

Original Article

Effect of psychological nursing on postoperative quality of life, pain, and rehabilitation in patients with femoral fractures

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Abstract: Objective: To investigate the effect of psychological nursing on postoperative quality of life, pain, and rehabilitation in elderly patients with femoral fractures. Methods: This retrospective study was conducted in 130 elderly patients with femoral fractures. These patients were divided into the control group and the experimental group (65 patients in each group). World Health Organization quality of life scale (WHOQOL) score, visual analogue scale (VAS) score, rehabilitation, self-rating anxiety scale (SAS) score, self-rating depression scale (SDS) score, and Harris score were analyzed and compared between the two groups. Results: WHOQOL score in the experimental group after surgery was significantly increased when compared with the control group. VAS score in the experimental group after surgery was significantly lower than that in the control group. Compared with the control group, postoperative weight-bearing time, hospitalization time, and fracture healing time in the experimental group were significantly reduced. SAS and SDS score in the experimental group after surgery were significantly lower than those in the control group. Compared with the control group, Harris score and excellent and good rate of hip function in the experimental group after surgery were significantly increased. Conclusion: Psychological nursing of elderly patients with femoral fractures plays an important role in the improved postoperative quality of life, relieved pain, reduced anxiety and depression, and fastened rehabilitation.

Keywords: Psychological nursing, femoral fractures, elderly patients, effect

Introduction

Femoral fractures are most commonly observed in elderly patients. These fractures are caused by indirect or direct force utilized in patients with osteoporosis [1, 2]. With the change of lifestyle and increase of the elderly population, the incidence of femoral fractures has been increasing year by year, which has threatened the life quality and health of elderly patients. Surgical open reduction followed by internal fixation is the main treatment for femoral fractures in elderly patients. It was reported that effective nursing plays an important role in the recovery and prognosis of elderly patients with femoral fractures [3].

For elderly patients with femoral fractures, they have reduced physiological functions, decreased adaptive capacity, and increased psycho-

logical concerns. As a result, they usually suffer from different psychological problems. Often these problems can lead to traumatic psychological disorders, decreased immune regulation ability, low treatment compliance, and delayed rehabilitation [4, 5]. The drawbacks of routine nursing include: insufficient health guidance, delayed guidance and resolution of negative emotion, inadequate attention on psychological needs, and little enthusiasm in participating in psychotherapy. Therefore, the effect of routine nursing on elderly patients with fractures is not satisfactory [6, 7]. Psychological nursing is immediately performed in accordance with the emotional changes and psychological needs of the individual patient, providing patients with a positive mood and good mentality [8]. For patients with cancer, psychological nursing can significantly improve their enthusiasm and satisfaction, resulting in reduced adverse events

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which are caused by negative emotion, improved psychological compliance, and promoted rehabilitation [9, 10]. However, there are rare reports on the effect of psychological nursing in the treatment of elderly patients with femoral fractures. In order to provide a scientific reference for clinical nursing, we investigated the effect of psychological nursing on postoperative quality of life, pain, and rehabilitation in elderly patients with femoral fractures.

Materials and methods

General information

The medical records of elderly patients with femoral fractures were collected. These patients were treated with orthopedic surgery in The First Hospital of China Medical University from February 2016 to April 2018. In total, 130 patients were enrolled in this retrospective study. They were allocated to the control group and the experimental group. For the control group, 65 patients received routine nursing. Meanwhile, 65 patients in the experimental group received both routine nursing and psychological nursing.

Inclusion criteria: The clinical manifestations, laboratory examinations, and imaging examinations met the diagnostic criteria of femoral fractures [11]; patients over 60 years old; patients diagnosed with unilateral fractures for the first time; patients who would like to receive surgical open reduction followed by internal fixation.

Exclusion criteria: Patients with contraindications to surgery; patients with malignant tumors; patients who had severe heart, brain, liver, or kidney dysfunction; patients with cognitive impairment; patients with mental illness; patients received fracture internal fixation surgery; patients with incomplete medical records; patients did not want to cooperate in this study.

Informed consent was signed by the patients or their family members. This study was approved by the Ethics Committee of The First Hospital of China Medical University.

Methods

Patients in the control group received routine nursing. For these patients, vital signs were recorded; laboratory tests, CT scan, and X-ray image were completed; routine visits before

surgery and routine health education were performed; an anesthesia program was set up, surgical procedures were performed, perioperative precautions were made, and postoperative risks and complications were monitored.

For the experimental group, patients received both routine nursing and psychological nursing. To be specific, psychological nursing consisted of the following 5 parts: (1) A good nurse-patient relationship was established. Nurses talked to patients with a caring, gentle, and sincere attitude. They informed patients and their family members of the importance of the perioperative period and precautions during this period using measures like guidance, encouragement, and suggestions. Anesthesia program, surgical procedures, and potential risks were introduced as detailed as possible. The importance of subjective factors was emphasized. (2) An in depth talk was performed between patients and nurses. In this way, nurses were aware of the psychological problems and negative emotions of patients. Influence of negative psychology on treatment and prognosis was informed. Cognitive misunderstanding of patients was also eliminated. (3) Patients were told to maintain a comfortable position, focused attention, and relaxed emotion. The negative emotions of patients were timely intervened. Moreover, their anxiety and fear were carefully listened to. As a result, the cause of negative emotion was found out and targeted measures were performed. (4) Patients were informed the purpose, importance, and precautions of listening to music. Music was provided only when patients agreed to listen to it. The types of music were different; lyrical, soft, and brisk music were the three main styles. The volume of music was determined according to the comfort and relaxation of patients. Music was played twice a day: in the morning and at night, (5). The influence of family members' negative emotion on patients was eliminated. Family members were told that mental support played an important role in the rehabilitation of patients. They should provide patients with both material and spiritual support. Therefore, the confidence of patients was enhanced, contributing to the release of fear in patients.

Outcome measures

Life quality of patients in the two groups before and six months after surgery was assessed

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Table 1. Comparison of basic data

Group	Control group (n=65)	Experimental group (n=65)	t value	P value
Age (years)	67.1±8.2	67.4±9.0	0.199	0.843
Gender (n)			0.125	0.724
Male	35	37		
Female	30	28		
BMI (kg/m ²)	21.2±1.4	20.9±1.2	1.312	0.192
Fracture type			0.126	0.939
Femoral intertrochanteric fracture	31	29		
Femoral shaft fracture	20	21		
Femoral neck fracture	14	15		
Cause of injury			0.306	0.858
Traffic	19	18		
Fall	22	25		
Crush	24	22		
Hypertension	19	22	0.321	0.571
Diabetes	15	13	0.182	0.670
Coronary heart disease	26	23	0.295	0.587

Note: BMI: body mass index.

Table 2. Comparison of WHOQOL score

Group	Control group	Experimental group	t value	P value
Physiological perspective				
Before surgery	50.8±8.6	51.2±9.1	0.258	0.797
After surgery	53.4±10.3	59.1±10.6	3.109	0.002
t value	4.188	14.420		
P value	0.009	<0.001		
Psychological perspective				
Before surgery	51.9±11.4	52.1±11.6	0.099	0.921
After surgery	58.4±12.6	65.3±13.5	3.012	0.003
t value	9.382	12.030		
P value	0.011	0.007		
Social perspective				
Before surgery	46.9±7.8	47.3±8.4	0.281	0.779
After surgery	49.7±9.6	54.5±10.2	2.763	0.007
t value	4.260	10.950		
P value	0.008	<0.001		
WHOQOL score				
Before surgery	73.6±12.9	73.8±13.3	0.087	0.931
After surgery	76.1±11.4	83.8±12.5	3.669	<0.001
t value	4.564	21.650		
P value	0.006	0.002		

Note: WHOQOL: World Health Organization quality of life scale.

according to World Health Organization quality of life scale (WHOQOL), which was composed of 6 perspectives [12]. In this study, WHOQOL scores in the physiological, psychological, and

social perspectives were measured. The higher the score was, the better the quality of life.

Visual analogue score (VAS) was applied to evaluate pain degree of patients in the two groups before and 1 week after surgery [13]. The total score ranged from 0 to 10 points; no pain was 0 points; severe pain was 10 points.

As for rehabilitation, postoperative weight-bearing time, hospitalization time, and fracture healing time were recorded and compared between the two groups.

Self-rating anxiety scale (SAS) [14] and self-rating depression scale (SDS) were used to assess the anxiety and depression of patients in the two groups before and after surgery [15]. Both SAS and SDS score consisted of 20 items and determined by a 4-point scoring method. For SAS score, 50 points was the cut-off value; patients with scores below 50 points were considered to be free of anxiety, while patients with scores

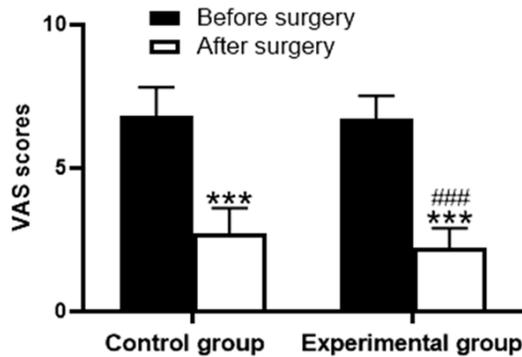


Figure 1. Comparison of VAS score. Compared with patients in the same group before surgery, *** $P < 0.001$; compared with patients in the control group after surgery, ### $P < 0.001$; VAS: visual analogue scale.

equal to and greater than 50 points were considered to be anxious. The higher the score was, the more severe the anxiety. For SDS score, 53 points was the cut-off value; patients with scores below 53 points were considered to be free of depression, while patients with scores equal to and greater than 53 points were considered to be depressed. The higher the score was, the more severe the depression.

Hip function of patients in the two groups before and 3 months after surgery were assessed by the Harris score [16]. Pain, function, deformity, and mobility were the main outcome measures of the Harris score. The total score was 100 points; excellent (90 to 100 points); good (80 to 89 points); fine (70 to 79 points); poor (<70 points). Excellent and good rate = (excellent + good)/the total number of patients * 100%.

Statistical methods

All data were analyzed with SPSS statistical software version 21.0 (IBM, USA). The measurement data were expressed as mean \pm standard deviation ($\bar{x} \pm sd$). Independent sample t test was applied for inter-group comparison, while paired t-test was used for before-after comparison within the same group. The enumeration data were calculated as number/percentage (n/%); comparison was conducted with chi-square test. The difference was statistically significant when P value was below 0.05.

Results

Basic data

There were no significant differences in age, gender, body mass index (BMI), fracture type, cause of injury, and underlying diseases between the two groups (all $P > 0.05$, **Table 1**).

WHOQOL score

As shown in **Table 2**, there were no significant differences concerning WHOQOL score in the physiological, psychological, and social perspectives between the two groups before surgery (all $P > 0.05$). WHOQOL scores in the physiological, psychological, and social perspectives in the two groups after surgery were significantly higher than those before surgery (all $P < 0.05$). Compared with the control group, WHOQOL scores in the physiological, psychological, and social perspectives in the experimental group after surgery were significantly increased ($P < 0.01$).

VAS score

As illustrated in **Figure 1**, there was no significant difference in VAS score between the two groups before surgery ($P > 0.05$). Compared with those before surgery, VAS scores in the two groups after surgery were significantly decreased (both $P < 0.001$). VAS score in the experimental group after surgery was significantly lower than that in the control group ($P < 0.001$).

Rehabilitation

The postoperative weight-bearing time, hospitalization time, and fracture healing time in the experimental group were significantly reduced when compared with those in the control group (all $P < 0.05$, **Table 3**).

SAS and SDS score

There were no significant differences on SAS and SDS score between the two groups before surgery (58.1 ± 6.1 vs 57.8 ± 5.9 ; 61.3 ± 6.8 vs 60.9 ± 6.4 ; both $P > 0.05$). SAS and SDS score in the two groups after surgery were significantly decreased when compared with those before surgery (all $P < 0.001$). SAS and SDS score in the experimental group after surgery were signifi-

Table 3. Comparison of rehabilitation

Group	Postoperative weight-bearing time (d)	Hospitalization time (d)	Fracture healing time (m)
Control group	10.5±2.7	20.2±4.6	3.2±0.8
Experimental group	9.5±2.4	18.6±3.9	2.9±0.6
t value	2.232	2.139	2.419
P value	0.027	0.034	0.017

after surgery were significantly higher than that in the control group ($P < 0.05$).

Discussion

Elderly patients with femoral fractures are prone to negative emotions on

account of their poor psychological tolerance, exaggerated anxiety, perioperative pain, restricted lower limb movements, and high prognostic expectation. In order to assess prognosis accurately and minimize the impact of negative emotion on rehabilitation, medical staff need to pay attention to the psychological state of elderly patients with femoral fractures. All patients enrolled in our study suffered from anxiety and depression, resulting in greatly reduced life quality and severely delayed rehabilitation. This was consistent with the result reported by Cristancho et al. [17]. In the study reported by Peeters et al., it was suggested that factors, such as insufficient knowledge on fractures, psychological preparations for surgery, sequelae of surgery, and concerns on medical costs, contributed to increased negative emotions like anxiety and depression [18]. Here, patients in the experimental group received both routine nursing and psychological nursing. SAS and SDS score in the experimental group after surgery were significantly decreased when compared with the control group. The result indicates that it is necessary to pay more attention to the negative psychological state of elderly patients. Life quality and psychological recovery of elderly patients with femoral fractures are severely influenced by postoperative anxiety and depression [19]. Therefore, it is of great importance to strengthen psychological nursing in elderly patients with femoral fractures. This will help to eliminate negative emotions and reduce psychological burden, and is significant in clinical practice.

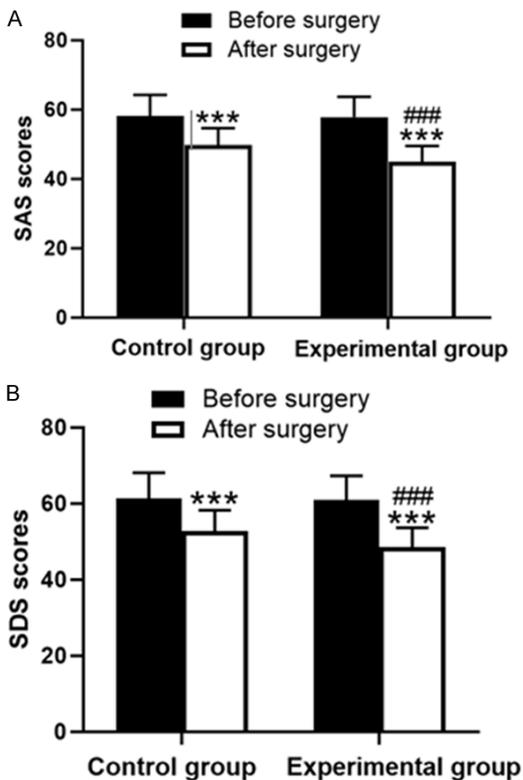


Figure 2. Comparison of SAS and SDS score. A. SAS score; B. SDS score. Compared with patients in the same group before surgery, *** $P < 0.001$; compared with patients in the control group after surgery, ### $P < 0.001$; SAS: self-rating anxiety scale; SDS: self-rating depression scale.

cantly lower than those in the control group (49.7±4.9 vs 44.9±4.6, $t=5.758$; 52.7±5.5 vs 48.5±5.1, $t=4.514$; $P < 0.001$, **Figure 2**).

Harris score

As displayed in **Table 4**, there was no significant difference in Harris score between the two groups before surgery ($P > 0.05$). Harris scores in the two groups after surgery were significantly increased when compared with those before surgery (both $P < 0.001$). Excellent and good rates of hip function in the experimental group

In this study, there were no significant differences on SAS and SDS score between the two groups before surgery. SAS and SDS score in the experimental group after surgery were significantly decreased when compared with those before surgery. Compared with the control group, SAS and SDS score in the experimental group after surgery were significantly

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Table 4. Comparison of Harris score

Group	Control group	Experimental group	t value	P value
Before surgery				
Harris score	21.5±4.2	21.8±4.4	0.398	0.692
After surgery				
Harris score	72.6±5.1	77.4±5.8	5.011	<0.001
t value	93.180	68.790		
P value	<0.001	<0.001		
Excellent (n, %)	20 (30.8)	43 (66.2)	16.290	<0.001
Good (n, %)	23 (35.4)	10 (15.4)	6.863	0.009
Fine (n, %)	14 (21.5)	9 (13.8)	1.321	0.251
Poor (n, %)	8 (12.3)	3 (4.6)	2.483	0.115
Excellent and good rate (n, %)	43 (66.2)	53 (81.5)	3.983	0.046

reduced. These results suggest that systematic and standardized psychological nursing of elderly patients with femoral fractures during the perioperative period could significantly relieve their anxiety and depression. An analysis on the condition and psychological characteristic of elderly patients with femoral fractures suggests that these patients are commonly observed with negative cognition, leading to the reduction of treatment compliance, occurrence of negative emotions, and decreased quality of life [20]. Therefore, it is of necessity to treat elderly patients with femoral fractures with personalized psychological nursing. To be specific, medical staff needs to listen to patients' inner thoughts, know their feelings and opinions about things, and inform them the influence of negative emotions. Psychological guidance, health education, music, and emotional support can be applied in the treatment of elderly patients with femoral fractures. With more communication, family support, active positive emotion, and confidence in treatment, their ability to psychologically handle problems can be promoted [21, 22].

For the psychological nursing of elderly patients with femoral fractures, it is necessary to pay attention to postoperative quality of life, pain, and rehabilitation; besides alleviating negative emotions and improving psychological rehabilitation. There is an obvious requirement for psychological nursing in elderly patients with femoral fractures. They hope to improve their life quality and rehabilitation under the guidance of medical staff [23]. Postoperative quality of life of elderly patients with femoral fractures is not

only influenced by psychological state, but also, to a certain extent, by pain and physical recovery. Measures including psychological guidance, health education, and listening to music contribute to enhanced psychological adjustment ability. Consciously relaxed emotions, feeling happy and calm, eliminated negative emotions, and maintaining a good psychological state improved postoperative quality of life

and rehabilitation. In our study, WHOQOL scores in the physiological, psychological, and social perspectives in the experimental group after surgery were significantly increased when compared with those before surgery and in the control group. VAS score in the experimental group after surgery was significantly reduced when compared with the control group. Compared with the control group, postoperative weight-bearing time, hospitalization time, and fracture healing time in the experimental group were significantly reduced. Harris score and excellent and good rate of hip function in the experimental group after surgery were significantly higher than those in the control group. These results indicate that psychological nursing of elderly patients with femoral fractures can help to improve postoperative quality of life, pain, and rehabilitation. This was consistent with the conclusion reported by Marcan-tonio et al. [24].

However, this is a single-centered and a short-time follow up was conducted in a limited number of patients. In order to verify our conclusions, we will perform a multi-centered, randomized control, and long-time follow up study in an amplified number of patients.

In summary, it is of great importance to pay attention to the negative emotion of elderly patients with femoral fractures. Psychological nursing can contribute to the increased postoperative quality of life, reduced pain, and improved rate of rehabilitation in these patients, and is worthy of promotion in clinical practice.

Disclosure of conflict of interest

None.

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