritual well-being scale (FACIT-Sp), and quality of life (QOL) scores of the two groups were compared before and after three months of nursing intervention.

Research results

The duration, frequency of occurrence, and amount of incontinence in the routine nursing group were significantly greater than those in the Peplau care group. After three months of intervention, the mean IPSS score of the routine nursing group was significantly reduced, while the mean FACIT-Sp and QOL scores were significantly increased. The mean IPSS score in the Peplau nursing group was significantly lower than that in the routine nursing group, while the FACIT-Sp and QOL scores were higher, respectively.

Research conclusions

The combination of a nursing model based on Peplau's interpersonal relationship theory with bladder function training can significantly improve prostate function, urinary system symptoms, negative emotions, and QOL for patients with prostate cancer.

Research perspectives

A diagnosis of prostate cancer can result in increased anxiety and uncertainty. However, interpersonal relationships, including partnerships, friendships, and social networks, may provide powerful conduits for health promotion messages and may prove to be fruitful mechanisms for an increase in the early presentation of men most at risk. Peplau's interpersonal relationship theory has been widely used in various fields in the nursing industry. In the future, the utilization of Peplau's interpersonal relationship theory combined with bladder function training will provide a useful framework for investigating clinical phenomena and guiding nurses' actions.

FOOTNOTES

Author contributions: Yang XH designed the study, collected data, and wrote and revised the manuscript; Wu LF interpreted and analyzed the data; Yan XY and Zhou Y collected the data; Liu X corrected the manuscript.

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