

Original Article

Effects of pain-free nursing care plus mind mapping on postoperative pain and urinary incontinence in patients after transurethral prostate resection

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Abstract: Objective: The aim of this study was to elucidate the effects of pain-free nursing care (intervention) plus mind mapping on postoperative pain and urinary incontinence following transurethral resection of the prostate (TURP). Methods: One hundred patients, admitted to the Department of Urinary Surgery in The First Affiliated Hospital of Jinzhou Medical University, from January 2015 to December 2017, that had undergone TURP were enrolled as participants in this study. Patients were assigned to receive either routine postoperative nursing care (control group, n=50) or pain-free nursing care plus mind mapping (observation group, n=50), in terms of a random number table. Pain-free nursing care covers establishment of good nurse-patient relationships, effective cooperation in surgical care, psychological nursing care (intervention), care for postoperative pain, and health education. Mind maps were expressed in divergent thinking. Patients in the observation group and control group were compared regarding scores on Visual Analogue Scale (VAS), Bladder Spasm Symptom Scale (BSSS), and Simplified Self Rating Scale of Sleep (SRSS), the day following surgery. Incidence, volume and frequency of urinary incontinence, scores on SAS, care satisfaction, and length of hospital stay were compared. Results: Compared to patients in the control group, VAS, BSSS, and SRSS scores of patients in the observation group all decreased considerably (all $P < 0.05$). Incidence of urinary incontinence and volume and frequency of urinary incontinence were also reduced, remarkably, in the observation group (all $P < 0.05$). Significantly lower SAS scores, shorter hospital stay, and higher patient satisfaction with nursing care were noted in the observation group (all $P < 0.05$). Conclusion: Pain-free nursing care plus mind mapping is associated with effective pain relief and less bladder spasms, lower incidence of postoperative urinary incontinence, shorter hospital stays, higher patient satisfaction with nursing care, and improved anxiety and depression in patients having undergone TURP. Hence, it is worthy of extensive use in clinical practice.

Keywords: Prostate hyperplasia, transurethral resection of the prostate, pain, urinary incontinence, mind map

Introduction

Benign prostatic hyperplasia (BPH) is a common obstructive urinary tract disease in elderly males [1]. In recent years, with increased aging of the population, the morbidity of BPH has risen on a yearly basis. It has been reported that prevalence among men older than 70 years has reached to approximately 75% [2, 3]. Currently, transurethral resection of the prostate (TURP) is the first-line therapy for treatment of BPH [4, 5]. Postoperative hemostasis by catheter balloon compression results in bladder spasm-related pain in patients and sometimes after removal of the catheters, un-

controlled leakage of urine may occur in patients [6, 7]. Of note, postoperative pain and urinary incontinence are common complications after TURP that seriously affect patient life and treatment, causing tremendous pain. Additionally, complex conditions and multiple compounding factors add difficulty to clinical nursing care [8-10].

Currently, the clinical efficacy of routine nursing care on postoperative pain and urinary incontinence of patients after TURP is unsatisfactory [11, 12]. Therefore, in the current study, nursing care interventions were performed for treatment of postoperative pain and urinary inconti-

Pain-free care plus mind mapping for postoperative pain and urinary incontinence

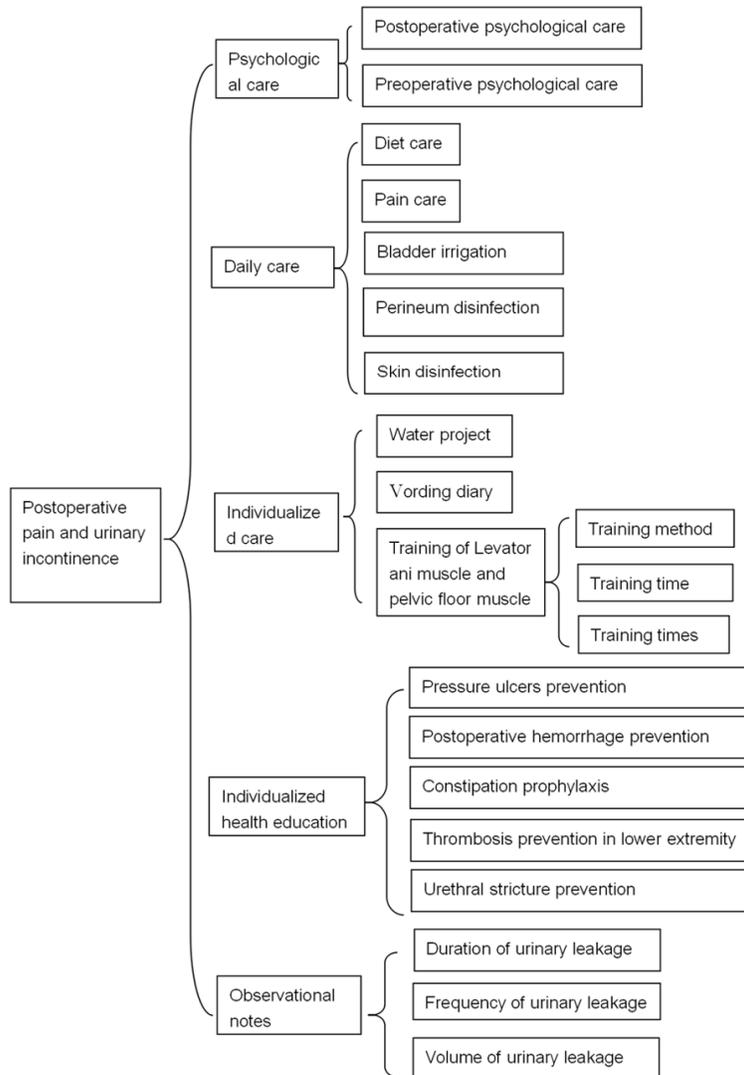


Figure 1. Designed mind map for postoperative pain and urinary incontinence.

nence using pain-free nursing care plus mind mapping. This technique has not yet been reported, globally. The effects of pain-free nursing care plus mind mapping on postoperative pain and urinary incontinence of patients after BPH were investigated, with an aim of providing experimental evidence for planning measures for clinical nursing care.

Materials and methods

Study participants

From January 2015 to December 2017, 100 patients with BPH, admitted to The First Affiliated Hospital of Jinzhou Medical University,

were recruited as participants for this study. All enrolled patients underwent TURP. Patients were eligible for enrollment if they had BPH, as documented by clinical symptoms and imaging examinations, and if they had surgical indications but no surgical contraindications. Patients were ineligible if they had severe liver and kidney disorders, if they had malignancies, or if they could not cooperate with the investigators in this study due to mental illness. Patients were randomly divided into a control group (n=50) and observation group (n=50). Patients in the control group underwent routine postoperative care, whereas those in the observation group received pain-free nursing care plus mind mapping. All patients recruited for this study submitted written informed consent. This study was approved by the Medical Ethics Committee of The First Affiliated Hospital of Jinzhou Medical University.

Methods

Patients in the control group were treated with routine care.

This care included disinfection of urethral orifice and bladder irrigation twice a day, dietary care, and postural care, as well as physical activity if necessary.

Patients in the observation group underwent pain-free nursing care plus mind mapping. Pain-free nursing care was performed as follows: A good nurse-patient relationship was established. Caregivers informed patients of protocols and cautions for BPH and familiarized the patients regarding care needs to establish a relationship of mutual trust. Patients were instructed to effectively cooperate in surgical care and informed of what was likely to occur preoperatively, intraoperatively, and postoperatively. They were instructed to keep a good

mentality before surgery and to actively cooperate with clinicians. Caregivers were aware of the primary outcomes after surgery. Patients were given active psychological care to eliminate fears and anxiety about postoperative pain and increase their confidence in rehabilitation. They received care for postoperative pain. If necessary, medications were used to prevent involuntary bladder contractions, reduce compression, and inhibit bladder spasms and catheter stimulation. Health education was conducted for patients from the perspectives of medication, diet, and self-monitoring.

Mind maps were designed and prepared based on the characteristics of care for postoperative pain and urinary incontinence [13]. In the present study, keywords regarding care for postoperative pain and urinary incontinence were subdivided into first-level branches including psychological care, daily care, individualized care, individualized health education, and observational notes. First-level branches were further subdivided into second-level branches which were thereby subdivided into respective second-level branches. The lower-level branches belong to upper-level branches (**Figure 1**). Nurses, enrolled in this study, were trained to ensure that they could establish a framework of comprehensive analysis and divergent thinking. A 4-sized printing paper was routinely utilized for the mind map design. Implementation profiles were completed and mind maps were adjusted and improved on the basis of corresponding feedback.

After surgery, patients in both groups took corresponding care measures, immediately, until discharge.

Outcome measures

Patients in the observation group and control group were compared regarding changes in the scores on VAS, BSSS, and SRSS, the day following surgery. Scores on VAS scale varied from 0 to 10, with 0 indicating no pain, scores under 3 indicating mild pain which was bearable, 4-6 indicating moderate pain which affected sleep but was bearable and patients should be given clinical treatment, and 7-10 indicating that patients showed incremental tense or unbearable pain. Scores on SRSS scale were classified into the following 4 grades: (1) severe bladder spasm was defined when bladder spasms

occurred once every several minutes and patients kept holding his/her breath, accompanied by a feeling of urgent urination and severe lower-abdominal pain, while the flushing fluid did not dribble, with increasingly darker color and regurgitation; (2) moderate bladder spasm was defined when bladder spasms occurred once every 1 hour or 2 hours, the flushing fluid did not dribble, with bloody urine spilling out around the catheter, along with paroxysmal abdominal pain and a sense of bladder bulge, but not severe; (3) mild bladder spasm was defined when bladder spasms occurred 5 times a day, with no bloody urine spilling out around the urinary catheter, with small changes in color of the flushing fluid and absence of bladder spasms. SRSS scale consisted of 10 items. The scores of each item varied from 1 to 5, with higher scores indicating more severe sleep problems.

Incidence, volume, and frequency of urinary incontinence of patients were compared between the two groups, from the time immediately after surgery until discharge.

Changes in SAS scores, patient satisfaction with care, and hospital stay, before and after intervention, were compared between the two groups. SAS scale covered 20 items. The scores of each item varied from 1 to 4, with a cutoff score of 50. Higher scores indicated more severe anxiety. Patient satisfaction with care was assessed from the perspectives of the environment of the ward, health education, effectiveness, and nurse proficiency in operation and work attitudes. Scores ranged from 0 to 100, with more than 90 indicating nursing care was extreme satisfactory, 80-90 indicating nursing care was satisfactory, 60-79 indicating nursing care was normal, and 60 points or less indicating that nursing care was unsatisfactory.

Statistical analysis

All data in this study were analyzed using SPSS software, version 18.0. Quantitative data are described as mean \pm standard deviation. Between-group comparisons were conducted by independent samples t-tests and intra-group comparisons were conducted with the use of paired t-tests. Count data are presented as percentages and the between-group comparisons

Pain-free care plus mind mapping for postoperative pain and urinary incontinence

Table 1. Basic characteristics of patients

Variables	Case	Age (year)	DOD (year)	IPSS	Qmax	QOL
C group	50	64.63±4.22	10.71±3.25	20.77±1.92	4.62±2.13	4.42±0.52
O group	50	63.84±3.74	11.28±3.53	21.44±1.75	4.91±2.42	4.38±0.47
Statistics		0.243	0.206	0.447	0.156	0.156
P		0.820	0.847	0.678	0.884	0.879

Note: C group denotes control group; O group, observation group; DOD, duration of disease; IPSS, International Prostate Symptom Score; Qmax, maximum urinary flow rate, and QOL, quality of life.

Table 2. Postoperative VAS, BSSS, and simplified SRSS scores of patients

Variables	Case	VAS	BSSS	SRSS
C group	50	3.94±1.07	4.68±1.09	18.47±2.12
O group	50	1.46±0.87	2.14±0.95	15.98±1.76
Statistics		3.115	3.043	3.671
P		0.036	0.038	0.001

Note: C group denotes control group; O group, observation group; VAS, visual analogue scale; BSSS, Bladder spasm symptom scale, and SRSS, simplified self-rating scale of sleep.

were carried out by Chi-square tests. Significance was set at $P < 0.05$.

Results

Basic characteristics of patients

Patients in the two groups were similar in basic characteristics (age, duration of disease, International Prostate Symptom Score (IPSS), maximum urinary flow rate (Qmax), and quality of life (QOL) scores) (all $P > 0.05$), as shown in **Table 1**.

Postoperative VAS, BSSS, and simplified SRSS scores

VAS score was 1.46 ± 0.87 , BSSS was 2.14 ± 0.95 , and SRSS score was 15.98 ± 1.76 in patients of the observation group who received pain-free nursing care plus mind mapping, the day following surgery. All scores were remarkably lower than those of the control group (all $P < 0.05$; **Table 2**).

Incidence, volume, and frequency of urinary incontinence

From the time immediately after surgery until discharge, incidence, volume, and frequency of urinary incontinence of patients in the observa-

tion group were markedly reduced compared to those in the control group (all $P < 0.05$; **Table 3**).

SAS scores, patient satisfaction with care, and length of hospital stay of patients

SAS scores of patients varied insignificantly between the two groups before nursing care ($P > 0.05$). SAS scores after nursing care were remarkably lower than those before nursing care in both groups (both $P < 0.001$). After nursing care, SAS scores in the observation group were markedly lower than the control group ($P < 0.001$; **Figure 2**).

Compared with the control group (11.26 ± 1.34 d), length of hospital stays (7.97 ± 1.18 d) in the observation group was strikingly decreased ($P < 0.001$).

Results of the questionnaires regarding patient satisfaction with nursing care showed that satisfaction rate (94%) of the observation group was considerably different from that (72%) of the control group ($\chi^2 = 7.087$, $P = 0.008$; **Figure 3**).

Discussion

For BPH patients, the presence of postoperative pain and urinary incontinence, following TURP, greatly decreases their quality of life. Thus, it is of great value to strengthen targeted care after TURP. The routine care programs currently applied in clinical practice fail to meet the needs of patients and have not significantly improved their negative emotions. Moreover, the majority of nursing staffs are unqualified and inexperienced [14, 15]. In recent years, with changes in the concepts of clinical nursing care and increasingly updated nursing care modalities, a new nursing care modality of pain-free nursing care in combination of mind mapping has been proposed, as illustrated in the present study. Pain-free nursing care requires nursing staffs to improve their ideas of pain management during the perioperative period, provide high-quality care services for patients, enable patients to receive timely treatment in a painless or mild pain status, and

Table 3. Incidence, volume, and frequency of urinary incontinence of patients

Variables	Case	IUI (n, %)	VUI (mL)	FUI (time/week)
C group	50	14 (28)	36.17±3.25	4.73±1.13
O group	50	4 (8)	25.85±2.39	3.02±0.51
Statistics		5.488	4.431	3.778
P		0.019	0.011	0.004

Note: C group denotes control group; O group, observation group; IUI, incidence of urinary incontinence; VUI, volume of urinary incontinence; FUI frequency of urinary incontinence.

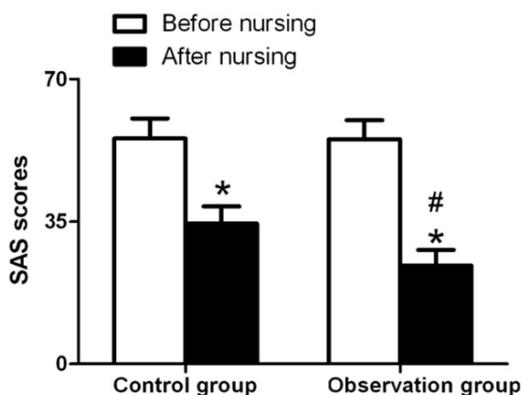


Figure 2. Comparison of SAS scores of patients between the two groups. *P<0.001, compared with pre-care; #P<0.001 compared to the control group.

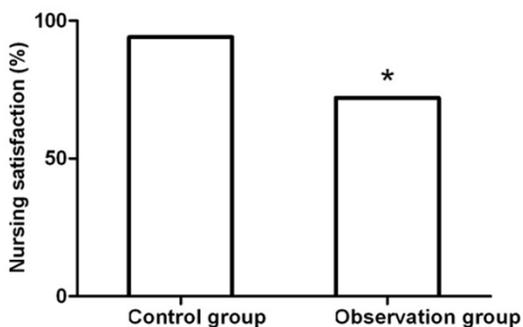


Figure 3. Comparison of patient satisfaction with nursing care between the two groups *P<0.05, compared with the control group.

relieve or eliminate pain in patients, instructing patients to do rehabilitation exercises as early as possible to improve their physical functions and quality of life [16]. The mind mapping utilized in this study was an organizational tool for thinking. Based on divergent thinking, problems are solved in a more favorable way, namely, transforming boring information from a com-

bination of graphs and texts into a logical highly-organized manner [17]. This way of thinking can guide caregivers to do divergent thinking about the problems and provide them with clearer ideas to solve problems [18].

In the present study, patients in the observation group received pain-free nursing care plus mind mapping. Results of this study demonstrated that VAS was 1.46±0.87, BSSS was 2.14±0.95, and SRSS was 15.98±1.76. Incidence of urinary incontinence was 8% while the volume of urinary incontinence was 25.85±2.39 mL and frequency of urinary incontinence was 3.02±0.51 time/week in patients of the observation group. Each of the above values were remarkably lower than those of the control group, suggesting that the modality of pain-free nursing care plus mind mapping is feasible in patients who having undergone TURP. It effectively relieved their symptoms of pain and urinary incontinence. This might be due to the fact that the modality of pain-free nursing care enabled caregivers to actively participate in patient pain prevention and management, improving patient tolerance to pain. In addition, comfortable catheter fixation techniques and effective daily management of catheters were beneficial. With mind mapping, urinary incontinence and postoperative pain were taken as keywords. Memory links were done to make the entire nursing care program more orderly and clear, ensuring no negligence in the entire care process.

Additionally, the results of this study indicated that hospital stays of patients in the observation group were substantially shorter than the control group, indicating that it is significant to implement pain-free nursing care plus mind mapping in patients having undergone TURP. This helps to alleviate symptoms of postoperative pain and urinary incontinence, contributing to better recovery of patients and significantly shorter hospital stays. Furthermore, this novel modality of nursing care can also effectively improve patient mood, thus, ensuring that they are more cooperative in treatment. In the current study, SAS scores after nursing care in the observation group were strikingly lower than that before nursing care and in the control group. This might be explained by the fact that the mind-map way of psychological care enabled patients to actively face surgery, elimi-

nate their anxiety about surgery, and become more cooperative in nursing care, leading to improved effect of nursing care. These results are in line with results reported by Chen et al. [19].

Regarding patient satisfaction with care, the new nursing care modality of pain-free nursing care plus mind mapping can improve the care quality of nursing staffs, allow a better and more accurate understanding of the care content received by patients, and facilitate more detailed care. This present study revealed that patient satisfaction with care in the observation group was remarkably higher than the control group, similar to results reported previously in the literature [20].

In conclusion, the implementation of pain-free nursing care plus mind mapping, in patients having undergone TURP, met patient needs for care, effectively relieved symptoms of postoperative urinary incontinence and pain, and shortened length of hospital stays. Furthermore, it could improve patient mood and satisfaction with clinical nursing care. Hence, it is worthy of extensive use in clinical nursing care. However, this study was not free of limitations. These limitations include a small sample size, a single-center study in nature, and paucity of long-term follow ups. Additional multi-center randomized controlled trials with larger sample sizes and long-term follow ups are required for further substantiation.

Disclosure of conflict of interest

None.

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