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Original Article

Exploring improvement in quality of life and nursing effects after high quality nursing care for patients undergoing surgery for nephroblastoma

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Abstract: Objective: To explore improvement in quality of life and nursing effects after providing high quality nursing care for patients undergoing surgery for nephroblastoma. Methods: Data from 60 children with nephroblastoma was analyzed retrospectively and 30 cases provided with conventional nursing formed the control group, whereas the other 30 cases given quality nursing care based on the conventional nursing comprised the experimental group. The Self-rated Anxiety Scale (SAS) and Self-rated Depression Scale (SDS) were adopted to assess anxiety and depression, respectively, of the 2 groups. Postoperative pain scores, sleep quality scores, crying time, hospitalization duration, treatment compliance, and family nursing satisfaction were recorded in detail. Results: Experimental and control group's scores on SAS and SDS after nursing were significantly decreased compared with those before nursing ($P<0.001$), and they were significantly lower in the experimental than the control group after nursing ($P<0.001$). Compared with the control group, in the experimental group, pain scores were significantly lower ($P<0.001$). The sleep quality scores, crying time, and the hospitalization duration were also reduced significantly ($P<0.001$). Treatment compliance of the patients in the experimental group was significantly higher than that of the control group ($P=0.024$). Nursing satisfaction of family members in the experimental group was significantly higher than that of the control group ($P=0.011$). Conclusion: High quality nursing care enables effective improvement of anxiety and depression in children with nephroblastoma and promotes compliance, thus improving nursing satisfaction by family members. Therefore, quality nursing is worthy of clinical promotion.

Keywords: High quality nursing care, nephroblastoma, treatment compliance, nursing satisfaction

Introduction

Nephroblastoma is a common primary renal malignant tumor in children. The tumor consists of a variety of tissue components and is mainly composed of undifferentiated mesothelial and epithelial tissues [1]. The incidence of nephroblastoma is about 6% of all malignant tumors in children, and the peak age of the onset is 3 years [2]. Most children with nephroblastoma can be observed to have clinical symptoms of abdominal discomfort, fever, shortness of breath, anemia, and hypertension [3]. With the improvement of medical services, treatment for nephroblastoma in children has made great progress and the 5-year disease-free survival rates may reach 80% [4]. Although surgical treatment is often applied in the clinic, it will affect the conditions of the children and reduce their immunity. After surgery, children often cry due to pain and have poor sleep quality, anxiety, depression, etc. [5, 6]. Therefore, establishment of an effective nursing intervention model in the perioperative period of nephroblastoma to promote the treatment compliance of children and achieve the aim of body recovery after operation is of great significance in clinical nursing.

Quality care is a new type of nursing model developed in recent years based on patients, society, and psychological condition and centered on strengthening the patients to implement and augment the nursing system, integrate humanistic care into nursing, deepen the meaning of nursing, and improve the nursing quality. Quality nursing care prioritizes the patients' feeling, satisfies the basic demands of

life, instills favorable feelings in patients, and improves their psychological, physiological, and living conditions [7]. At present, there are many clinical applications of high quality nursing, all of which indicate that the nursing model enables to effectively improve the undesirable emotions including anxiety and tension during the treatment of various diseases and promote the body recovery of the patients after the operation.

To further analyze the value of high quality nursing model in the perioperative period of nephroblastoma, this study implemented the quality nursing intervention in the children with nephroblastoma during perioperative period and aimed to provide a feasible clinical nursing model for patients with nephroblastoma during the perioperative period.

Materials and methods

General information

The data of 60 children with nephroblastoma, who were admitted in The First Bethune Hospital of Jilin University was analyzed retrospectively. Thirty cases provided conventional nursing and formed the control group whereas the other 30 cases of quality nursing care based on conventional nursing comprised the experimental group. In the experimental group, there were 19 male and 11 female children in the age range of 4~9 years with an average age of 6.15 ± 1.07 years. There were 12 children suffering abdominal pain, 8 having fever, and 9 with hematuria. There were 3, 11, and 16 patients with bilateral, left, and right lesions respectively. In the control group, there were 16 male and 14 female children in the age range of 4~10 years with an average age of 6.42 ± 0.98 years. There were 9 children suffering abdominal pain, 9 having fever, and 8 with hematuria. There were 2, 9, and 19 patients with bilateral, left, and right lesions respectively.

Inclusion and exclusion criteria

Inclusion criteria: (1) the surgery for nephroblastoma was performed in the pediatric department of our hospital; (2) the patients were conscious and able to answer questions independently and objectively; and (3) their ages were ≥4 and ≤10 years. The study was approved by the Ethics Committee of our hospital and the research subjects and their families signed the informed consent forms. Exclusion criteria: (1) patients with allergic constitution and intolerance for surgical and nursing methods; (2) patients with severe liver and kidney dysfunction; (3) patients with connective tissue, endocrine, and metabolic diseases; (4) patients with cognitive dysfunction, consciousness function disorder, and failure of normal communication; and (5) patients with mental disorders and family history of psychosis.

Nursing methods

Conventional nursing intervention

This involved collecting and archiving basic information of the patients; knowing about the social, cultural, and family environment; explaining the disease-related knowledge to the children and their families; establishing reasonable eating habits according to the actual situation of the patients; and observing various physiological indicators of patients.

High quality nursing care

Conventional examinations were conducted after admission to the hospital. Under the guidance of the nursing department of the hospital, the major professionals in pediatrics consisted of 1 Associate Chief Nurse, 3 Senior Nurses, and 1 Pediatrician to make up the research project team. The director of the hospital nursing department provided training to the members of the project group and elaborated on the concept, meaning, implementation method, and implementation steps of high quality nursing in detail so as to improve the executive ability of the team members to provide the quality care. According to the actual conditions of the children, the project team devised a reasonable quality nursing plan. The plan was as follows: (1) Psychological nursing: the children in the strange environment will be anxious, nervous, and frightened, and experience other undesirable emotions and hence a euphemistic and gentle way should be adopted to communicate with the children and their families. To train the children, a multifaceted and complete health knowledge would be carefully elaborated and the disease-related information and the surgical treatment as well as the precautions for the disease would be conveyed. They would establish a good and harmonious relationship between doctors and patients,

increase their trust in nursing staff, and cooperate with family members of patients in the process of psychological nursing, and provide targeted psychological nursing intervention according to the actual psychological conditions of children. (2) Dietetic nursing: the children were given food with high protein, high calories, and cellulose with less quantity more frequently for nutritional support during the perioperative period, and spicy, cold, and other irritating foods were avoided. The nutritional balance of the patients was maintained and the children and family members ate at the same time. The patients were fed with more pasty and light food, and they maintained a sitting posture for 45 min to prevent food reflux after eating; if necessary, albumin, plasma, or other nutrient solutions were given to increase their immunity. (3) Postoperative care: this included assisting children with proper posture after the operation and observing their respiratory condition to prevent respiratory obstruction and aspiration error. Electrocardiogram monitoring was applied to observe changes in their complexion, expression, consciousness, body function, body temperature, and the vital signs including the respiration, blood pressure, and urine volume of the children were recorded in detail. During the observation, if the vital signs of the children were found to be abnormal, the doctors were informed in time. (4) Drainage tube nursing: this included keeping the drainage tube unobstructed, paying attention to the quantity, smell, color, and residue of the drainage, and scrubbing the perineal region of the children daily strictly according to the principle of aseptic operation to prevent infection.

Observation index

(1) Anxiety and depression of children were evaluated using Self-rated Anxiety Scale [8] (SAS) and Self-rated Depression Scale [9] (SDS) respectively. The SAS score ≥51 and the SDS score ≥53 implied the negative psychological state. (2) Visual Analogue Scale (VAS) was used to evaluate the degree of pain in children. The VAS score of 0 represents no pain and that of 10 represents the most severe pain and the higher the VAS score is, the more severe is the pain [10]. (3) The sleep quality of the children was evaluated using the Pittsburgh Sleep Quality Index [11]. Its scores range from 0 to 21 and the higher the score is, the worse is the sleep quality. In the evaluation, 18 items were included, such as sleep efficiency, sleep latency, sleep quality, sleep time, use of sleep medicine, sleep efficiency, and daytime dysfunction. The contents of the scale were explained in detail to the children and their families and were evaluated as the subjective sensation of the pediatric patients. (4) Compliance with the treatment was evaluated using the Compliance Questionnaire of the hospital. The group members read each treatment compliance item and recorded the treatment compliance of the patients. If the medical advice was not followed, the treatment was discontinued, or the execution rate was <30%, in-compliance was deemed. In cases where the medical advice was not followed, the treatment was not standard, or the execution rate ranged from 50 to 70%, general compliance was deemed. However, if the medical advice was basically followed and the implementation rate was from 70 to 90%, it was determined as basic compliance, whereas if the patients strictly followed the doctor's advice and completely cooperated with the treatment, and the execution rate was more than 90%, it was considered as complete compliance. The total compliance rate = (general compliance + basic compliance + complete compliance)/total cases *100%. The Nursing Satisfaction Questionnaire of the hospital was used to evaluate the nursing satisfaction of the children's families. Scores less than 60 represented dissatisfaction, 60~79 represented basic satisfaction, 80~90 represented satisfaction, and more than 90 represented excellence. Satisfaction rate = (basic satisfaction + satisfaction + excellence)/total cases × 100%. The postoperative recovery indicators of the patients including score of pain, score of sleep quality, crying time, and hospitalization duration were all observed and recorded in detail by the project group members.

Statistical method

Statistical analysis was carried out using SPSS 19.0 (Yi Yun (Shanghai) Information Technology Co., Ltd.). Measurement data was expressed using mean ± standard deviation ($\bar{x} \pm s$); the comparison of measurement data between groups was performed using t-test and the counted data comparison between groups was carried out using Chi-square test. $P<0.05$ implied the difference was statistically significant.

Table 1. Baseline data for patients in the experimental and control groups [n (%)]/($\bar{x}$ ± s)

Category	Experimental group (n=30)	Control group (n=30)	t/χ^2	P
Gender			0.617	0.601
Male	19 (63.33)	16 (53.33)		
Female	11 (36.67)	14 (46.67)		
Age	6.15 ± 1.07	6.42 ± 0.98	1.019	0.312
Lesion			0.657	0.719
Bilateral	3 (10.00)	2 (6.67)		
Left side	11 (36.67)	9 (30.00)		
Right	16 (53.33)	19 (63.33)		
Clinical stage			3.723	0.287
Phase I	8 (26.67)	15 (50.00)		
Phase II	12 (40.00)	7 (23.33)		
Phase III	7 (23.33)	6 (20.00)		
Phase IV	3 (10.00)	2 (6.67)		
Lymph node metastasis			0.480	0.731
Have	6 (20.00)	4 (13.33)		
No	24 (80.00)	26 (86.67)		
Vascular infiltration			0.577	0.706
Have	5 (16.77)	3 (10.00)		
No	25 (83.33)	27 (90.00)		

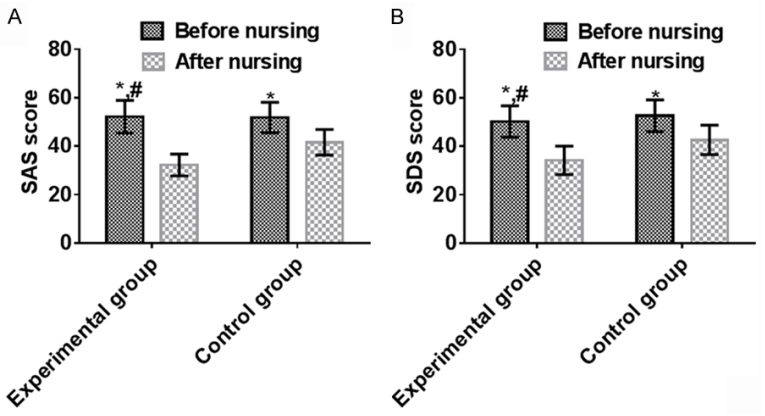

Figure 1. SAS and SDS scores before and after nursing intervention. Comparison of SAS results before and after a nursing intervention between the experimental group and the control group (A). Comparison of SDS results before and after a nursing intervention between the experimental group and the control group (B). *P<0.01 compared to pre-care; #P<0.01 compared with post-care control.

Results

Baseline data of children in the experimental and control groups

There was no statistical difference in general and clinical baseline information, including gender, age, lesion site, clinical stage, lymph node metastasis, and blood vessel infiltration between the experimental and control groups (P> 0.05) (**Table 1**).

The SAS and SDS scores of the experimental and control groups before and after nursing intervention

In the experimental group, the scores of SAS and SDS before nursing were 52.15 ± 6.74 and 50.23 ± 6.47 respectively, while those after nursing were 32.26 ± 4.49 and 34.26 ± 5.86 respectively. In the control group, the scores of SAS and SDS before nursing were 51.86 ± 6.27 and 52.62 ± 6.57 respectively, while those after nursing were 41.64 ± 5.28 and 42.63 ± 6.05 respectively. Compared to the condition before nursing, the scores of SAS and SDS after nursing in the experimental group significantly reduced (t=13.40, P<0.001; t=10.020, P<0.001) and the scores of SAS and SDS in the control group decreased significantly (t=6.829, P<0.001; t=6.127, P<0.001); the SAS and SDS scores in experimental group were significantly lower than those of the control group after nursing (t=7.413, P< 0.001; t=5.443, P<0.001) (**Figure 1A** and **1B**).

Postoperative recovery index of children in the experimental and control groups

The pain degree score, sleep quality score, crying time, and hospitalization duration of the pediatric patients were 4.11 ± 1.26, 5.83 ± 2.16, 35.52 ± 4.75 min/d, and 7.69 ± 2.36 d respectively in the experimental group, and those in the control group were 6.01 ± 1.36, 8.54 ± 1.98, 47.52 ± 4.52 min/d, and 10.86 ± 3.07 d respectively. Compared to the control group, the pain score of the experimental group significantly decreased (t=5.613, P<0.001), the sleep quality score significantly reduced (t=5.066, P<0.001), the crying time

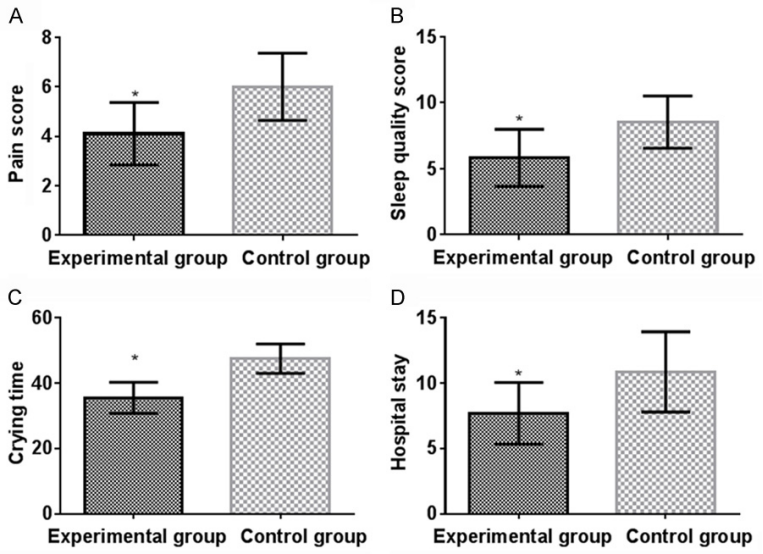

Figure 2. Postoperative recovery index. Comparison of postoperative pain scores between the experimental group and the control group (A) Comparison of postoperative sleep quality scores between the experimental group and the control group (B). Comparison of postoperative crying time between the experimental group and the control group (C). Comparison of postoperative hospitalization duration between the experimental group and the control group (D). *P<0.01, compared with the control group.

significantly reduced (t=5.847, P<0.001), and the duration of hospitalization significantly reduced (t=4.484, P<0.001) (**Figure 2A-D**).

Treatment compliance of the pediatric patients in the experimental and control groups

In the experimental group, there were 4 cases with general compliance, 12 with basic compliance, 14 with complete compliance, and the total compliance rate was 100%. In the control group, there were 6 cases with in-compliance, 11 with general compliance, 6 with basic compliance, and 7 with complete compliance, and the total compliance rate was 80%. The compliance of children in the experimental group was significantly superior to that in the control group (χ^2=6.667, P=0.024) (**Table 2**).

Nursing satisfaction of the families of the children in the experimental and control groups

Regarding nursing satisfaction of the families of the children, in the experimental group, 4 cases were basically satisfied, 7 were satisfied, and 19 expressed excellence with a total satisfaction rate of 100%. The nursing satisfaction of the family members of the experimental group displayed dissatisfaction in 7 cases, basic satisfaction, in 8, satisfaction in 5, and excellence in 10 with the total satisfaction rate of 76.67%. The nursing satisfaction of family members in the experimental group was significantly superior to that of the control group (χ^2=7.925, P=0.011) (**Table 3**).

Discussion

Nephroblastoma accounts for about 78% [12] of urinary tract malignancies in children younger than 14 years of age and nephroblastoma in early phase does not affect the health and development of body of children because of the limited size of the tumor [13, 14]. Surgery is the main medium of treatment for nephroblastoma, which enables to effectively prolong the overall survival of the children, but the children were often observed to have unexpected symptoms such as crying, poor sleep quality, anxiety, and depression after operation [15, 16]. Therefore, application of effective nursing practices during the perioperative period to reduce the undesirable symptoms of pediatric patients has always been the focus of nursing workers.

Quality nursing care with a patient-orientation induces a sense of responsibility in the nursing system, satisfies the basic living requirements of the patients, maintains their physical comfort levels, balances their psychological problems so as to achieve overall improvement of nursing care and promote patients' recovery [17]. Children receiving high quality care must receive more meticulous nursing intervention so that they get better quality care services, thus improving the degree of their trust in the nursing care and treatment.

Pediatric patients experience negative emotions before operation, which are closely related to the operation's success and postoperative recovery and are the main factors affecting the outcome of the surgical treatment and their prognosis [18]. Therefore, meticulous psychological nursing intervention during periopera-

Table 2. Comparison of Treatment Compliance of Children in the Experimental and Control Groups [n (%)]

Groups	N	Non-compliance	General compliance	Basic compliance	Full compliance	Total compliance rate
Experimental group	30	0 (0.00)	4 (13.33)	12 (40.00)	14 (46.67)	30 (100.00)
Control group	30	6 (20.00)	11 (36.67)	6 (20.00)	7 (23.33)	24 (80.00)
χ^2						6.667
P						0.024

Table 3. Comparison of the Satisfaction Results of Family Care in Children of the Experimental and Control Groups [n (%)]

Groups	N	Not satisfied	Basically satisfied	Satisfaction	Very satisfied	Total satisfaction rate
Experimental group	30	0 (0.00)	4 (13.33)	7 (23.33)	19 (63.33)	30 (100.00)
Control group	30	7 (23.33)	8 (26.67)	5 (16.67)	10 (33.33)	23 (76.67)
χ^2						7.925
P						0.011

tive period enables children to receive intimate nursing service. The results of this study show that compared with that before nursing, the scores of SAS and SDS in the experimental group decreased significantly after the nursing, and though those in the control group decreased significantly after nursing, they were significantly lower in the experimental than control group after nursing, which suggests that the quality care can effectively improve the anxiety and depression of the children, improve surgical treatment efficacy, and promote prognosis. Shoshani et al. [19] applied psychological care for children with nephroblastoma and demonstrated that it significantly improved the undesirable mood of children, which was similar to the results of this study.

After operation, the compliance of the children with nephroblastoma treatment is the main factor affecting the operation's outcome and their recovery. The low immunity of the children after the operation often make them uncooperative to or reject the medication treatment, which affects recovery and the prognosis [20]. High quality nursing intervention emphasizes that the pediatric patients must receive delicate nursing so as to provide a certain basis for their postoperative recovery. The results of this study show that compared with the control group, in the experimental group, the scores of pain were significantly lower and the scores of sleep quality, time of crying, and hospitalization duration significantly decreased. The children's treatment compliance and family's nursing care satisfaction in the experimental group were significantly higher than those of the control group, which suggested that the quality nursing care intervention enables to effectively promote the compliance of the children, improve their families' nursing satisfaction, significantly increase the effect of postoperative recovery, reduce the treatment time, promote recovery, and save the medical resources. Silver et al. [21] report that the patients with tumors always have diverse and complex body damage, which will affect their physiological and psychological conditions and lead to a serious decline in the quality of life, and the quality care enables to provide the nursing care intervention in accordance with the actual conditions of the patients in the process of its application, thereby relieving the undesirable psychological mood, decreasing the likelihood of patients suffering from disability, and maximizing their quality of life. This is similar to the results of this study.

This study selected the subjects strictly according to the inclusion and exclusion criteria and the patients in the experimental and control groups had no significant differences in their general and clinical baseline information including gender, age, lesion site, clinical stage, lymph node metastasis, and vascular infiltration, thus ensuring the accuracy and reliability of this study. It is not clear whether the high quality nursing intervention model is applicable to other diseases and the research time and the number of samples were limited. In future

research, we should expand the sample size for the exploration to further strengthen the conclusion of this study, which will provide references for clinical application of the high quality nursing model.

In summary, high quality care enables effective improvement of anxiety and depression of children with nephroblastoma, promotes their compliance, and promotes satisfaction of their families. The effect of postoperative recovery was significant, the treatment time was reduced, children's recovery was promoted, and the medical resources were saved. It is worth promoting the high quality nursing of patients.

Disclosure of conflict of interest

None.

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