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Name of Journal: *World Journal of Clinical Cases*

Manuscript NO: 71261

Manuscript Type: ORIGINAL ARTICLE

Retrospective Study

Evidence-based intervention on postoperative fear, compliance, and self-efficacy in elderly patients with hip fracture

Fu Y *et al.* Evidence-based intervention in hip fracture

Ying Fu, Li-Juan Zhu, Da-Cheng Li, Jing-Lei Yan, Hai-Ting Zhang, Yu-Hong Xuan, Chun-Ling Meng, Yan-Hong Sun

Abstract

BACKGROUND

Elderly patients tend to have poor self-efficacy and poor confidence in postoperative rehabilitation for hip fractures, and are prone to negative emotions, which affect treatment compliance.

AIM

To evaluate the effects of evidence-based intervention on postoperative fear, compliance, and self-efficacy in elderly patients with hip fractures.

METHODS

A total of 120 patients with hip fracture surgically treated from June 2018 to June 2020 at the orthopedic department of our hospital were selected and divided into intervention and routine groups ($n = 60$ each) according to different nursing methods. The basic rehabilitation methods of the two groups were consistent, but patients in the intervention group received evidence-based nursing interventions at the same time. Differences

between groups in the scores of motion phobia, pain fear, rehabilitation training compliance, self-efficacy, nursing satisfaction, and hip joint function were compared before and after the intervention.

RESULTS

Before the intervention, there were no statistically significant differences in motion phobia and pain fear scores between the groups (all $P > 0.05$). However, motion phobia scores at 1 wk after intervention initiation ($P < 0.05$), and pain fear scores at 1 wk and 2 wk after intervention initiation (all $P < 0.05$), were significantly lower in the intervention group than in the routine group. On the first day of intervention, there was no significant difference in rehabilitation treatment compliance between the groups ($P > 0.05$); however, at 2 wk after intervention initiation, rehabilitation compliance was significantly better in the intervention group than in the routine group ($P < 0.05$). Before the intervention, there were no statistically significant differences in the scores for the two self-efficacy dimensions (overcoming difficulties and rehabilitation exercise self-efficacy) and the total self-efficacy score between the groups (all $P > 0.05$). After 2 wk of intervention, the scores for these two dimensions of self-efficacy and the total self-efficacy score were significantly higher in the intervention group than in the routine group (all $P < 0.05$). At 3 and 6 mo after surgery, hip function as evaluated by the Harris hip score, was significantly better in the intervention group than in the routine group ($P < 0.05$). Additionally, overall nursing satisfaction was significantly higher in the intervention group than in the routine group ($P < 0.05$).

CONCLUSION

Evidence-based nursing intervention can alleviate fear of postoperative rehabilitation in elderly patients who underwent hip fracture surgery, and improve rehabilitation treatment compliance and patient self-efficacy, which promote hip function recovery.

INTRODUCTION

The occurrence of hip fractures in the elderly population is related to decreased strain force and activity, osteoporosis, and other factors, and can cause severe pain, activity disorders, and long-term bed rest, thus leading to lower extremity deep vein thrombosis, pulmonary infections, urinary tract infections, and other complications, which hinder recovery^[1-4]. Therefore, elderly patients with hip fractures should undergo surgery as soon as possible to correct joint dysfunction, restore joint function, and reduce the rate of disability. Although surgery is the first choice for the treatment of hip fractures, rehabilitation training is needed to help recover hip function^[5].

Currently, there are many clinical intervention measures for postoperative rehabilitation in elderly patients who undergo hip fracture surgery. However, due to a lack of knowledge, memory, and understanding of post-fracture rehabilitation, elderly patients have poor self-efficacy and poor confidence in rehabilitation, and are prone to negative emotions, which affect treatment compliance^[6]. Evidence-based nursing is a new nursing model that takes clinical nursing problems as the starting point and solves problems in an evidence-based manner^[7]. This study aimed to evaluate the effects of evidence-based intervention on postoperative fear, compliance, and self-efficacy in elderly patients with hip fractures.

MATERIALS AND METHODS

Patient selection

A total of 120 patients with hip fractures surgically treated from June 2018 to June 2020 at the orthopedic department of our hospital were selected and divided according to different nursing methods into two groups of 60 patients each: the intervention group and routine group. The inclusion criteria were as follows: (1) received closed reduction and intramedullary nailing at the department of orthopedics of our hospital due to a hip fracture; (2) underwent rehabilitation training in our hospital after the surgery; (3) aged 65–85 years; (4) underwent unilateral hip surgery; and (5) was able to understand, read,

listen, and converse. The exclusion criteria were as follows: (1) fracture or cancer caused by a malignant tumor; (2) previous nerve and muscle diseases of the lower limbs leading to lower limb dysfunction; (3) artificial hip replacement or re-repair; (4) previous ankle and knee surgery; (5) coagulation disease; and (6) accompanied by large tissue defects of the lower limbs, large blood vessels, and nerve damage. The study protocol was approved by the Ethics Committee.

Basic rehabilitation intervention

All patients were treated with basic rehabilitation. The patients were visited by nurses prior to surgery, and instructed to perform effective coughing and lip-constricted breathing after the surgery. They were also instructed to practice inhalation through the nose and exhalation with the lips parted, similar to whistling. Postoperatively, the patients received help in maintaining proper posture, and were instructed to maintain gentle movements once placed into position. Soft pads were used to protect the patient's bone carina and prevent pressure sores. Additionally, the patients in both groups were instructed to perform ankle pump movements in bed, as well as plantar flexion, lower toe, back extension, and hook toe exercises, 20 min/time, 2 times/d.

Evidence-based nursing interventions

The intervention group received evidence-based nursing. First, an evidence-based nursing team, composed of head nurses and responsible nurses, was established. Before the study, the group members were trained on the common complications, emotional problems, and self-management problems in elderly patients after hip fracture surgery. The group members' grasp of the training content was enhanced by centralized on-site training, teaching videos, and online learning platforms, *etc.* Based on clinical nursing experience, evidence-based issues were put forward, the relevant literature was consulted, and individualized nursing plans were formulated. Patients were evaluated preoperatively, and evidence-based interventions were performed to address possible problems.

Given the likelihood of high-risk factors that cause postoperative complications, such as deep venous thrombosis of the lower limbs, bedsores, precipitate pneumonia, and urinary tract infections, the health education provided to patients was strengthened, so as to ensure that the patient understood that postoperative self-management is important to the prognosis. As part of basic rehabilitation, the patients were instructed to perform effective coughing, lip-constricting breathing, and ankle pump movement, using the same methods as those in the routine group. Additionally, the patients were helped in turning over regularly, the back was patted, and soft pads to protect the patient's bone carinal area were used to prevent pressure sores. The patients were guided to appropriately raise the affected limb and perform ankle pump movements after surgery, and were encouraged to get out of bed as early as possible, follow the doctor's advice to undergo lower limb function training, strengthen the quadriceps muscle contraction with training, assist with proper massage, and hot compress the affected limb. If lower extremity swelling and venous thrombosis were found, massage was stopped, and the patient was reported to the doctor for thrombolysis treatment in a timely manner.

For elderly patients who easily produce negative emotions, the nurses adhered to a gentle, cordial attitude and communicated with the patient regarding issues caused by negative emotions in nursing work, and provided the corresponding psychological counseling. Patients were guided to listen to the radio and watch videos, as a form of distraction to relieve negative emotions.

Given the characteristics of impaired vision, hearing, and comprehension in elderly patients, the communication between nurses and patients was strengthened, using masterful communication skills at an appropriately increased volume. The influence of postoperative rehabilitation exercise on the recovery of lower limb function was repeatedly emphasized to the patients, and they were instructed to overcome their pain and fear and actively cooperate with rehabilitation training. Nurses praised the progress made by patients in a timely manner, and guided the patients to carry out self-care without tiredness.

Evaluation indexes

Differences in the scores of motion phobia, pain fear, rehabilitation training compliance, self-efficacy, nursing satisfaction, and hip joint function between the two groups were evaluated before and after the intervention.

The Tamp Scale (TSK) was used to evaluate motion phobia^[8]. The TSK comprises 17 items, each of which is scored on a 4-point Likert scale. The total score ranges 17-68 points, with higher scores indicating greater motion phobia severity. A total score > 37 was considered to indicate that the patient had symptoms of motion phobia^[8].

The pain fear questionnaire comprises 30 items, each of which is scored from 1 to 5 points; accordingly, the total score ranges 30-150 points. A higher score indicates more severe pain fear^[9].

An early rehabilitation training compliance evaluation table was used to evaluate rehabilitation training compliance, and the compliance standards were divided into three levels as follows: (1) full compliance: the patient can actively complete the daily rehabilitation training plan, with good quality and quantity, according to the guidance of nurses, and the rehabilitation effect is good; (2) partial compliance: the patient competes the daily rehabilitation training plan only when supervised by a nurse, or only occasionally, sometimes due to a lack of action, sometimes due to a lack of time, and the rehabilitation effect is fair; and (3) noncompliance: the patient does not follow instructions and refuses to carry out early rehabilitation training according to the guidance of nurses, and the rehabilitation effect is poor.

The self-efficacy for rehabilitation scale (SER) was used to assess self-efficacy^[10]. The SER is used to evaluate self-efficacy in patients undergoing postoperative knee or hip rehabilitation, and has a total of 12 items for two dimensions of self-efficacy: rehabilitation exercise self-efficacy and self-efficacy in overcoming difficulties. The highest total score is 120 points, and scores are proportional to the patient's self-efficacy^[10].

Hip joint function was evaluated using the Harris hip scale, which includes items on pain, lower limb deformity, hip joint function, and hip joint range of motion^[11]. The highest total score is 100 points, and higher scores indicate better hip joint function^[11].

Nursing satisfaction was evaluated using a 100-point scale, completed by patients and their families at discharge. The sum of the two scores was averaged as the nursing satisfaction score, with scores ≥ 90 indicating very satisfied; 80-89, relatively satisfied; 70-79, fair; and < 79 , not satisfied.

Statistical analyses

Age, various scale scores, and other measurement indicators used in this study were evaluated for normal distribution by pp and qq diagrams, which indicated approximately normal or normal distributions. Accordingly, these data are expressed as mean \pm SD, and the independent-sample *t*-test was used to evaluate differences between the two groups. Sex, affected side, combined diseases, and other count data are expressed as percentages, and differences between groups were evaluated using the χ^2 test for non-grade count data and the Whitney-*U* test for grade count data. Significance was set at $P = 0.05$.

RESULTS

Comparisons in baseline characteristics

There were no statistically significant differences in age, height, weight, and interval between the fracture and surgery between the two groups (all $P > 0.05$) (Table 1).

Comparison in motion phobia scores before and after the intervention

Before the intervention, there was no statistically significant difference in motion phobia scores between the two groups ($P > 0.05$). At 1 wk after intervention initiation, motion phobia scores were significantly lower in the intervention group than in the routine group ($P < 0.05$) (Table 2).

Comparison in pain fear scores before and after the intervention

Before the intervention, there was no statistically significant difference in pain fear scores between the two groups ($P > 0.05$). At 1 wk and 2 wk after intervention initiation, pain fear scores were significantly lower in the intervention group than in the routine group ($P < 0.05$) (Table 3).

Comparison in rehabilitation treatment compliance

On the first day of the intervention, rehabilitation treatment compliance was evaluated, and there was no significant difference between the two groups ($P > 0.05$). At 2 wk after the intervention, the rehabilitation treatment compliance was significantly better in the intervention group than in the routine group ($P < 0.05$) (Table 4).

Comparison in self-efficacy scores before and after the intervention

Before the intervention, there were no statistically significant differences in the scores for the two self-efficacy dimensions (overcoming difficulties and rehabilitation exercise self-efficacy), and the total score, between the two groups (all $P > 0.05$). At 2 wk after intervention initiation, scores on the two self-efficacy dimensions and the total score were significantly higher in the intervention group than in the conventional group (all $P < 0.05$) (Table 5).

Comparison in Harris hip scores before and after intervention

At 3 and 6 mo after surgery, hip function was evaluated. At both timepoints, the Harris hip score was significantly higher in the intervention group than in the routine group (all $P < 0.05$) (Table 6).

Comparison in nursing satisfaction

The overall nursing satisfaction was significantly higher in the intervention group than in the routine group ($P < 0.05$) (Table 7).

DISCUSSION

In the elderly population, physiological degeneration occurs in various organs, and immunity is relatively low. Once a hip fracture occurs, it is more difficult for elderly patients to recover than young and middle-aged patients. Because the elderly tend to have osteoporosis, a long postoperative bed rest will further aggravate bone loss, rendering the degree of osteoporosis more serious^[12]. Therefore, elderly patients with hip fracture should pay close attention to rehabilitation training. However, due to declines in cognitive ability, including comprehension, in elderly patients, the degree of rehabilitation training acceptance and ability for self-management are not high; thus, elderly patient often cannot cooperate with rehabilitation training^[13]. In view of this problem, it is very important to strengthen the intensity of nursing interventions. However, the intervention effect of routine rehabilitation nursing is often not ideal, resulting in a fair hip fracture rehabilitation effect in elderly patients^[14].

Evidence-based nursing emphasizes clinical nursing experience and the patient's actual needs, and is mainly objectively based, using literature reviews and evidence-based practice as a guide. Evidence-based nursing combines theory and practice to provide patients with more targeted, detailed nursing interventions. This nursing mode can avoid blindness in nursing work and improve work efficiency^[15]. Evidence-based nursing intervention has been applied in every clinical area, and shows a good application effect in enhancing patients' self-management ability, improving their emotional state, and reducing complications and unsafe events^[5,16-18]. In the present study, evidence-based nursing interventions were applied to the postoperative treatment of elderly patients with hip fractures. It was found that after 1 wk of intervention, motion phobia scores were lower, and rehabilitation treatment compliance was better, in patients who received evidence-based nursing intervention than in patients who received routine intervention alone. Similarly, after 1 wk and 2 wk of intervention, pain fear scores were lower in patients who received evidence-based nursing intervention than in patients who received routine intervention alone. These results suggest that evidence-based nursing intervention can reduce the fear of postoperative rehabilitation in elderly patients who

undergo hip fracture surgery and improve rehabilitation treatment compliance. Under the mode of evidence-based nursing intervention, nursing group members put forward the common problems of postoperative elderly patients with hip fracture according to their own clinical nursing practice, and conducted targeted intervention in accordance with literature reviews and clinical experience. Through on-site training, lecture videos, online learning platforms, and other channels, team members can better grasp the key points and issues requiring attention in the care of elderly patients with hip fractures. Furthermore, through repeated and detailed health education, patients can better understand the risk of postoperative complications and the significance of postoperative self-management and combined treatment for the prognosis; patients should be encouraged in a timely manner when they make progress, so that they can overcome their own thoughts on the fear of pain and better coordinate with the treatment plan^[6,11,19].

Self-efficacy refers to a person's subjective judgment about whether they can successfully complete a certain behavior, and is consistent with self-competence, self-confidence, and other categories. Self-efficacy plays a very important role in the medical field, and is directly related to a patient's emotional state, treatment compliance, and treatment effect. Therefore, clinical practice has gradually focused on improving patients' self-efficacy to help them overcome the disease^[19]. The present study found that evidence-based nursing intervention can better improve two dimensions of self-efficacy, overcoming difficulties and rehabilitation exercise self-efficacy, as well as the total self-efficacy score. Accordingly, the patients' confidence in rehabilitation was enhanced and they were better able to cooperate with the rehabilitation therapy, which is also one of the important reasons for their good prognosis. For elderly patients who tend toward negative emotions, non-acceptance, and poor understanding, evidence-based nursing interventions focus on the ways and methods of communication in nursing work, *via* observation and inquiry, to identify the reason for the patient's decreased confidence, so as to provide the corresponding psychological counseling and alleviate negative emotions through a variety of means. The importance of postoperative rehabilitation therapy was repeatedly emphasized so that the patients could better cooperate with the

treatment. Patients were praised in a timely manner for their progress, and were tirelessly guided on self-care. Under this model, the patient's hip function can be improved, and their confidence in recovery can be increased significantly.

This study also evaluated hip function at 3 and 6 mo of intervention, and found that evidence-based nursing intervention can help improve the patients' hip function and their overall nursing satisfaction. Based on the above-mentioned results, this is likely due to reduced fear of postoperative rehabilitation and improved rehabilitation treatment compliance and self-efficacy. Furthermore, the patients' self-efficacy was improved in multiple domains and by several methods (*e.g.*, physical and psychological interventions), rendering the patients more proactive, with better cooperation during postoperative rehabilitation training, leading to improvements in hip function. Good recovery of the hip joint was the main reason for the higher patient satisfaction in the evidence-based intervention group than in the routine intervention group. In addition, during nurse-patient communication, the patients felt kindness and care from the nursing staff, which was also one of the reasons for the improvement in patient satisfaction.

CONCLUSION

In conclusion, evidence-based nursing intervention can alleviate fear of postoperative rehabilitation in elderly patients who undergo hip fracture surgery, improve rehabilitation treatment compliance, and improve the self-efficacy of patients, so as to promote the recovery of hip function in patients. This method has a high requirement for preliminary work by the nursing staff, including disease condition assessment, the discovery of nursing problems, literature reviews, statistical summaries, and professional training, which leads to an increase in the workload of the nursing staff to a certain extent. However, this method can improve the patients' self-efficacy and treatment compliance, and make follow-up nursing work easier (double the result with half the effort), so it has certain advantages.

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Table 1 Comparisons in baseline characteristics between the two groups, *n* (%)

Baseline data	The intervention group (<i>n</i> = 60)	The routine group (<i>n</i> = 60)	t/χ^2 value	<i>P</i> value
Age (yr)	71.4 \pm 6.1	70.9 \pm 5.2	0.483	0.630
Height (cm)	166.8 \pm 4.1	165.5 \pm 5.0	1.557	0.122
Weight (kg)	64.9 \pm 5.8	66.3 \pm 5.2	-1.392	0.167
Interval between fracture and operation (d)	3.1 \pm 1.3	3.3 \pm 1.1	-0.910	0.365
Gender			0.556	0.456
Male	34 (56.67)	38 (63.33)		
Female	26 (43.33)	22 (36.67)		
Affected side distribution			0.536	0.464
Left side	30 (50.00)	34 (56.67)		
Right side	30 (50.00)	26 (43.33)		
Hypertension			2.596	0.107
Yes	11 (18.33)	5 (8.33)		
No	49 (81.67)	55 (91.67)		
Diabetes			0.536	0.464
Yes	3 (5.00)	5 (8.33)		
No	57 (95.00)	55 (91.67)		
Reason of fracture			2.004	0.157
Traffic accident	14 (23.33)	8 (13.33)		
Self fall injury	46 (76.67)	52 (86.67)		

Table 2 Comparisons in motion phobia scores before and after intervention initiation between the two groups (mean \pm SD, scores)

Groups	N	Before intervention	1 wk after intervention	2 wk after intervention
Intervention group	60	57.3 \pm 6.2	43.8 \pm 5.6	28.6 \pm 4.0
Routine group	60	58.5 \pm 5.8	46.4 \pm 5.5	30.0 \pm 4.8
<i>t</i> value		-1.095	-2.566	-1.736
<i>P</i> value		0.276	0.012	0.085

Table 3 Comparisons in pain fear scores before and after intervention initiation between the two groups (mean \pm SD, scores)

Groups	<i>n</i>	Before intervention	1 wk after intervention	2 wk after intervention
Intervention group	60	127.4 \pm 12.9	95.8 \pm 10.2	58.1 \pm 8.3
Routine group	60	125.0 \pm 14.1	101.3 \pm 12.4	62.7 \pm 9.6
<i>t</i> value		0.973	-2.653	-2.808
<i>P</i> value		0.333	0.009	0.006

Table 4 Comparisons in rehabilitation treatment compliance between the two groups, n (%)

Groups	Complete compliance	Partial compliance	Noncompliance
1 d of intervention			
the intervention group ($n = 60$)	22 (36.67)	32 (53.33)	6 (10.00)
the routine group ($n = 60$)	24 (40.00)	29 (48.33)	7 (11.67)
Z value	-0.204		
P value	0.838		
2 wk after intervention			
the intervention group ($n = 60$)	47 (78.33)	13 (21.67)	0 (0.00)
the routine group ($n = 60$)	36 (60.00)	22 (36.67)	2 (3.33)
Z value	-2.243		
P value	0.025		

Table 5 Comparisons in self-efficacy scores before and after intervention initiation between the two groups (mean \pm SD, scores)

Groups	n	Self-efficacy of overcoming difficulties			Self-efficacy of rehabilitation exercise			Total score of self-efficacy		
		Before intervention	2 wk after intervention	wk	Before intervention	2 wk after intervention	wk	Before intervention	2 wk after intervention	wk
Intervention group	60	37.5 \pm 8.7	49.6 \pm 9.0		34.3 \pm 7.2	50.3 \pm 8.5		71.8 \pm 6.6	99.9 \pm 10.5	
Routine group	60	35.8 \pm 8.2	45.3 \pm 8.8		36.8 \pm 8.0	46.5 \pm 8.1		72.6 \pm 8.0	91.8 \pm 8.8	
t value		1.101	2.646		-1.799	2.507		-0.598	4.580	
P value		0.273	0.009		0.075	0.014		0.551	0.000	

Table 6 Comparisons in Harris scores before and after intervention initiation between the two groups (mean \pm SD, scores)

Groups	n	3 mo after operation	6 mo after operation
Intervention group	60	64.8 \pm 8.1	88.4 \pm 7.4
Routine group	60	60.3 \pm 7.6	84.8 \pm 7.1
t value		3.138	2.719
P value		0.002	0.008

Table 7 Comparisons in the patients' satisfaction with nursing between the two groups, *n* (%)

Groups	<i>n</i>	Satisfied	Fairly satisfied	Normal	Unsatisfied
Intervention group	60	41 (68.33)	13 (21.67)	6 (10.00)	0 (0.00)
Routine group	60	30 (50.00)	18 (30.00)	9 (15.00)	3 (5.00)
Z value		-2.166			
P value		0.030			

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