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Impact of Continuous Nursing Intervention on Quality of Life in Patients with Acute Leukemia

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Abstract: Objective: To assess impact of continuous nursing intervention on quality of life in patients with acute leukemia. Methods: the valid data was collected from 202 patients during July 2019 to February 2021. In the early stages of the study, participants were randomly assigned to either an intervention or a control group. Control group participants received common nursing intervention during treatment. In another group, the participants who received additional continuous nursing intervention based on common nursing intervention were defined as the intervention group. The data included age, sex, education, marital status, duration of illness, number of treatments, quality of life assessments, and physical functioning status. Result: All results of characteristic were no significant difference between control group and intervention group. In addition, after carrying out nursing intervention, control group participants had better improvement in some indexes of quality-of-life, such as Physiological, Social/family, and Emotional. However, comparing with control group, function, leukemia specific module, and total score were significant difference in intervention group (p < 0.05). Also, we observed that intervention group participants had better physical functional status after carrying out nursing intervention, their physical functional status assessment was significant higher compare with control group participants. Conclusion: continuous nursing intervention can improve quality of life and physical function in patients with acute leukemia in long term. compared with common nursing intervention, continuous nursing intervention is more likely to improve patients by changing their behavior so that patients' quality of life and physical function are imperceptibly improved over the long term.

Keywords: Acute Leukemia, Nursing, Quality of Life

1. Introduction

Acute leukaemia is a heterogeneous group of blood-related cancers, that it cased the abnormal proliferation of blast cells in bone marrow so that abnormal cells replace normal cells, and it decrease of the three haematopoietic lines in peripheral blood [1]. It is the 11th most prevalent cancer in the world, and it has a very high death rate, the 10th highest in the world [2, 3]. Base on the 2018 research, there had more than 300,000 deaths as they were patients with acute leukaemia [4]. The patients with acute leukaemia only had 19% of survival during 5 years in Europe [5]. The treatment of acute leukaemia is pain and the patients often had poor mental health, so some hospital provided continuous nursing intervention to improve patients' quality of life. For example, Song's report and Che's report indicated continuous nursing intervention improve quality of life and survival rates for patients with acute leukemia [6, 7]. Those are reasons why exploring continuous nursing intervention improve quality of life in patients with acute leukemia is necessary.

Continuous nursing intervention is a long-term nursing intervention for medical staffs and patients. Some reports indicated continuous nursing intervention can improve quality of life to patients [8, 9]. In recent years, some researchers attempt to improve quality of life by continuous nursing intervention. For example, Bai's report showed that he used continuous nursing intervention to change the life behavior of patient so that their quality of life were improved [10]. Therefore, impact of continuous nursing intervention on patients with acute leukemia is worth studying. The aim of this study was to investigate impact of continuous nursing intervention on quality of life in patients with acute leukemia.

2. Methods

2.1. Participants Enrollment and Survey Methods

220 patients who were diagnosed as acute leukemia were invited to join this study, but 18 patients were lack necessary information in the treatment, so the valid data was collected from 202 patients during July 2019 to February 2021. In the early stages of the study, participants were randomly assigned to either an intervention or a control group. Control group participants received common nursing intervention during treatment. In another group, the participants who received additional continuous nursing intervention based on common nursing intervention were defined as the intervention group.

Each participant provided data three times: the first time was after diagnosis, we collected basic information and characteristics from the patient's medical record, which included age, sex, education, marital status, duration of illness and number of treatments. The second was before care, when we used questionnaires to collect quality of life assessments and physical functioning status of patients before the nursing intervention. The third time was after the nursing intervention. The questionnaires were also used to collect the quality-of-life evaluation and physical function status of the patients after the nursing intervention. The questionnaires included FACT-Leu and Karnofsky Performance Scale (KPS), that they were used to collect quality-of-life assessment and physical function status of patients [11,.12].

In continuous nursing intervention, it is established on the basis of conventional nursing, and provide additional long-term nursing intervention, the additional nursing intervention included disease knowledge education, treatment compliance supervision, daily diet, follow-up, and physical function exercise. In addition, nurses tailor the nursing interventions they provide to the individual patient's status. The nurse will also collect and record feedback after the nursing intervention, and review and improve the nursing intervention, so as to maintain the improvement of the continuity of care.

2.2. Statistical Analysis

We use Excel and SPSS22.0 software to establish a database and analyzed the valid data. the result was described by mean and standard deviation (SD). The valid data included age, sex, education, marital status, duration of illness, number of treatments, quality-of-life assessment, and physical function status assessment. Additionally, Statistical significance was observed at level of 0.05.

3. Result

We collected the patient characteristic from 202 patients with acute leukemia, the patient characteristic included gender, age, education, marital status, course of the disease, and treatment time. In the intervention group and control group, each with 101 patients in each group to provide relevant data. All results of characteristic were no significant difference between control group and intervention group (Table 1).

Table 1. Patient characteristic.

Item	Gender (female) (n, %)	Age (year) (mean±SD)	Education (high school or higher) (n, %)	Marital status (married) (n, %)	Course of the disease (year) (mean±SD)	Treatment time (n) (mean±SD)
Control group (n = 101)	85 (84.2%)	47.14±25.36	77 (76.2%)	94 (93.1%)	2.44±0.98	2.65±1.08
Intervention group (n = 101)	78 (77.2%)	49.85±23.90	71 (70.3%)	89 (88.1%)	2.28±1.13	2.59±1.16
P value	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05

Before carrying out nursing intervention, the quality-of-life assessments which were collected from two groups participants were similar, they were no significant difference in every index of quality-of-life. after carrying out nursing intervention, control group participants had better improvement in some indexes of quality-of-life, such as Physiological, Social/family, and Emotional. Those indexes were significant difference between before and after carrying out nursing intervention. Comparing with same group, each index was significant difference in intervention group. However, comparing with control group, Function, Leukemia specific module, and Total score were significant difference (p < 0.05).

Table 2. Comparison of quality-of-life assessment after carrying out nursing intervention (mean±SD).

Item	Period	Physiological	Social/family	Emotional	Function	Leukemia specific module	Total score
Control group (n = 101)	BN	11.76±5.46	20.83±5.44	16.58±4.81	12.76±6.11	44.15±11.79	106.08±22.85
	AN	13.28±5.88[a]	22.75±6.07[a]	17.49±5.01[a]	11.95±6.24	43.78±12.33	106.25±24.94
Intervention group (n = 101)	BN	12.01±5.16	21.18±5.80	15.97±5.31	12.90±6.83	44.66±12.34	106.72±23.54
	AN	14.94±6.03[a]	22.54±6.64[a]	17.44±5.65[a]	14.76±6.41[ab]	48.91±11.64[ab]	118.59±23.91[ab]

BN = Before nursing intervention
AN = After nursing intervention
[a] = There were significant differences between the same groups (p < 0.05)
[b] = There was a significant difference compared to the control group (p < 0.05)

The Table 3 blew shows the change of physical functional status during nursing intervention. Before carrying out nursing intervention, the Physical functional status of two groups participants was no significant difference. After carrying out nursing intervention, we observed that intervention group participants had better physical functional status, their physical functional status assessment was significant higher compare with control group participants.

Table 3. *Physical functional status assessment by Karnofsky Performance Scale (mean±SD).*

Item	KPS	
	Before carrying out nursing intervention	**After carrying out nursing intervention**
Control group (n = 101)	62.14±11.43	77.37±9.48
Intervention group (n = 101)	61.89±12.57	83.74±10.12
t	0.931	12.438
P value	0.174	< 0.005

4. Discussion

In this study, we demonstrated that continuous nursing intervention can improve quality of life in patients with acute leukemia. To clarify the effect of continuous nursing intervention on quality of life in patients with acute leukemia, we performed a randomized controlled trial and comparison of quality of life and physical functional status. We compared not only changes in the same group before and after the nursing intervention, but also changes in outcomes between groups with different types of nursing intervention. Our results showed continuous nursing intervention led to the patients with acute leukemia had better quality of life and physical functional status compare with the patients who received common nursing intervention.

As shown in Table 2, we found that continuous nursing intervention had better effect compare with common nursing intervention. Furthermore, continuing nursing interventions were better than common nursing interventions in only three areas of quality of life, including function, leukemia specific module, and total score. As shown in Table 3, the participants of two groups were significant difference after carrying out nursing intervention (p < 0.005). The participants who received continuous nursing intervention had better physical functional status than these with common nursing intervention. Compare with common nursing intervention, continuing nursing interventions is continuous and long term. It is more likely to improve patients by changing their behavior so that patients' quality of life and physical function are imperceptibly improved over the long term.

several studies in related fields clearly demonstrated that continuous nursing intervention had better effect compare with common nursing intervention for patients' quality of life and physical function. Their reports also indicated the effect of continuous nursing intervention is continuous and long term [13, 14]. Likewise, long-term changes in patient behavior are better than short-term changes in patient status in long-term nursing interventions [15, 16].

In limitation, our subject were patients with acute leukemia, so it is not known whether our results are application to the patient with other diseases. Also, because we examined only 202 patients, the result of this study may have been due to chance. The results must be confirmed in a large study.

Therefore, continuous nursing intervention may be a useful tool for the patients who had Long-term illness or persistent disease. In addition, this nursing intervention provide better improvement to patients with acute leukemia, that it can lead to the patients with acute leukemia had better quality of life and physical function in treatment.

5. Conclusion

In summary, continuous nursing intervention can improve quality of life and physical function in patients with acute leukemia in long term. compared with common nursing intervention, continuous nursing intervention is more likely to improve patients by changing their behavior so that patients' quality of life and physical function are imperceptibly improved over the long term.

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