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Influence of Early Functional Exercise Routing Nursing on Limb Rehabilitation of Preschool Children with Deep Burn

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Abstract: ***Objective: To explore the clinical effect of functional exercise pathway nursing in children with hand burn in early stage. Methods: Children with burns hospitalized in the burn Department of the Affiliated Hospital of Youjiang Medical College for Nationalities from August 2019 to August 2023 were selected and divided into control group (23cases) and study group (23cases) according to the order of hospitalization. Control group received routine nursing intervention; On the basis of routine nursing, the study group implemented early functional exercise routing nursing intervention. The compliance, nursing effect and early complications of the two groups of children were evaluated. Results: The compliance of hand function exercise in study group was significantly higher than that in control group (P<0.05). The nursing effect evaluation of children in the study group was better than that of the control group (P<0.05): the complications of limb rehabilitation in the study group were lower than those in the control group (P<0.05). Conclusion: Early functional exercise pathway nursing can improve the compliance of preschool children with deep burn and improve the quality of nursing, which can provide reference for clinical burn children rehabilitation.***

Keywords: Early functional exercise, Pathways nursing, Deep burn preschool children**.**

1. Introduction

Burns are the fifth most common cause of non-fatal injuries to children, and according to data [1], the death rate from burns in children under 5 years of age is more than twice that of children under 5 years of age worldwide. Preschool children have gradually developed their athletic ability, but their ability to identify and judge dangers and self-protection is weak. Therefore, pediatric burn is a group with a high incidence of burn accidents [2]. Hand burn is relatively common in clinical practice. Children's ignorance and hyperactivity often lead to accidents, resulting in hand burn and hand thermal injury, which has a great impact on hand function and even affects the long-term hand function and quality of life of children. However, the recovery time of hand function is long, and the compliance of children participating in rehabilitation is poor [3]. Studies have shown that early rehabilitation can effectively improve children's hand function [4]. In order to further explore the helpful significance of early functional exercise for preschool children with deep burn, this study conducted pathway guidance for early functional exercise immediately after admission to better help children improve hand function.

2. Object and Method

Study subjects: A total of 46 school-age children with deep burns admitted to the Affiliated Hospital of Youyi Medical College of Nationalities (hereinafter referred to as our hospital) from August 2019 to August 2023 were selected as the study subjects, and were divided into the observation group and the control group according to the order of admission, with 23 cases in each group. Inclusion criteria: (1) newly admitted burn children aged 3-6 years; (2) The children and their families have cognitive ability and can correctly understand the content of the questionnaire; (3) During the hospitalization, there are family members who know the child very well, and can correctly understand and express the feelings of the child; (4) The wounds on the hand were mainly unilateral burns, and the burns on the affected side were deep II°-III° burns, while the burns on the healthy side were less than shallow II° burns, and no tendon was injured. The total burned area of the whole body is less than 50%, no serious infection, shock, organ failure and other comprehensive dysfunction; (5) The burn type is hydrothermal, steam, flame burn; (6) The patient was admitted to hospital within 8 hours after the burn, and no treatment was taken before admission. Exclusion criteria:1) children with burns caused by malicious injury; 2) Suffering from mental, immune deficiency, physical disability, cardiovascular system development defects and other congenital diseases or acquired diseases that damage intellectual and physical motor function; 3) Patients who give up treatment midway. There was no significant difference in gender, age, injury mode, injury site and operation mode between the two groups (P>0.05). This study has been approved by the Ethics Committee of the Affiliated Hospital of Youjiang Medical College for Nationalities (No. 2019014).

3. Methods

3.1 Study Methods

School-age burn children were screened according to the inclusion criteria after admission, and children meeting the inclusion criteria were divided into control group and observation group according to admission time. The control group received routine nursing methods: after admission, the children were given appropriate and reasonable fluid rehydration scheme, anti-infective drugs, wound treatment, functional site bandaging. Change the dressing in time according to the bleeding condition of the wound. After wound healing, pressure gloves were given for pressure

treatment. The children in the experimental group were given early functional exercise routing nursing on the basis of routine nursing. 1) The early functional exercise pathway nursing team was established in the department, with the head nurse as the responsible leader and the researcher as the deputy leader. The researcher established the first draft of the early functional exercise pathway nursing path, and the leader organized experts in hospital nursing, rehabilitation, pediatrics and other fields to hold an expert meeting and then formulated the early functional exercise pathway nursing plan (hereinafter referred to as the nursing path list) according to the results of the expert meeting. The researchers trained the members of the pathway nursing group, and passed the assessment with a score of 70 for off-script assessment and mission teaching. 2) Within 24 hours after the admission of the child, assess the child's family's education level and understanding of the burn, inform the family of the importance of early rehabilitation exercise according to the assessment results, and issue a nursing path list for the family of the child. 3) The responsible nurse guided the children to carry out passive hand exercise according to the single contents of the nursing path every day, and then gradually transited to active exercise. Soft music and building block games were played during the exercise.

3.2 Evaluation Methods

(1) Early functional exercise compliance evaluation. Early functional exercise compliance questionnaire was used to evaluate. This table is composed of 5 items, each of which is scored from 1 to 5 points according to the degree of compliance. The contents include the start time of early functional exercise, whether the early functional exercise is carried out according to the time instructed by the nurse, whether the method and frequency are correct, and whether the exercise will be terminated if the affected limb feels mild pain during the functional exercise. According to the completion of functional exercise, the compliance of early functional exercise was divided into 3 levels [5], non-compliance (0~13points): the effect of functional exercise was very poor, and the children refused to complete the functional exercise plan; Partial compliance (14~20points): The effect of functional exercise was general, and the children partially completed the functional exercise plan; Complete compliance (21~25points): the functional exercise effect was good, and the children completed the functional exercise plan with quality and quantity. (2) Nursing effect evaluation. Before discharge, a self-made satisfaction questionnaire was used to investigate the evaluation of nurses' nursing effect by family members of the two groups. The questionnaire includes the evaluation of the families of the children on the active service of the nurses, the work quality of the nurses, such as the working method of the nurses, and the exercise effect of the children after the guidance of the nurses, etc. Each item is evaluated according to the evaluation of the families of the children, in accordance with the three levels of very satisfied (3points), satisfied (2points) and dissatisfied (1 point). The total Cronbach'sαcoefficient of the questionnaire is 0.971, which has good reliability and validity. After explaining the purpose and filling requirements of the survey, the responsible nurse would issue the questionnaire before discharge, and the families of the children filled in the questionnaire according to their own feelings and took it back. The effective recovery rate of the questionnaire was 100%. (3) The occurrence of early limb complications. The nurses observed the extremity blood transport temperature and limb swelling of the children every day according to the requirements of the level of nursing, timely treated the complications and recorded them. The number of children with severe limb swelling and other complications was counted one week later.

3.3 Statistical Methods

SPSS26.0software was used for data analysis and processing. The frequency and percentage (%) of counting data were expressed, and$\chi 2$ test was used for comparison between groups. The measurement data of normal distribution were expressed as mean ± standard deviation (x±s), and independent sample t test was used for comparison between groups. $P < 0.05$ indicated that the difference was statistically significant.

4. Results

1) Comparison of compliance with early functional exercise of affected limb of burned children between the two groups: There was statistical significance in compliance with early functional exercise of affected limb of school-age children after limb fracture surgery between the two groups ($P < 0.05$).

2) Evaluation of nursing effect by family members of children in the two groups: The evaluation of nurses' work quality and exercise effect of children in the observation group was higher than that in the control group, and the evaluation of nursing effect by family members of children in the two groups was statistically significant ($P < 0.05$).

3) Early complications of the fractured limbs of children in the two groups: no significant swelling of the limbs of burn children in the study group, and swelling of the limbs of burn children in the control group in 5 cases (21.74%).

5. Discussion

1) After burns, children are subjected to physical and psychological trauma. From injury to wound healing to rehabilitation exercise, children are faced with repeated challenges and difficulties. Because children burn is different from adults, their skin is thinner, and the wound surface after thermal burn is deeper than that of adults. And children are in the growth and development stage, scar formation is more rapid, and more prone to joint scar contracture deformity. Hands are the medium for children to contact the outside world, learn and perceive the outside world. Children with hand burns, due to fear, physical pain and disability, often lead to children unwilling to contact with the outside world, withdrawn personality, difficulty in self-care and other problems. Rehabilitation exercise is an important part of burn treatment in children [6]. Children's skin is more sensitive, heat resistance is worse, and children are in a critical period of growth and development, resulting in children's burn rehabilitation exercise is very different from that of adults. How to effectively help children reduce wound pain and help prevent scar and other sequelae is a difficult problem faced by medical staff. According to studies, early functional exercise

can promote the physical rehabilitation of children with burns [7], but the early time has not been defined. In this study, children with deep hand burns were evaluated according to their condition after admission. After admission, the families of children with deep hand burns were given early functional exercise path nursing education, and the families were instructed to carry out passive exercise for the children. Gradually change to active exercise after 3 days of passive exercise. In order to prevent the children's reverse psychology, in the exercise to music, games and other methods. Therefore, the routing nursing of functional exercise immediately after admission can improve the compliance of children to participate in exercise and reduce the occurrence of complications.

2) Burn rehabilitation is a long process [8], which requires close cooperation between family and medical staff. Because the school-age children have no self-discipline and initiative, the family members of the children play a great role in promoting the treatment and rehabilitation of the children after burn. In this study, the families of the children were evaluated and educated immediately after admission, and the families were guided to participate in rehabilitation and exercise activities, and trust and cooperation were formed in the process of exercise. Therefore, functional exercise routing nursing promotes the mutual trust of nurse-patient relationship and improves nursing effect and satisfaction.

In conclusion, the early functional exercise pathway nursing can improve the compliance of rehabilitation exercise of preschool children with burns, reduce the occurrence of complications, improve nursing satisfaction, and provide a basis for medical staff to guide burn rehabilitation exercise.

References

[1] Lin Jiamei. Analysis on the characteristics and Influencing factors of burn in preschool children in Western Guangxi [D]. Youjiang Medical College for Nationalities, 2022.

[2] LU Xuelan, Liu Yingping, Liu Yiwei, et al. Cross-sectional investigation on the occurrence of psychological stress disorder after burn in preschool children and analysis of influencing factors [J]. The burn and wound repair, 2024, 40 (4): 373-379.

[3] Shi Na, Jin Xiaoyan, Zhao Kaiping, et al. Continuous rehabilitation based on home tele-rehabilitation platform improves the efficacy of anti-scar treatment for hand burn patients [J]. Journal of China medical university, 2023, 52 (9): 810-814.

[4] Zhou Yaqin, Tan Jianglin. Effect of early rehabilitation treatment for burn children hand function [J]. Chinese journal of burn and wound repair, 2023, 33 (12): 6 1130.

[5] Tang Weiwei, Huang Ping, Zhang Tongqing, et al. Effect of family-centered interactive temperament intervention on early functional exercise compliance of affected limbs in school-age children after limb fracture surgery [J]. The Chinese journal of modern nursing, 2021, 27 (30): 4144-4148.

[6] Gao Yixuan, Hu Wenzhi, Huang Dongyan, et al. Prevention, treatment and rehabilitation of scar after burn in children [J]. Chinese Journal of Clinician, 2019, 52(05):511-515.

[7] CAI Du, He Tingting, Zhang Dandan, et al. Multidisciplinary team to make the hand function recovery video application in burn children [J]. Journal of nursing science, 2021, 4 (6): 101-104.

[8] Zheng Chundong, Huang Qiuhuan, Huang Fen, et al. The progress in the application of self-management in patients with burn rehabilitation care [J]. Journal of Chinese medicine science, 2023, 13 (15): 28-31.