

**Analysis of the effect of outcome-oriented demand nursing application
in children with granulocytic leukaemia**

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Abstract

Objective: to explore the effect of outcome-oriented demand nursing application in children with granulocytic leukaemia, and to assess its impact on adherence, service satisfaction and quality of life. **METHODS:** The study included 80 children with granulocytic leukaemia treated in our hospital between March 2023 and February 2024, who were randomly divided into an observation group (40 cases) and a control group (40 cases) according to the nursing intervention model. The observation group implemented outcome-oriented need-based care and the control group implemented routine care. Adherence, service satisfaction, and quality of life through SF-36 scale were evaluated in the 2 groups. **RESULTS:** The adherence scores of children in the observation group were significantly higher than those of the control group in terms of rehabilitation training, dietary management, taking medication as prescribed by the doctor, and timely follow-up ($P < 0.05$); the satisfaction of children in the observation group (97.50%) was significantly higher than that of the control group (80.00%), with a significant difference between the groups ($P < 0.05$); and the scores of all dimensions of the quality of life of the observation group were significantly higher than those of the control group ($P < 0.05$). **DISCUSSION:** Outcome-oriented demand nursing can significantly improve the treatment compliance, family satisfaction and quality of life of children with granulocytic leukaemia.



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Granulocytic leukaemia is a malignant haematological disease caused by abnormal proliferation of the bone marrow haematopoietic system, commonly seen in children and adolescents, with high morbidity and poor prognosis, although the survival rate has been improving year by year with the advances in chemotherapy and haematopoietic stem cell transplantation, the intense

pharmacological interventions in the course of treatment, prolonged hospitalization and frequent follow-ups have brought great psychological pressure to the children and their families [1]. Studies have found [2] that patient adherence is closely related to treatment outcomes, and adherence includes multiple aspects such as medication, rehabilitation training, dietary management, and regular follow-ups, etc. Enhancing adherence can effectively reduce complications and improve the quality of life. Outcome-oriented needs-based care is a personalised care model that provides targeted interventions according to the specific needs of patients and has been effective in the care of many diseases. However, few studies have been conducted on children with granulocytic leukaemia, especially the lack of data to support systematic assessment of adherence, family satisfaction and quality of life. The aim of this study was to investigate the effectiveness of this care model in children with granulocytic leukaemia and to assess its role in improving adherence, family satisfaction and quality of life, so as to provide a scientific basis for clinical care. It is reported as follows:

1. Data and Methods

1.1 General information

The study included 80 cases of children with granulocytic leukaemia who were treated in our hospital between March 2023 and February 2024, and the children were randomly divided into the observation group (40 cases) and the control group (40 cases) according to the nursing intervention model. In the observation group, there were 18 (45.00%) males and 22 (55.00%) females, with the age range of 3-12 years old, mean age (8.25 ± 2.97) years old, and the clinical phenotypes were: acute myelogenous leukaemia (AML) in 30 cases (75.00%), and chronic myelogenous leukaemia (CML) in 10 cases (25.00%), while in the control group, there were 20 cases (50.00%) males, 20 cases (50.00%) females, 20 cases (50.00%) females, and 20 cases (50.00%) females, in the control group. Female 20 cases (50.00%), age range 3-12 years old, mean age (8.58 ± 3.02) years old; Clinical typing: 28 cases (70.00%) of acute myelogenous leukaemia (AML), 12 cases (30.00%) of chronic myelogenous leukaemia (CML); Comparison of baseline data between the groups $P > 0.05$, comparable.

Inclusion criteria: diagnosis of granulocytic leukaemia confirmed by bone marrow and molecular biology examination; age 3-12 years; children and guardians agreed to participate in the study and signed an informed consent form. Exclusion criteria: combination of severe cardiac, hepatic, renal

and other organ insufficiency or other major complications; the presence of severe mental or neurological disorders that could not be communicated or assessed; refusal to co-operate or withdrawal during the study period.

1.2 Methods

The control group implements conventional nursing: the conventional nursing team provides daily care for the children to ensure that the children's basic life needs are met, including keeping clean, changing bed sheets regularly, dressing appropriately, oral care, etc. The nurses give medicines to the children timely and accurately in accordance with the doctor's treatment plan, including chemotherapeutic drugs and supportive therapeutic drugs. At the same time, the adverse reactions of the drugs were closely observed to ensure timely treatment. Through communication with the children and their families, the nurses pacified the children's emotions and alleviated their anxiety and fear during the treatment process, and at the same time, provided the necessary psychological support and counselling to help the children and their families adjust their mentality and cooperate with the treatment.

The observation group implemented outcome-oriented demand nursing: (1) Adherence enhancement nursing: nursing staff instructed the family to take medication on time according to the child's age and condition, and helped to identify adverse drug reactions (e.g., nausea, vomiting, skin rashes, etc.). For older children, nurses explained the effects and side effects of medications and encouraged children and parents to co-manage medications to improve adherence. In terms of dietary management, a meal portioning system was adopted to help children maintain proper nutrition. For older children, nurses suggested choosing light, easy-to-digest and protein-rich food. In terms of rehabilitation training, nurses encourage young children to perform simple bed activities, such as finger exercises, ankle exercises, etc. For older children, they are encouraged to perform light activities to promote physical recovery. (2) Psychological counselling and emotional support: Nurses help young children to express their emotions and reduce their fear of treatment through simple communication and games. For the older children, the nurse encourages them to communicate with the psychologist to release their pressure, and the family members often feel anxious, so the nurse provides regular psychological counselling for the family members to help them understand the treatment process and give them emotional support to promote the active participation of the family members. (3) Health education and nursing education: nurses provide family members with guidance on the use of drugs and side effects

according to the age of the children. For young children, nurses help them understand the effects of drugs through drawings; for older children, they explain in detail the mechanism of the drugs and how to cope with the side effects, and enhance the awareness of compliance with the doctor's instructions. Nursing staff provide disease-related education in phases to help the children understand the condition and the treatment, and improve the compliance with the treatment.

1.3 Evaluation criteria

(1) Adherence assessment: the adherence scoring scale designed by our hospital was verified by Cronbach's α coefficient, with a score of 0.839, involving four aspects of rehabilitation training, diet, medication and follow-up, with a full score of 100 for each item, with higher scores representing better adherence.

(2) Service satisfaction survey: use self-made questionnaires to understand the satisfaction of children's families with nursing services. Scoring criteria: >90 is very satisfied, 80-90 is satisfied, 60-80 is general, <60 is dissatisfied [3]. Total satisfaction was calculated as (very satisfied + satisfied)/total cases \times 100%.

(3) Quality of life assessment: the SF-36 scale was used, covering four major domains: social relations, psychology, daily life and physiology, with a full score of 100 for each item, and a high score indicating a good quality of life. The scale was re-tested with a reliability of 0.872 and a Cronbach's α coefficient of 0.860.

1.4 Statistical methods

SPSS24.0 was used to analyse the data by chi-square (2) and t-test for counting and measuring data respectively, which were shown as '%' and ' $\bar{x} \pm s$ ' (normally distributed data), and the difference of $P < 0.05$ meant that the difference was statistically significant.

2. Results

2.1 Adherence (compliance) assessment

The adherence scores of children in the observation group were significantly higher than those of the control group in terms of rehabilitation training, dietary management, taking medication as prescribed by the doctor, and timely follow-up ($P < 0.05$). See Table 1

Table 1 Comparison of adherence scores between the two groups (points)

Group	n	Rehabilitation training	Dietary management	Compliance with medication	Follow-up on schedule
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		Pre-inter vention	Post-inte rvention	Pre-inter vention	Post-inte rvention	Pre-inter vention	Post-inte rvention	Pre-inter vention	Post-inte rvention
Observat ion group	40	59.02± 4.63	79.62± 5.28*	62.05± 5.84	84.42± 5.59*	65.23± 5.06	86.69± 6.47*	40.15± 5.03	77.51± 5.94*
Comparis on group	40	58.25± 5.17	68.96± 4.74*	61.85± 5.32	75.47± 6.69*	66.69± 4.82	77.14± 5.23*	49.02± 4.55	62.36± 5.47*
<i>t</i>	-	0.830	11.113	0.187	7.713	1.540	8.445	1.233	13.897
<i>P</i>	-	0.408	0.000	0.852	0.000	0.124	0.000	0.220	0.000

2.2 Comparison of nursing service satisfaction between groups

The satisfaction of the children in the observation group (97.50%) was significantly higher than that of the control group (80.00%), and the difference between the groups was significant ($P < 0.05$). See Table 2

Table 2 Comparison of nursing satisfaction between groups (n/%)

Group	n	Very satisfied	Satisfied	Unsatisfied	Satisfaction
Observation group	40	29	10	1	97.50 (39/40)
Comparison group	40	21	12	7	80.00 (32/40)
<i>t</i>	-	-	-	-	17.092
<i>p</i>	-	-	-	-	0.000

2.3 Comparison of quality of life levels between groups

The scores of all dimensions of quality of life in the observation group were significantly higher than those in the control group ($p < 0.05$), see Table 3

Table 3 Table 3 Comparison of SF-36 levels between groups ($\bar{x} \pm s$, points)

Group	Social Relationships	Psychological Domain	Daily Life Skills	Physical Domain
Comparison group (40)	86.09±4.67	87.69±4.23	91.86±4.40	90.78±5.78
Observation	67.04±5.23	68.46±3.90	72.39±3.56	72.49±5.23

group (40)

<i>t</i>	6.838	8.943	5.697	7.000
<i>P</i>	0.000	0.000	0.000	0.00

3. Discussion

Granulocytic leukaemia is a class of haematological malignancy involving abnormal proliferation of white blood cells, the incidence rate is low, but it has a great impact on the physical and mental health of the children, despite the continuous progress of treatment technology, the high recurrence rate of granulocytic leukaemia and the adverse reactions during chemotherapy still bring a huge burden to the children and their families, in the course of the treatment, the children's adherence, the satisfaction of their families, and the quality of life of the children are all In the process of treatment, child compliance, family satisfaction and quality of life of the child are all important indicators of the effectiveness of treatment. In recent years, nursing interventions have evolved, and outcome-oriented demand nursing, as a new type of nursing model that provides precise care by systematically identifying patients' individual needs, has demonstrated its superiority in many fields.

The results obtained in this study showed that: the adherence scores of children in the observation group were significantly higher than those of the control group in terms of rehabilitation training, dietary management, taking medication as prescribed by the doctor, and timely follow-up consultations ($P < 0.05$); the satisfaction of children in the observation group was significantly higher than that of the control group (97.50%), with a significant difference between the groups ($P < 0.05$); and the scores of all dimensions of the quality of life of the observation group were significantly higher than those of the control group ($P < 0.05$). This is in the form of the results of Feng Xiaoyan et al [4], the reasons for this: results-oriented demand nursing through personalised nursing intervention, for the different conditions and age characteristics of the children to provide tailored treatment plans, especially in the rehabilitation training, dietary management and compliance with the doctor's prescription of medication, etc., to help the children and their families to overcome the difficulties of the treatment, enhanced treatment compliance, the nursing staff, through the detailed guidance of the family to Nursing staff ensured that the children took medication on time, ate reasonably, and had regular follow-ups, which reduced treatment delays caused by improper care or poor compliance, and improved the treatment effect. Secondly, the

personalised psychological guidance and emotional support measures effectively alleviated the anxiety of the children and their families, enhanced their confidence in treatment, and further improved their satisfaction. The detailed communication and emotional support of the nursing staff helped the families to understand the treatment process, strengthened their degree of cooperation, and reduced their resistance to the treatment, and also guided the children to carry out appropriate rehabilitation training, emotional support and dietary management, which helped reduce the side effects of chemotherapy. These measures helped the children to reduce the side effects of chemotherapy and improve their physical and psychological status, thus improving their overall quality of life.

In conclusion, outcome-oriented demand nursing can significantly improve the treatment compliance, family satisfaction and quality of life of children with granulocytic leukaemia.

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