

Pain Control and Influencing Factors of Specialized Nursing Intervention after Traumatic Orthopedic Surgery

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Abstract: In the increasingly prominent aging problem, the incidence of orthopedic diseases cannot be ignored, which not only affects the health of the elderly, but also leads to the main cause of the elderly's mobility inconvenience. This article mainly studied the pain control and its influencing factors of specialized nursing intervention after traumatic orthopedic surgery. This paper discusses the effect of professional nursing interventions on pain control of patients after traumatic orthopedics surgery. To seek a scientific rehabilitation exercise intervention program suitable for patients after orthopaedic trauma surgery, to provide a reference for the realization of continuous and effective pain control and rehabilitation exercise for patients after orthopaedic trauma surgery. The experimental results show that the professional nursing intervention has achieved a good effect on pain control of patients after traumatic orthopedics surgery, reducing the pain of patients, improving the pain self-evaluation and pain coping ability of patients, and improving the satisfaction of patients after surgery.

1. Introduction

Damage Control Orthopaedics (DCO) was first used in the treatment of multiple traumata to fix long bones, especially femoral fractures, in order to maximize the avoidance of the fatal triplet (hypothermia, coagulopathy, and acidosis) triggered by severe bleeding. It can reduce the complications (pain, thromboembolism, pathological inflammatory reaction, etc.) and the secondary blow of major surgery to trauma patients [1]. Elderly orthopedic patients, because of their special group, overall function, reduced, conventional nursing model can no longer meet the nursing needs of such people, the concept of DCO, and precision nursing organic combination, according to the elderly orthopedic patients after admission in different periods of medical history data, test indicators, psychological status, intraoperative conditions, etc. With the tools of all kinds of care, such as risk assessment software to complete the corresponding stage of risk early warning, according to the different risk factors of patients with different prevention and control of corresponding nursing measures, at the same time fully with the help of mind mapping, social networking, electronic information platform and other knowledge media innovation education way, implement focused, systematic precision personalized care, It helps elderly hip replacement patients safely survive the difficulties of surgery and recover quickly and with high quality [2-3].

Foreign studies advocate maintaining the acid-base balance of patients and shortening the traction time to reduce the occurrence of pulmonary complications [4]. Chinese scholars applied DCO in the field of fracture treatment in elderly patients, aiming to maintain and repair bone and joint injuries, optimize the overall physiological function of patients, and reduce the incidence of postoperative complications [5]. Then, some scholars DCO concept was applied to elderly hip fracture patients with perioperative management, to conduct the risk assessment of elderly patients with severe basic diseases or original physical conditioning, and in patients with early operation and the best balance between physiological states, in order to improve the patient's ability to fight against, reduce the postoperative complications. Age and comorbidities are important factors for deciding whether to apply the concept of DCO, and important factors affecting the risk of surgery, postoperative rehabilitation effects, incidence of complications, and mortality [6]. One study showed that the incidence of hypothermia increased to 46% when patients left the operating room. In addition, metabolic disorders such as diabetes also increase the risk of limb ischemia and circulatory disorders. In addition, various factors such as decreased pulmonary function, anesthesia, surgical trauma, intraoperative and postoperative overt, and recessive bleeding, and breaking in elderly patients may interact with each other, which may form a "fatal triad" similar to the initial stage of severe trauma, which is consistent with the initial treatment goal of damage control [7]. In recent years, domestic scholars have applied DCO in the perioperative group nursing of elderly patients with hip replacement, and implemented rapid rehabilitation and multidisciplinary nutritional support, respectively, in the early operation group and the delayed operation group. Postoperative complications and length of hospital stay in the delayed group were not different from those in the early operation group [8]. It can be seen that group nursing combined with DCO concept is safe and feasible, but the effect on postoperative limb function needs to be further studied.

At present, there is no professional nursing intervention research based on DCO concept for elderly orthopedic patients at home and abroad. Therefore, this study explored the application effect of a professional nursing interventions based on DCO in the early rehabilitation of elderly orthopedic patients, aiming to find a long-term nursing management model suitable for elderly orthopedic patients, in order to provide an empirical basis for the rehabilitation management of elderly orthopedic patients.

2. Formulation of Nursing Intervention Program after Orthopedic Surgery

2.1 Develop a Health Education Manual for Caregivers of Patients

The content of the manual is organized according to the results of qualitative studies, spanning the period from hospital admission to 3 months after discharge. The main contents include: introduction of disease knowledge, treatment methods, operation preparation and postoperative nursing, rehabilitation, exercise guidance, life nursing, discharge procedures, postoperative complications and prevention, etc. [9]. Pay attention to the use of non-professional vocabulary, when necessary illustrated, so that patients and caregivers can understand the content of the preparation. Formed after the first draft, by two or more doctors and four nurses with more than 5 years working experience, 1 nursing graduate student, 1 rehabilitation therapist, the modified and revised handbook will be distributed to the six different educational backgrounds of caregivers trying to read, mark failed to understand the content, and will again be modified the manual to caregivers, Consult their opinions, and form the final draft when all readers have no reading difficulties.

2.2 Build a Public Platform

The team members divided their work and cooperated according to their personal strengths, built public accounts and wechat groups to recruit caregivers who met the research standards to join the group chat, and regularly pushed audited articles and videos related to trauma and orthopedics to answer the questions of caregivers. At the same time, each caregiver is encouraged to exchange experience and form a support team.

2.3 Intervention Methods

The control group received routine nursing interventions, such as the distribution of comprehensive content but only text and pictures, health education materials that need to be understood by patients and caregivers, low frequency simple follow-up, etc. Intervention group hospital: face-to-face teaching manual of health education group (intervention objects called teaching will be at the same stage, 30 to 40 minutes per time, a total of 3 times), step-by-step demonstration object (according to the intervention education level and the number of master degrees decided to intervene and time), the public platform (video, articles, pictures), support group, etc. Outside the hospital: telephone follow-up, outpatient follow-up, health education manuals, public platforms (videos, articles, pictures), mutual aid groups, etc. [10].

3. Research Objects and Methods

3.1 Study Population

(1) Research object

A total of 150 patients with open lower limb fractures treated in the orthopedic ward of a Classiii Grade A hospital in this city from January to December 2021 were selected as the research objects, including 110 males and 40 females. Aged 18-79 years; The mean time of admission was (4.35 ± 1.79) hours after trauma. Patients were divided into groups according to their admission numbers. The experimental group with double numbers was assigned rehabilitation nursing in the same ward, and the control group with single number was assigned routine nursing intervention in the same ward, 75 cases in each group.

(2) Inclusion criteria

Fracture of long bones; aged between 18 and 79 years old; within 24 hours after the trauma, the patient was treated with surgery, and the external fixation stent was treated with an intramedullary needle. The injury condition meets the standard of limb salvage operation; anaerobic bacteria smear negative; informed consent was obtained and participants volunteered to participate in the study.

(3) Exclusion criteria

Other non-lower limb fractures; consciousness is not clear, unable to cooperate; patients with heart, brain, liver, kidney, and other important organ diseases; other serious emergency events occur during treatment; pregnant women and persons with symptoms of mental illness and mental illness; people with unclear language expression or communication difficulties; patients with pathologic fractures.

(4) Sample size calculation

The sample size was calculated according to the formula of comparing the mean of two samples. Formula for

$$n = (u_{\alpha} + u_{\beta})^2 (1 + 1/k) \sigma^2 / \delta^2 \quad (1)$$

In this study, the postoperative pain score of patients was taken as the main observation index,

and the mean and standard deviation were obtained by preexperiment. σ was the standard deviation of the combination of the two groups, δ was the absolute value of the difference between the two groups, and $\sigma=0.78$ and $\delta=0.46$ were calculated. Hypothesis test level $\alpha=0.05$,

$\beta=0.1$, $u\alpha=1.960$, $u\beta=1.282$, the sample size of the experimental group is n , the control group is kn , k represents the proportion of sample content of the experimental group and the control group.

3.2 Research Methods

Two groups of patients were treated with the same anesthesia plan, operation method, and different nursing intervention methods.

(1) Control group

Patients in the control group received routine care. Routine nursing: routine nursing health education was given according to the actual situation of patients after the operation; Postoperative diet intervention: after fasting for 6 hours, the patients began to eat water and gradually changed the diet from liquid, semi-liquid to general food. Postoperative analgesic care: an epidural or intravenous analgesic pump was used for continuous analgesia, and analgesic treatment was given when patients complained of pain. Functional exercise: instruct patients to carry out functional exercise after surgery, inform patients of the correct exercise methods, and encourage patients to carry out moderate activities in bed after surgery according to patients' wishes and pain level, within the range of pain patients can bear, but do not make specific requirements, and urge patients to carry out moderate exercise every day in the future; The patient healed well and was discharged without obvious discomfort.

(2) Experimental group

Patients in the experimental group received rapid rehabilitation nursing intervention. Routine nursing: health education, in addition to routine health education, around the concept, method, and function of "rapid rehabilitation nursing intervention" to carry out health education for patients and their families, improve the understanding level of patients; psychological intervention, through observation of patients' behavior and emotional changes, communication to understand patients' psychological status, through positive guidance, targeted counseling to increase patients' positive emotions; By guiding patients to recall, write happy, happy events and experience to increase positive psychological factors, improve the psychological status of patients; Cooperate with patients' family members and friends, optimize patients' psychological experience through careful care and close care, and enhance patients' rehabilitation confidence; Postoperative analgesic care: teach patients to correctly understand the digital rating scale (NRS) and VSA facial expression scale, effectively evaluate their own pain degree, nurses record patients' pain scores every day, when the score ≥ 4 , give flurbiprofen axetil or parecoxib analgesic treatment. On the basis of the traditional epidural or intravenous analgesic pump for continuous pain relief, multimode analgesia should be applied, relaxation therapy and self-behavior therapy should be used to distract the patient's attention. Soothing light music can be listened to, combined with a deep breathing method, close your eyes slowly, inhale through the nose and exhale through the mouth, hold for a few minutes. Repeated self-suggestions don't worry don't worry, or combined with meditation methods, think of the experience of good, happy, happy things, such as outing or childhood good experiences, a few minutes later the mood will relax, to achieve physiological and psychological relaxation. Give emotional support to patients to reduce the attention to the affected limb and reduce the sensitivity to pain; Functional exercise: instruct patients to do functional exercise in the early postoperative period; the wound healed well and the patient was discharged with no obvious discomfort.

3.3 Quality Control

After data collection and sorting, double check and input the data to ensure the accuracy of the data; Nursing intervention group was established, and the team members are a system of training and learning, mastering the rapid rehabilitation nursing health education, pain management, to guide the patients to correct function exercise, enhance the medical cognition to rehabilitation nursing, make its better applied to clinical, mastering the nursing mode, to ensure the effective implementation of the research plan; The patients were taught to correctly understand the digital pain assessment scale, and their pain degree was evaluated with the facial expression scale. The combination of the two methods ensured the accuracy of the pain score.

4. Effect of Nursing Intervention on Pain Control after Traumatic Orthopedic Surgery

Table 1: Comparison of VAS scores between the two groups before intervention

	Control group	Intervention group	t	P
VAS-rest	3.57	3.62	-1.75	0.632
VAS-activity	6.14	6.11	-1.83	0.895

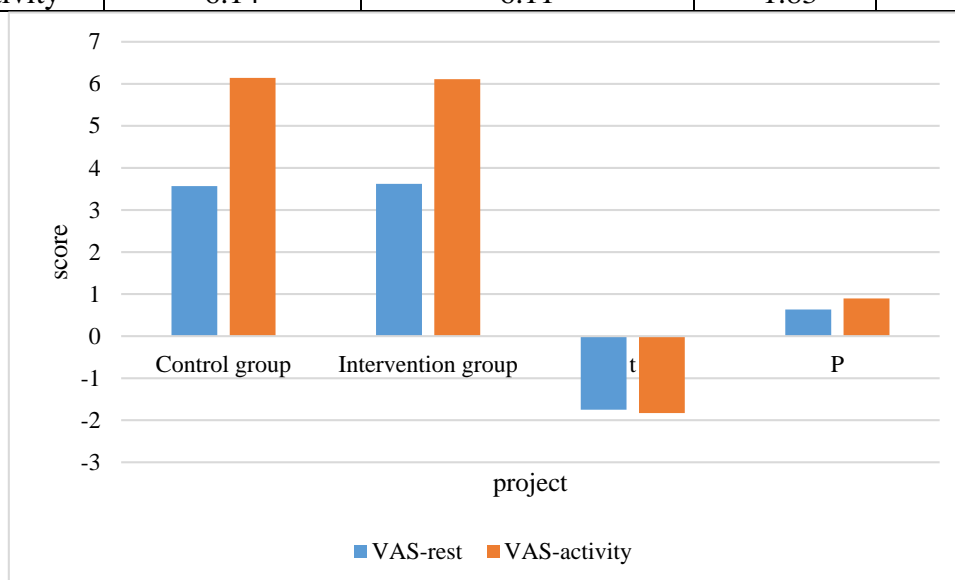


Figure 1: Comparison of VAS Score

As shown in Figure 1, the pain after traumatic orthopedic surgery is more unbearable than any other surgery, about 60% of them reach moderate to severe pain. Postoperative rehabilitation exercise and pain are mutually affected, if the pain is not effectively controlled, the rehabilitation exercise can not be carried out smoothly, thus greatly reducing the efficacy of surgery and patient satisfaction. Therefore, the effective pain control of patients after trauma and orthopedic surgery is the top priority of nursing work. As can be seen from Table 1, there was no statistical difference in VAS resting and VAS activity scores between the two groups before the intervention ($P > 0.05$), among which the VAS resting score of the control group was 3.57, and that of the intervention group was 3.62.

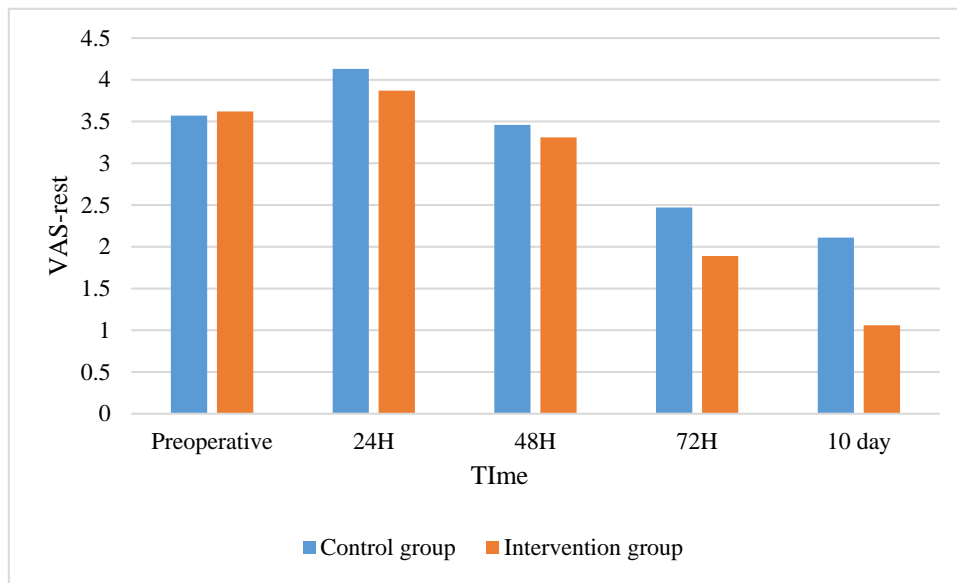


Figure 2: Vas-rest of the two groups changed in each period

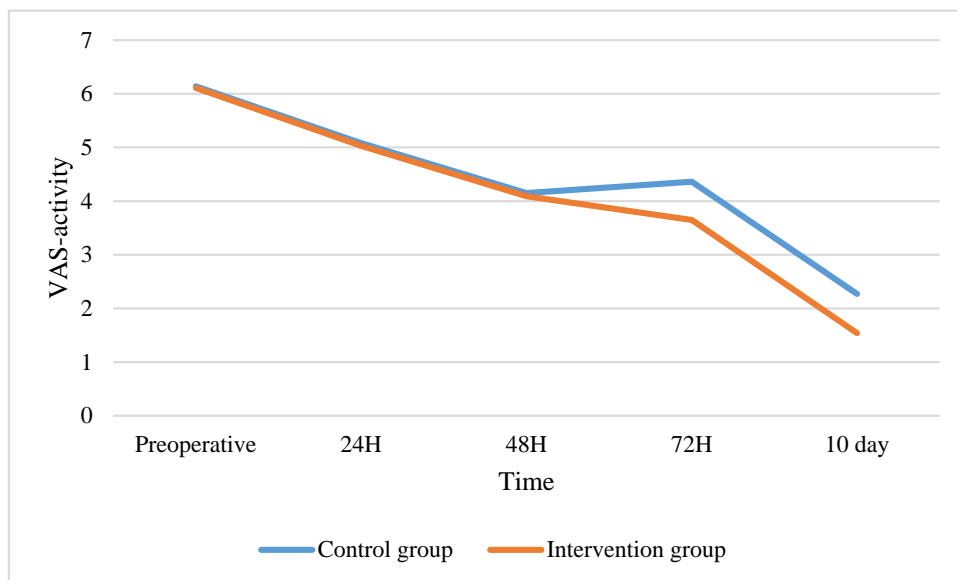


Figure 3: VAS-activity of the two groups changed in each period

From Figure 2 and Figure 3, it appears that after surgery, the 24-hour VAS resting score of the two groups of patients after surgery is slightly higher than that before surgery, 3.87 in the intervention group and 4.13 in the control group. There was no significant difference in VAS rest scores between the two groups ($P>0.05$), which may be affected by the trauma of the operation itself. At 24-hours after surgery, the VAS activity score of both groups decreased compared to that before surgery (5.03 in the intervention group and 5.08 in the control group), but there was no significant difference between the two groups ($P>0.05$). The reason may be that the anesthesia and analgesia methods of the two groups were the same during operation, and the control measures were the same within 24 hours after operation. There was no significant difference in VAS activity scores. The VAS resting and VAS activity scores of the intervention group were lower than those of the control group at 48h, 72h, on the tenth day after surgery, VAS resting score and VAS activity score in the intervention group decreased significantly compared to the control group ($P<0.01$). The reason may be that the intensity and frequency of rehabilitation exercise increased from 72 hours

after operation, while the patient-controlled analgesia pump was removed at 48 hours after operation. Patients in the control group did not receive effective pain control intervention. It indicates that collaborative nursing intervention for patients with traumatic orthopedics is more conducive to improve the pain of patients, improve the patient's self-control ability of pain, improve the initiative of postoperative rehabilitation exercises, and promote the recovery of knee joint function.

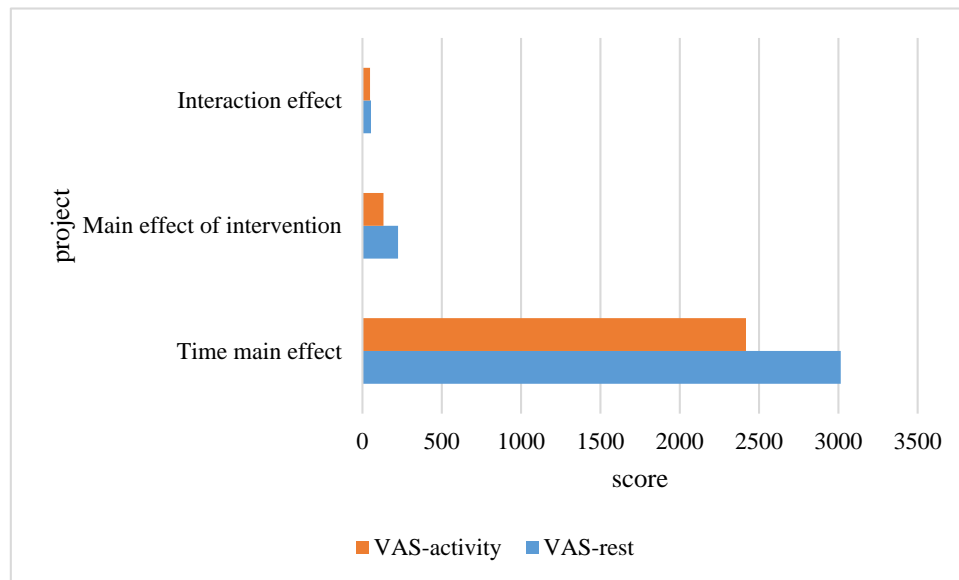


Figure 4: Analysis of the effect of time and intervention factors on the score of two groups of patients

As for the effect analysis of time and intervention factors on VAS score of the two groups, repeated measures ANOVA was used, as shown in Figure 4.

5. Conclusions

The innovation of this paper is to pay more attention to the psychological response and emotional state of patients, rather than only focusing on the solution of patients' symptoms. In this study, the status quo and influencing factors of disease perception in elderly orthopaedic trauma patients were clarified through the current situation study and additive study. On the other hand, the real feelings, cognition, and needs of elderly patients with orthopedic trauma to the disease were deeply discussed, which made the intervention program more focused on the individual needs of patients and more able to solve the problems faced by patients. This study is helpful to improve patients' compliance with functional exercise to a certain extent, promote patients to maintain more positive disease perception to cope with the disease, and improve patients' joint function and joint flexion.

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