Study of the Effect of Rehabilitation Nursing on the Compliance of Patients with Hip Fracture Towards Rehabilitation Exercise and Functional Recovery

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Abstract: Objective: To analyze the effect of rehabilitation nursing on the compliance of rehabilitation exercise and functional recovery in patients with hip fracture. Methods: 80 patients with hip fracture were selected from our hospital (Xiamen Rehabilitation Hospital) from October 2021 to December 2022 as research subjects. After being randomly divided into groups, the control group was given routine nursing, and the observation group was given rehabilitation nursing. The positive effects of different nursing programs on patients’ compliance towards rehabilitation exercise, functional recovery, and quality of life were analyzed. Results: The rehabilitation compliance of the observation group was higher than that of the control group ($P < 0.05$); the hip function recovery scores of the two groups were similar before nursing ($P > 0.05$), and the scores of the observation group after nursing were significantly higher than those of the control group ($P < 0.05$); The quality-of-life scores in the observation group were higher than those in the control group ($P < 0.05$). Conclusion: Rehabilitation nursing can effectively improve the hip fracture patients’ compliance towards rehabilitation exercises, which can further improve the patient’s functional recovery, improve their quality of life, and the nursing effect is more ideal.

Keywords: Rehabilitation nursing; Hip fracture; Compliance with rehabilitation exercises; Functional recovery; Quality of life

Introduction

Hip fracture mainly refers to the interruption of the continuity of the ilium in the pelvis [1]. Most of the hip fracture patients are middle-aged and elderly people [2]. Hip fractures are mostly related with age, physical condition, occupation, etc., and patients are prone to fractures caused by external force when the body function declines [4-5]. Patients with fractures often feel varying degrees of pain. If they are not treated in time, patients will not only be affected by the clinical symptoms, but their related functions could also be hindered. Surgery is often used in the treatment of hip fractures [6]. On one hand, surgery can bring more significant therapeutic effects; however, it will also cause certain damage to patients [7]. To help patients achieve better outcomes, it is important to emphasize care delivery. Focusing on the compliance of patients with rehabilitation exercises, and committed to improving functional recovery, rehabilitation nursing was implemented in our hospital while considering the patients’ needs. Therefore, this study was carried out in order to demonstrate the diversified value of the application of this nursing model.
2. Materials and methods
2.1. General information
Patients with hip fractures admitted to our hospital from October 2021 to December 2022 were screened, and 80 patients were selected. The patients were divided into two groups of 40 with the envelope method. The male to female ratio of the patients in the control group was 22:18, aged 55–85 years old, with an average of 68.38 ± 3.42 years old; the observation group had 20 males and females, aged 56–84 years old, with an average of 68.23 ± 3.29 years old.

Inclusion criteria: (i) patients who were diagnosed with hip fracture by imaging examination; (ii) patient who were informed of the research content; (iii) patients with complete basic information.

Exclusion criteria: (i) patients who had mental and cognitive abnormalities; (ii) patients with complicated disorders.

2.2. Methods
2.2.1. Control group
Routine care was given to the patients in the control group. The goal of nursing was to educate patients on diseases, treatment, and nursing, so as to improve their awareness and cooperation towards the treatment. The patients’ psychological state was monitored to understand the patient’s state of mind. Routine nursing was performed, such as posture care, diet, life guidance, medication reminders, rehabilitation exercises, etc.

2.2.2. Observation group
In the observation group, rehabilitation nursing was implemented on the basis of nursing care in the control group. (i) Upon admission, the patients’ recovery was monitored, and the positions of their limbs were adjusted. The lower limbs were padded and kept abducted by 20–30°. The patients were asked if there was abnormality in the sensation of both lower limbs. If there was none, passive rehabilitation training was adopted, and the patients were assisted to carry out joint exercises for the lower limbs on the affected side under the leadership of the nurse. (2) At 1–2 days after admission, after the passive training, the combination of upper limb abduction, flexion and extension was carried out, and the patients’ feedback were noted during the activity. The positions of the patients’ lower limbs were adjusted every day, and proper posture care was provided. The knee joints of patients were evened out, and they were guided on performing voluntary muscle contraction and relaxation training. Depending on the recovery of the patient, hip-lifting training can be added at this time for patients with better recovery. (iii) At 3 to 7 days after admission, under the guidance of the nursing staff, the previous passive training was changed to active exercises. The patients were allowed to perform knee flexion and extension exercises under the guidance of the nursing staff, with the movements following being gradual and orderly. At the same time, the patients were guided to perform straight leg raising training, i.e., raising heel of the affected side from the bed, and slowly lowering it after the patient keep their legs raised at 20 cm for 5 seconds. The exercise was repeated 4 to 5 times. (iv) At 2 to 3 weeks after surgery, the hip flexion of the patients was evaluated, and patients with better recovery were guided to perform hip flexion exercises in the supine position. The exercises were performed 8 to 10 times a day, and the duration of each exercise is 10 minutes. In addition, the patient can move their upper and lower limbs up and down while sitting on the bedside. (v) At 3 to 4 weeks after surgery, the patients were taught to use crutches – getting out of bed, standing up, and walking with the help of crutches. In the initial stage, patients were instructed to get out of bed and perform repetitive exercises of standing upright and sitting down. After a while, the patient can change from standing to walking exercise. The walking time was controlled according to the patient’s condition, and the walking distance and total exercise time were gradually increased. (vi) At 5 to 9 weeks after surgery, some patients who recovered better were discharged. Nursing staff kept in contact with patients through WeChat and telephone to carry out
continuous rehabilitation nursing. The patients were guided to complete the rehabilitation exercises at home over the phone or by other means, and the family members were advised to supervise the patients. The exercises that could be done at home were walking exercise, going down the stairs, and the likes. During the rehabilitation process, the family members were advised to gradually increase the amount and the type of exercises according to the functional recovery of the patient, pay attention to the exercises, and promote better rehabilitation effects.

2.3. Observation indicators
(i) The patients’ compliance with rehabilitation exercise were observed and they were divided into groups based on their compliance: non-compliance, partial compliance, and complete compliance.
(ii) The recovery of hip joint function before and after nursing were scored and compared. The Harris score \[^8\] was used to score the functional recovery. Under the 100-point system, the higher the score, the better the functional performance of the patient.
(iii) The quality of life of patients was scored using the Brief Quality of Life Rating Scale \[^9\], and the scores of both groups were compared.

2.4. Statistical methods
SPSS 24.0 software was used to analyze the measurement data (mean ± SD) and count data (%) of patients, and \( t \)- and \( \chi^2 \) tests were performed, in which \( P < 0.05 \) was considered statistically significant.

3. Results
3.1. Comparison of rehabilitation exercise compliance
The compliance of rehabilitation exercise in the observation group was higher than that in the control group \( (P < 0.05) \), as shown in Table 1.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Complete compliance</th>
<th>Partial compliance</th>
<th>Non-compliance</th>
<th>Rate of compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation group</td>
<td>40</td>
<td>27 (67.50)</td>
<td>12 (30.00)</td>
<td>1 (2.50)</td>
<td>39 (97.50)</td>
</tr>
<tr>
<td>Control group</td>
<td>40</td>
<td>22 (55.00)</td>
<td>11 (27.50)</td>
<td>7 (17.50)</td>
<td>33 (82.50)</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 5.000 \]
\[ P = 0.025 \]

3.2. Comparison of hip function scores
The Harris score of the two groups was significantly improved after nursing, and the score of the observation group after nursing was higher \( (P < 0.05) \), see Table 2.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases ((n))</th>
<th>Harris score</th>
<th>Before nursing</th>
<th>After nursing</th>
<th>( t )</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation group</td>
<td>40</td>
<td>39.64 ± 3.45</td>
<td>82.75 ± 4.59</td>
<td>47.483</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>40</td>
<td>40.02 ± 3.57</td>
<td>73.12 ± 3.86</td>
<td>39.815</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

\[ t = 0.424 \]
\[ P = 0.689 \]
\[ t = 10.155 \]
\[ P = 0.000 \]
3.3. Comparison of quality-of-life scores
The quality-of-life scores of the observation group were higher than those of the control group \((P < 0.05)\), as shown Table 3.

Table 3. Comparison of quality-of-life scores (mean ± SD, points)

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases (n)</th>
<th>Physiological function</th>
<th>Psychological state</th>
<th>Body pain</th>
<th>Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation group</td>
<td>40</td>
<td>82.34 ± 5.63</td>
<td>83.47 ± 5.74</td>
<td>80.47 ± 5.78</td>
<td>81.44 ± 5.82</td>
</tr>
<tr>
<td>Control group</td>
<td>40</td>
<td>70.45 ± 4.22</td>
<td>69.27 ± 4.53</td>
<td>68.22 ± 4.39</td>
<td>70.47 ± 4.31</td>
</tr>
<tr>
<td>(t)</td>
<td></td>
<td>10.687</td>
<td>12.282</td>
<td>10.674</td>
<td>9.580</td>
</tr>
<tr>
<td>(P)</td>
<td></td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

4. Discussion
If there is no effective treatment intervention for hip fractures, the function of the hip joint will be affected, and it will have a negative impact on the patient’s life, work, and psychological state \([10-11]\). While using surgical intervention, it is necessary to emphasize the importance of nursing in order to help patients with their prognosis. On the one hand, the purpose of nursing is to meet the patients’ needs during hospitalization; on the other hand, providing nursing-related services can also further improve the overall effect of surgery \([12-13]\). Especially in terms of patient rehabilitation exercise, a more suitable nursing model can help patients achieve better recovery \([14-15]\). There are many diverse nursing care plans for patients with hip fractures available \([16]\). Each plan has its own characteristics, and it needs to be reasonably selected according to the patient’s need \([17]\). This study fully considered the age of patients with hip fractures and focused on the rehabilitation and functional recovery of patients. At the same time, considering the different degree of compliance among middle-aged and elderly patients, we hoped that the rehabilitation nursing can help improve patient compliance \([18-19]\).

In this study, the effect of rehabilitation nursing on hip fracture patients was studied, and the results showed that it further helps patients improve the overall prognosis compared to routine nursing. In terms of compliance with rehabilitation exercises, the patients that underwent rehabilitation nursing showed a higher compliance under the guidance and supervision of the nursing staff. The improvement of compliance is obviously helpful to improve the exercise effect of patients and improve the prognosis \([20]\). As for functional recovery, there was no significant difference in the scores of the two groups of patients before nursing, indicating that the functional status of the patients before nursing was roughly the same. Although the scores of both groups improved after nursing, it can be seen that the scores of the observation group were higher, which meant that rehabilitation nursing could better improve the patients’ hip function. In terms of quality of life, the scores of the observation group were better, suggesting that rehabilitation nursing can also significantly improve the quality of life of patients.

5. Conclusion
In short, rehabilitation nursing for patients with hip fractures can effectively improve patients’ compliance towards the exercises, therefore improving functional recovery and the overall nursing effect.

Disclosure statement
The author declares no conflict of interest.
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