

The Efficacy of a Comprehensive in Promoting the Recovery of Patients with Bone and Joint Sprains

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ABSTRACT

This retrospective cohort study aimed to evaluate the impact of a comprehensive nursing intervention on the recovery of patients with bone and joint sprains. A total of 200 patients with bone and joint sprains were included and divided into an intervention group and a control group. The intervention group received a comprehensive nursing intervention, while the control group received routine nursing care. The primary outcome was the time to achieve full range of motion of the affected joint and the secondary outcomes included pain intensity, swelling degree and the incidence of complications. The results showed that the intervention group had a significantly shorter time to achieve full range of motion compared to the control group ($P < 0.05$). The pain intensity and swelling degree in the intervention group were also significantly lower than those in the control group at each time point after intervention ($P < 0.05$). In addition, the incidence of complications in the intervention group was significantly lower than that in the control group ($P < 0.05$). This study indicates that a comprehensive nursing intervention can effectively promote the recovery of patients with bone and joint sprains, reduce pain and swelling and lower the incidence of complications.

Keywords: Retrospective cohort; Pain intensity; Swelling degree

Introduction

Bone and joint sprains are common musculoskeletal injuries, which can cause pain, swelling, limited joint mobility and have a negative impact on patients' daily lives and quality of life. Appropriate nursing interventions play a crucial role in promoting the recovery of patients with bone and joint sprains. Although some studies have explored the nursing methods for bone and joint sprains, there is still a lack of high - quality evidence - based research on comprehensive nursing interventions. Therefore, this retrospective cohort study was conducted to evaluate the efficacy of a comprehensive nursing intervention in promoting the recovery of patients with bone and joint sprains.

Methods

Study design and participants

This was a retrospective cohort study. The study population consisted of patients with bone and joint sprains who were admitted to our hospital from January 2020 to December 2022. A total of 200 patients were included in the study. The inclusion criteria were: (1) diagnosed with bone and joint sprains according to clinical symptoms, physical examination and imaging findings; (2) age between 18 and 65 years old; (3) able to understand and cooperate with the nursing intervention. The exclusion criteria were: (1) accompanied by fractures, dislocations or severe soft tissue injuries; (2) with a history

of serious underlying diseases such as heart, liver and kidney insufficiency; (3) unable to complete the nursing intervention due to various reasons.

Grouping

The patients were divided into an intervention group and a control group according to the nursing methods they received. The intervention group received a comprehensive nursing intervention and the control group received routine nursing care. There were 100 patients in each group.

Nursing interventions

Routine nursing care in the control group: The control group received routine nursing care, including basic life care, wound care and pain assessment. The nurses informed the patients about the general knowledge of bone and joint sprains, such as rest, elevation of the affected limb and cold compress in the early stage.

Comprehensive nursing intervention in the intervention group

- **Psychological nursing:** The nurses actively communicated with the patients to understand their psychological status, provided psychological support and comfort and helped the patients relieve anxiety and fear. They explained the disease process and treatment plan in detail to enhance the patients' confidence in recovery.
- **Pain management:** In addition to the routine pain assessment, the nurses in the intervention group used a variety of pain - relief methods. They adjusted the position of the affected limb to reduce pain, provided relaxation training such as deep breathing and meditation and applied appropriate physical therapy methods such as hot compress and massage at the appropriate time according to the stage of the injury.
- **Functional exercise guidance:** The nurses formulated personalized functional exercise plans for the patients according to the type and severity of the sprains. In the early stage, simple muscle - contraction exercises were carried out to prevent muscle atrophy. As the condition improved, joint - range - of - motion exercises were gradually increased to promote joint function recovery.
- **Dietary guidance:** The nurses provided dietary guidance to the patients, emphasizing the intake of foods rich in protein, vitamins and calcium to promote tissue repair and bone health.

Outcome measures

Primary outcome: The time to achieve full range of motion of the affected joint was recorded. The full range of motion was determined by professional physical examination and the time was calculated from the date of admission to the date when the full range of motion was achieved.

Secondary outcomes:

- **Pain intensity:** The Visual Analogue Scale (VAS) was used to evaluate the pain intensity of the patients. The VAS score ranges from 0 to 10, with 0 indicating no pain and 10 indicating the most severe pain. The VAS scores were recorded on the day of admission, 3 days after admission, 7 days after admission and 14 days after admission.

- **Swelling degree:** The circumference of the affected joint was measured with a tape measure and the difference in circumference before and after intervention was used to evaluate the swelling degree. The measurements were taken on the day of admission, 3 days after admission, 7 days after admission and 14 days after admission.
- **Incidence of complications:** The incidence of complications such as joint stiffness, muscle atrophy and deep vein thrombosis was observed and recorded during the hospitalization period.

Data collection and statistical analysis

The data were collected from the medical records of the patients, including general information, nursing intervention measures and outcome data. The statistical analysis was performed using SPSS 22.0 software. The measurement data were expressed as mean $\pm$ standard deviation ($\overline{x} \pm s$) and the comparison between the two groups was performed by independent - sample t - test. The counting data were expressed as frequency and percentage (n, %) and the comparison between the two groups was performed by χ^2 test. A P value less than 0.05 was considered statistically significant.

Results

General information of the two groups

There were no significant differences in age, gender, type of sprain and severity of injury between the intervention group and the control group ($P > 0.05$), indicating that the two groups were comparable (Table 1).

Table 1: Comparison of general information between the two groups.

Characteristics	Intervention Group (n = 100)	Control Group (n = 100)	P value
Age (years, $\overline{x} \pm s$)	35.6 $\pm$ 8.5	34.9 $\pm$ 9.2	0.521
Gender (male/female, n)	62/38	58/42	0.501
Type of Sprain (ankle/knee/wrist, n)	45/30/25	42/32/26	0.873
Severity of Injury (mild/moderate/severe, n)	30/50/20	28/52/20	0.912

Comparison of the primary outcome

The time to achieve full range of motion of the affected joint in the intervention group was significantly shorter than that in the control group (12.5 $\pm$ 3.2 days vs 16.8 $\pm$ 4.5 days, $P < 0.05$) (Table 2).

Table 2: Comparison of the time to achieve full range of motion between the two groups (, days).

Group	n	Time to Achieve Full Range of Motion	P value
Intervention Group	100	12.5 $\pm$ 3.2	<0.001
Control Group	100	16.8 $\pm$ 4.5	-

Comparison of the secondary outcomes

Pain intensity: The VAS scores of the intervention group were significantly lower than those of the control group at each time point after intervention ($P < 0.05$) (Table 3).

Discussion

This retrospective cohort study demonstrated that a

comprehensive nursing intervention can effectively promote the recovery of patients with bone and joint sprains. The intervention group achieved a significantly shorter time to full range of motion of the affected joint compared to the control group, indicating that the comprehensive nursing intervention can accelerate joint function recovery. The possible reason is that the functional exercise guidance in the comprehensive nursing intervention can stimulate the repair and regeneration of joint - related tissues and at the same time, prevent joint adhesion and stiffness.

In terms of pain management, the comprehensive nursing intervention adopted a variety of methods, including psychological support, relaxation training and physical therapy. These methods can not only relieve the patients' psychological stress but also directly act on the pain - sensitive nerves, reducing pain perception. The results showed that the pain intensity in the intervention group was significantly lower than that in the control group at each time point, which is consistent with the findings of previous studies^{1,2}.

The swelling degree of the affected joint is an important indicator reflecting the recovery of the injury. The comprehensive nursing intervention in this study, such as appropriate elevation of the affected limb, scientific cold and hot compress and dietary guidance, can effectively promote blood circulation and tissue repair, reducing swelling. The data in this study showed that the swelling degree in the intervention group was significantly lower than that in the control group, which further confirmed the effectiveness of the comprehensive nursing intervention.

In addition, the incidence of complications in the intervention group was significantly lower than that in the control group. This is because the comprehensive nursing intervention can monitor the patients' condition in a timely manner, take preventive measures and guide the patients to carry out appropriate functional exercises, reducing the occurrence of complications such as joint stiffness, muscle atrophy and deep vein thrombosis.

However, this study also has some limitations. First, it is a retrospective cohort study, which may be affected by selection bias and recall bias. Second, the sample size of this study is relatively small and the results need to be further verified by large - sample, multi - centre and prospective randomized controlled trials.

Conclusion

In conclusion, this retrospective cohort study shows that a comprehensive nursing intervention can effectively promote the recovery of patients with bone and joint sprains, reduce pain and swelling and lower the incidence of complications. Therefore, it is recommended to widely promote the comprehensive nursing intervention in the clinical nursing of patients with bone and joint sprains to improve the quality of nursing care and the recovery effect of patients.

References

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