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Short Communication

Research Progress on Systematic Nursing Rehabilitation Exercises for Patients after Spinal Cord Injury Surgery

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Abstract

Spinal fractures accompanied by spinal cord injuries can cause changes such as pathological reflexes and abnormal muscle tone, seriously reducing the quality of life of patients. This article aims to explore the multi-dimensional roles and practical strategies of nurses in rehabilitation exercises for patients with spinal cord and spinal cord injuries. By reviewing relevant literature and combining clinical practice, it is proposed that rehabilitation exercises should follow the principles of early intervention, comprehensive assessment, gradual progress, teamwork and patient participation. In the future, specialized training in rehabilitation nursing should be further strengthened, and innovative rehabilitation nursing models based on evidence-based and technological approaches should be explored.

Key Words: spinal cord injury; spinal fracture; rehabilitation exercise; nursing care

Introduction

Traumatic spinal cord injury (TSCI) refers to the damage or destruction of the spinal structure caused by various traumatic factors, which in turn damages the spinal cord nerve fiber bundles, leading to motor, sensory and autonomic dysfunction below the injury level [1]. Scientific, systematic and personalized rehabilitation exercises are the core links to enhance patients' functional independence, prevent complications and improve their quality of life. SCI not only brings heavy physical functional disorders (such as paraplegia and quadriplegia) to patients, but also triggers a series of psychological and social adaptation problems. Rehabilitation treatment is a long and complex process, and its ultimate goal is to enable patients to achieve maximum functional independence and return to society. Rehabilitation exercises are the core means of this process, and nurses, as the professional group that has the closest and most lasting contact with patients, play an irreplaceable role in the implementation, adjustment, supervision and patient education of rehabilitation plans. The traditional nursing model focuses on life care and passive treatment of complications, while the modern rehabilitation nursing concept requires nurses to actively participate in the functional recovery-oriented active rehabilitation practice. This article will systematically elaborate on the strategies, contents and nursing points of implementing rehabilitation exercises for SCI patients from the perspective of nursing.

1. Nursing Assessment and Plan Formulation for Rehabilitation Exercises

Effective rehabilitation begins with precise assessment. Nurses should take on the responsibility of continuous assessment within the framework of the rehabilitation team (doctors, therapists, nurses, psychologists, etc.).

1.1 Comprehensive Assessment Contents [2]: (1) Assessment of injury level and degree: Determine the ASIA (American Spinal Injury Association) classification, understand complete and incomplete injuries, and identify the residual functional level; (2) Functional status assessment: Use tools such as the Functional Independence Measure (FIM) to assess the patient's mobility, self-care, sphincter control, etc.; (3) Risk screening for complications: Assess the risks of pressure ulcers, aspiration pneumonia, urinary tract infections, deep vein thrombosis, autonomic hyperreflexia, spasticity, and pain; (4) Psychosocial assessment: Understand the patient's emotional state (depression, anxiety), coping strategies, family support system, economic status, and willingness and obstacles to returning to society; (5) Assessment of learning willingness and ability: Evaluate the patient's and caregiver's understanding of rehabilitation knowledge and learning motivation.

1.2 Individualized Rehabilitation Nursing Plan: Based on the assessment results, nurses, the rehabilitation team, and the patient/family members jointly formulate short-term and long-term rehabilitation nursing goals. The plan should be specific, measurable, achievable, and clearly define the nurse's responsibilities, such as "Within two weeks, instruct the patient's family members to master the daily passive joint movement technique for both lower limbs to prevent joint contractures."

2. Core contents of rehabilitation exercise and nursing intervention

2.1 Acute stage/bedridden stage: (1) placement management with good limb posture: use reduced pressure mattress, axial turn regularly, keep the limb function with a use, preventing pressure ulcers and joint deformity. (2) Respiratory function exercises: Guide abdominal breathing, deep breathing, and effective cough training. If necessary, use a expectorant machine to prevent pulmonary infection [3]. (3) Passive joint range of motion training: Nurses perform full-range, gentle passive movements on all paralyzed joints of the patient every day, repeating 10 to 15 times for each joint, twice a day, to maintain joint flexibility and prevent contracture and deep vein thrombosis [4]. (4) Active-assisted training: Encourage patients to use their remaining muscle strength to perform active activities in non-paralyzed areas and provide assistance to weak muscle groups.

2.2 Recovery period/rehabilitation training period : (1) Muscle strength strengthening training: under the guidance of therapists, nurses supervised patients to perform resistance training of residual muscle strength, such as the use of elastic bands, small dumbbells, etc., to lay the foundation for transfer and movement. (2) Sitting balance training: gradually transition from sitting on the back to straight sitting, bedside sitting, and finally to unsupported sitting. Nurses protect and encourage patients to perform balance reaction training such as trunk flexion and lateral bending [5]. (3) Transfer training: teaching and assisting patients to master the skills of bed-wheelchair and wheelchair-toilet transfer, emphasizing safety and energy saving. (4) Wheelchair control training: guide patients to master the forward, backward, turning, slope operation and wheel tilting balance skills of wheelchair. (5) Activities of daily living (ADL) training: integrating rehabilitation into daily life, encouraging and guiding patients in self-care activities such as eating, dressing, grooming, and washing, and using assistive devices such as universal sleeves and long-handle combs. (6) Bladder and intestinal function training [6] : formulating and implementing intermittent catheterization plan, cooperating with regular defecation, abdominal massage, drug use, and establishing regular bladder and bowel excretion mode are the most important of rehabilitation nursing.

2.3 Community Return Period/Family Period: (1) Guidance on home environment renovation: Offer suggestions on barrier-free home environments (such as threshold removal, bathroom handrails). (2) Supervision of continuous exercise programs: Develop a family rehabilitation plan and guide family members to assist patients in adhering to daily exercise. (3) Self-management education for complications: Educate patients and their families to identify early signs of complications, such as urinary tract infections, pressure ulcer erythema, hyperautonomic reflex, etc., and take corresponding measures.

3. Rehabilitation exercise in health education and social psychological support throughout the health education

3.1 adopt diversified form (oral explanation, demonstration, video and manual), the contents include the disease knowledge, exercise the importance, the key points of technique, security considerations, complication prevention and emergency handling.

3.2 psychosocial support: (1) to establish a trust relationship between nurses and patients, use listening, empathy, communication skills, etc. (2) Encourage patients to set realistic goals, promptly affirm every bit of progress, and enhance their sense of self-efficacy. (3) Guide patients to participate in patient support groups, share experiences and gain peer support. (4) Assist families in coping, incorporate family members into the rehabilitation education system, reduce the burden of care, and improve family dynamics.

4. Discussion

Nurses are not only executors, collaborators, but also educators and advocates in SCI rehabilitation. However, there are still challenges in clinical practice: the number of specialized nurses in rehabilitation care is insufficient; The rehabilitation knowledge and skills of nurses need systematic training. The connection between hospital, community and family rehabilitation is not smooth. The long-term follow-up and remote support mechanism for patients is not sound. In the future, efforts should be made to strengthen the construction of rehabilitation nursing specialties. By leveraging information technologies such as "Internet Nursing", a continuous nursing model should be established to maximize the benefits of rehabilitation.

5. Conclusion

The rehabilitation of patients with spinal cord injury is a systematic engineering, and rehabilitation exercise is its backbone. Nursing work was deeply integrated into every stage of the process, from early passive intervention to later active functional training and self-management education, which played a pivotal role in assessment, planning, implementation, coordination and support. To construct a systematic rehabilitation nursing model with nurses as the core coordinator, patients as the center, and multidisciplinary team cooperation is the key to optimize the functional outcome of SCI patients and improve their overall quality of life. Continuously deepening the connotation of rehabilitation nursing and strengthening evidence-based practice are the inevitable direction for the development of nursing discipline in the field of rehabilitation.

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