

Original Article

High-quality nursing mode is helpful to improve the joint function and quality of life of patients after hip replacement

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Abstract: Objective: With the increasing number of patients undergoing hip replacement, the demand for high-quality nursing is also raising. This study aimed to explore the application value of high-quality nursing mode in the nursing of patients undergoing hip replacement. Methods: Altogether 144 patients who underwent hip replacement in our hospital from January 2018 to January 2019 were selected as the research objects. Among them, those in the conventional group (n=68) received conventional nursing and those in the high-quality group (n=76) received high-quality nursing. The effects of the two nursing modes on the quality of patients' nursing were compared. Results: After nursing intervention, the evaluation of hip joint function, pain management, adverse emotions, quality of life and nursing satisfaction in the high-quality group were better than those in the conventional group. In addition, the number of cases of joint swelling and incision infection in the high-quality group was lower than that in the conventional group. Conclusion: Compared with conventional nursing model, high-quality nursing model can provide better hip joint function, quality of life and nursing satisfaction for patients undergoing hip replacement, and can be popularized in clinical practice.

Keywords: Nursing, hip replacement, quality of life, joint function

Introduction

Hip replacement is the replacement of patients' diseased joint by artificial nearthrosis, and its purpose is to relieve the pain and improve their activities of daily living (ADL) [1]. It is a common operation and has good efficacy on hip diseases such as femoral neck fracture, osteoarthritis and femoral head necrosis [2, 3]. According to reports, in 2010, about 2.5 million people in the United States needed hip replacement [4]. However, the replacement is traumatic and patients undergoing the surgery are mainly elderly people. Therefore, in order to ensure the smooth completion of the surgery and the recovery of joint function of patients after the surgery, it is necessary to strengthen perioperative nursing.

High-quality nursing is a new type of nursing mode that is born with the increasing demand of patients for nursing quality. Its core is to take

people as the basis, and use professional knowledge, operation and attitude to comprehensively nurse patients and help them recover [5, 6]. Earlier reports pointed out that the high-quality nursing mode has great application prospects in the nursing of various diseases. For example, some research results showed that, compared with conventional nursing, high-quality nursing can improve the independent ability of dementia patients to stay at home, improve the quality of life and care, and reduce the overall cost of medical care [7]. Other studies have shown that compared with conventional nursing, high-quality nursing can improve the anxiety and depression of patients with acute stroke in MRI examination, which has a positive effect on improving the completion rate of examination, shortening examination time and improving nursing satisfaction [8]. Other research results revealed that comprehensive nursing for patients with chronic obstructive

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pulmonary disease can effectively reduce the readmission rate and hospital stay of patients and improve their quality of life [9]. However, high-quality nursing is rarely reported in the care of patients undergoing hip replacement, and more clinical data are still needed.

This study carried out conventional nursing and high-quality nursing for patients undergoing hip replacement respectively, analyzed the clinical application value of the two nursing modes in such patients, and aimed to provide a feasible nursing intervention measure for those undergoing hip replacement.

Data and methods

Objects of research

Altogether 144 patients who underwent hip replacement in Wuhan Fourth Hospital from January 2018 to January 2019 were selected as the research objects, and they were divided into conventional group (n=68) and high-quality group (n=76) according to the selected nursing methods. Inclusion criteria: All of them had surgical indications for total hip replacement; patients and their guardians had signed informed consent forms; they had complete clinical data; all could independently complete the evaluation of this study. Exclusion criteria: Patients suffered from serious systemic diseases; patients who had communication difficulties; patients quitted midway.

This study was approved by the ethics committee of Wuhan Fourth Hospital and it was done in accordance with Helsinki Declaration.

Nursing methods

The conventional group was given conventional nursing methods, mainly including monitoring various vital signs of patients, incision nursing, nutritional support and routine dressing change, etc.

The research group was given high-quality nursing, and the main contents were as follows: Preoperative nursing: we monitored the vital signs and evaluated the physical condition of patients before operation. In addition, we persuaded their adverse emotions to avoid adverse emotions and poor physical condition before

operation. Pain nursing: we strengthened health education of pain knowledge, inform patients of the causes of pain and solutions, and formulated analgesic plans. Psychological nursing: the nursing staff actively and enthusiastically communicated with patients, understood their condition and psychological development, provide good suggestions according to their condition, reduce their anxiety, fear and other negative emotions, and build their courage and confidence to overcome the disease. Diet nursing: according to patients' eating habits and actual condition, we formulated personalized diet, gave balanced and digestible diet packages, prohibited the consumption of pungent and spicy foods, and promoted their absorption of nutrition. Rehabilitation guidance: according to patients' pain, physical condition and recovery degree, with the principle of gradual and orderly progress, from simple to complex, we specified personalized rehabilitation exercise to promote the recovery of lower limb muscle strength and limb function after surgery. Complication nursing: we closely observed patients' condition changes after operation, and focused on preventing possible complications. When complications occurred, symptomatic treatment was carried out immediately, and the treatment methods of complications and psychological counseling were explained to them, so as to reduce their uneasiness, depression and other adverse emotions, and reduce their injury caused by complications. Discharge guidance: we informed patients and their families about nursing knowledge in the form of lectures and publicity books, and set up a special nursing hotline to timely understand their rehabilitation.

Outcome measures

Harris scale [10] was used to score patients' hip joint function on the 1st day before operation and the 1st day before discharge. The score was made from four dimensions of pain, function, deformity and mobility, with a full score of 100 points. The higher the score was, the better the hip joint function was.

Visual analogue scale (VAS) [11] was used to evaluate patients' degree of pain on the first day before operation and the first day after operation, with a full score of 10. The higher the score was, the more severe the pain was.

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Table 1. Comparison of general data of patients in the two groups ([n (%)], $\bar{x} \pm s$)

Group	Conventional group (n=68)	High-quality group (n=76)	χ^2/t	P
Gender			0.649	0.421
Female	45 (66.18)	55 (72.37)		
Male	23 (33.82)	21 (27.63)		
Average age (years)	60.98±6.98	62.38±6.11	1.283	0.201
Average body weight (KG)	63.21±6.33	61.66±7.18	1.367	0.174
Diet preference			0.181	0.671
Light	47 (69.12)	50 (65.79)		
Spicy	21 (30.88)	26 (34.21)		
Place of residence			0.208	0.649
Cities and towns	33 (48.53)	34 (44.74)		
Countryside	35 (51.47)	42 (55.26)		
Exercise habits			1.691	0.194
Yes	36 (52.94)	32 (42.11)		
No	32 (47.06)	44 (57.89)		
Marital status			2.638	0.267
Married	59 (86.76)	58 (76.32)		
Unmarried	5 (7.35)	9 (11.84)		
Widowed	4 (5.88)	9 (11.84)		
Etiology			1.360	0.507
Osteoarthritis of hip joint	19 (27.94)	15 (19.74)		
Femoral neck fracture	38 (55.88)	48 (63.16)		
Osteonecrosis of the femoral head	11 (16.18)	13 (17.10)		

Self-rating anxiety scale (SAS) [12] and the self-rating depression scale (SDS) [13] were used to evaluate the anxiety and depression status of patients one day before operation and one day before discharge. The total score was 100 points. The higher the score was, the more serious the anxiety status was.

Quality of life questionnaire [14] was used to evaluate patients' quality of life for 3 months after discharge, including general health (GH), role physical (RP), physical function (PF), social function (SF), emotional role (RE) and mental health (MH). The full score for each item was 100 points, and the higher the score was, the better the quality of life was.

The complications of the two groups during hospitalization were observed and recorded, mainly including venous thrombosis, urinary system infection, pressure ulcer, constipation, incision sensation and delirium.

The self-made "nursing satisfaction questionnaire" of our hospital was used to evaluate patients' nursing satisfaction one day before

discharge, mainly including attitude, character, wearing, operation proficiency, etc. There were 20 questions, each with 5 points, < 70 points were unsatisfied, 70-89 points were basically satisfied, and ≥ 90 points were satisfied. Satisfaction = (satisfied cases+basically satisfied cases)/total cases $\times 100\%$.

Statistical methods

SPSS 19.0 (Shanghai Yijun Information Technology Co., Ltd.) was used for statistical analysis, and GraphPad Prism 7 was used to draw pictures. The counting data were compared by Chi-square test or Fisher exact test. The comparison of the measurement data between the two groups was under independent-samples t test, and comparison before and after treatment in the group was under paired t test; comparison of the measurement data above the two groups was under one-way analysis of variance, and back testing (Tukey's hsd method) was used to verify the correctness of statistical values. The differences were statistically significant when $P < 0.05$.

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Table 2. Comparison of surgical conditions between the two groups ($x \pm sd$)

Group	Operation time (min)	Intraoperative hemorrhage (ml)	Length of hospital stay after operation (d)
Conventional group (n=68)	104.24±10.24	145.78±13.29	15.21±2.78
High-quality group (n=76)	94.26±8.25	131.21±12.11	13.11±2.26
t	6.469	6.883	4.995
P	< 0.001	< 0.001	< 0.001

Table 3. Evaluation and comparison of hip joint function of patients ($x \pm sd$)

Group	Conventional group (n=68)	High-quality group (n=76)	t	P
Before intervention	45.56±5.23	46.45±5.56	0.986	0.326
After intervention	72.62±5.74	77.34±5.71	4.940	< 0.001
t	28.736	33.789	-	-
P	< 0.001	< 0.001	-	-

Table 4. Comparison of pain management assessment for patients ($x \pm sd$)

Group	Conventional group (n=68)	High-quality group (n=76)	t	P
Before intervention	7.12±1.17	7.35±1.06	1.238	0.218
After intervention	4.87±0.94	4.11±0.91	4.926	< 0.001
t	12.779	19.733	-	-
P	< 0.001	< 0.001	-	-

Results

Comparison of general data

There was no statistical difference between the two groups in general data such as gender, age, weight, diet preference, place of residence, exercise habits, marital status and etiology ($P > 0.05$). See **Table 1**.

Comparison of surgeries

All patients completed the operation successfully. After comparing their operation conditions, we found that the operation time and postoperative hospital stay in the high-quality group were shorter than those in the conventional group, and the intraoperative blood loss was lower than that in the conventional group ($P < 0.05$). See **Table 2**.

Evaluation and comparison of hip joint function of patients

The evaluation of hip joint function showed that there was no remarkable difference in Harris score between the two groups before interven-

tion ($P > 0.05$); after intervention, the Harris score in both groups increased, and the Harris score in the high-quality group was higher than that in the conventional group ($P < 0.05$). See **Table 3**.

Comparison of pain management assessment of patients

The evaluation of patients' pain showed that there was no statistical difference in VAS scores between the two groups before intervention ($P > 0.05$); after intervention, the scores of both groups decreased, and the scores of the high-quality group were lower than those of the conventional group ($P < 0.05$). See **Table 4**.

Comparison of improvement of patients' unhealthy emotions

The evaluation of patients' adverse emotions manifested that there was no statistical difference in the SAS score and SDS score between the two groups before intervention ($P > 0.05$); after intervention, the scores of the two groups decreased significantly, and the scores of the high-quality group were lower than those of the conventional group ($P < 0.05$). See **Table 5**.

Comparison of postoperative complications of patients

After comparing the occurrence of postoperative complications between the two groups, we found that there was no statistical difference in the number of cases of deep vein thrombosis, urinary system infection and hip dislocation between both groups ($P > 0.05$), but the number of cases of joint swelling and incision infection in the conventional group was higher than that in the high-quality group ($P < 0.05$). See **Table 6**.

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Table 5. Comparison of improvement of patients' unhealthy emotions (x ± sd)

Group	SAS score		SDS score	
	Before intervention	After intervention	Before intervention	After intervention
Conventional group (n=68)	72.34±4.87	64.62±5.24	74.86±4.32	63.23±5.13 [#]
High-quality group (n=76)	73.58±5.45	56.36±5.51	75.46±4.78	57.84±6.64 [#]
t	1.433	9.190	0.787	5.404
P	0.154	< 0.001	0.433	< 0.001

Comparison with the conventional group after nursing ([#]P < 0.05).

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

Group	Conventional group (n=68)	High-quality group (n=76)	χ ²	P
Deep venous thrombosis	6 (8.82)	2 (2.63)	2.622	0.105
Urinary tract infection	5 (7.35)	1 (1.32)	3.276	0.070
Red Hock	9 (13.24)	3 (3.95)	4.053	0.044
Incision infection	6 (8.82)	1 (1.32)	4.374	0.037
Dislocation of hip joint	2 (2.94)	0 (0.00)	2.267	0.132

Table 7. Comparison of quality of life score after nursing between the two groups (score, x ± SD)

Project	Conventional group (n=68)	High-quality group (n=76)	t	P
GH	72.64±6.15	78.34±5.53	5.856	< 0.001
RP	74.23±5.45	81.33±5.15	8.035	< 0.001
PF	69.61±5.13	76.42±4.82	8.211	< 0.001
SF	68.12±4.87	75.67±5.77	8.432	< 0.001
RE	71.42±5.22	78.88±6.31	7.677	< 0.001
MH	73.76±4.98	80.24±5.81	7.144	< 0.001

Comparison of patients' quality of life

After nursing intervention, the scores of GH, RP, PF, SF, RE and MH in QLQ items in the high-quality group were higher than those in the conventional group (P < 0.05). See **Table 7**.

Comparison of nursing satisfaction

In an evaluation of patients' satisfaction with nursing before discharge from hospital, we found that patients in the high-quality group had higher satisfaction with nursing than those in the conventional group (P < 0.05). See **Table 8**.

Discussion

This study mainly compared the application value of high-quality nursing and conventional

nursing in the nursing of patients undergoing hip replacement. The results signified that compared with conventional nursing model, high-quality nursing model can provide better hip function, quality of life and nursing satisfaction for patients undergoing hip replacement. In addition, high-quality nursing is superior to conventional nursing in postoperative complications, adverse emotions and pain management.

Hip replacement is a common method in clinical treatment of hip diseases and recovery of hip function in elderly patients, which can effectively reduce pain and improve limb function, thus improving their quality of life [15, 16]. As

the number of patients undergoing hip replacement is expanding, the demand for care is also increasing. The high-quality nursing mode is patient-centered, and continuously deepens the connotation of nursing service by improving the nursing level of medical staff and the mutual cooperation of nursing teams, so as to provide customized nursing service for patients in a more humanized and scientific manner. The whole nursing process not only provides professional disease care for patients, but also provides help for their psychological, dietary, rehabilitation and other needs [17, 18]. Hip replacement is a kind of traumatic surgery, and patients are mainly the elderly, with less physical quality and recovery ability. As a result, patients undergoing this surgery often suffer from various postoperative complications, such as wound infection, joint swelling and disloca-

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Table 8. Comparison of nursing satisfaction between the two groups [n (%)]

Group	Very satisfied	Basically satisfied	Dissatisfied	Satisfaction
Conventional group (n=68)	13 (19.12)	36 (52.94)	19 (27.94)	49 (72.06)
High-quality group (n=76)	26 (34.21)	40 (52.63)	10 (13.16)	66 (86.84)
χ^2	-	-	-	4.877
P	-	-	-	0.027

tion, etc. These complications will not only increase the redundant medical burden, but also damage the physical and mental health of patients [19, 20]. Therefore, the nursing of postoperative complications of patients is particularly important. In this study, we took preventive nursing of the common complications of patients in the high-quality group, and found that such treatment would reduce the occurrence of postoperative complications.

Functional recovery exercise plays an irreplaceable key role in patients and postoperative rehabilitation. However, patients are not willing to participate in rehabilitation training due to fear of pain caused by exercise and uncertainty of its effect after undergoing traumatic stimulation of surgery [21]. Hence, we made individual rehabilitation plans for patients. The whole process required gradual and orderly progress, increasing the training amount from less to more so that patients could more easily accept rehabilitation exercises, thus promoting hip joint healing. Our results manifested that the Harris scores of patients in the high-quality group were higher than those in the conventional group. Quality of life is a vital indicator to reflect the postoperative recovery effect of surgical patients [22]. However, hip replacement will cause persistent pain to patients, which will not only cause depression, suppression and other negative emotions to them, but also cause serious negative impact on their daily life and quality of life [23, 24]. Therefore, in the process of nursing, not only professional nursing should be carried out for diseases, but also special attention should be paid to the pain management and psychological needs of patients, and individualized nursing programs should be designated to relieve their pain and improve their bad emotions, thus providing better quality of life for them. We conducted pain management, adverse emotions and quality of life assessment of patients in the two groups, and found that the VAS, SAS and SDS scores of the high-quality group were lower than those of

the conventional group, and the GH, RP, PF, SF, RE and MH scores of QLQ items were also higher than those of the conventional group. At the end of this study, we compared patients' satisfaction with nursing in the two groups; the results showed that their satisfaction with nursing in the high-quality group was higher than that in the conventional group, which indicated that they had higher recognition of the high-quality nursing model. It also indicated that they had higher requirements for nursing quality, which provided a strong basis for application and promotion of high-quality nursing in future clinical practice.

Although this study proves that high-quality nursing can provide better nursing quality for patients than conventional nursing, there are still some deficiencies. First, the results have certain limitations because the research objects were all from one hospital and the number was small. Second, there were some differences in working experience of nursing staff, which may influence nursing quality.

To summarize, compared with the conventional nursing model, the high-quality nursing model can provide better hip function, quality of life and nursing satisfaction for patients receiving hip replacement, and can be popularized and applied clinically.

Disclosure of conflict of interest

None.

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