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Original Article

A feasibility analysis of implementing transitional care for malignant lymphoma patients undergoing chemotherapy

Yang He[1], Huiling Qiu[1], Weiyi Zhu[2]

[1]*Department of Nurse, State Key Laboratory of Medical Genomics, Shanghai Institute of Haematology, National Research Center for Translational Medicine at Shanghai, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China;* [2]*Department of Nurse, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China*

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Abstract: Objective: To explore the feasibility of implementing transitional care for patients with malignant lymphoma after chemotherapy, and to explore the impact of transitional care on their quality of life and self-management efficacy. Methods: 139 patients with malignant lymphoma undergoing chemotherapy in our hospital were recruited for this study and were randomly divided into a study group (69 cases) and a control group (70 cases). Transitional care was implemented for the patients in the study group, and routine care was given to the patients in the control group. After 6 mouths' follow-up care and observation, the EORTC QLQ-C30 (European Organization for Research and Treatment of Cancer quality of life questionnaire, C30) (the Chinese version) and the SUPPH (Strategies Used by People to Promote Health) (the Chinese version) scores were compared between two groups during the first, third, and sixth courses of chemotherapy. The unhealthy emotion scores before and after the intervention were compared between the two groups. Results: During the third course of chemotherapy, the emotional functioning and global health status scores from the EORTC QLQ-C30 in the study group were higher than the corresponding scores in the control group ($P<0.05$), and the dimensionalities and total scores in the SUPPH scale were higher than they were in the control group ($P<0.05$). During the sixth course of chemotherapy, the functional scale, symptom scale, and single item scores in the EORTC QLQ-C30 in the study group were higher than they were in the control group, and the dimensionalities and total scores in the SUPPH scale were also higher than they were in the control group ($P<0.05$). There were no significant differences in the self-rating anxiety scale (SAS) and self-rating depression scale (SDS) scores between the two groups before the intervention, and the SAS and SDS scores in the study group were lower than they were in the control group after the intervention ($P<0.05$). Conclusion: Transitional care can help enhance the self-efficacy and self-management abilities of patients with malignant lymphoma undergoing chemotherapy and can also greatly improve patients' quality of life, especially their social functioning.

Keywords: Malignant lymphoma, chemotherapy, transitional care, feasibility analysis

Introduction

Malignant lymphoma refers to a malignant tumor that originates in the lymph nodes and lymphoid tissue outside the lymph nodes. It is an umbrella term for malignant tumors that originate in the lymphatic hematopoietic system. The main clinical manifestation of the disease is painless lymphadenopathy, which can involve various tissues and organs of the whole body. Most patients with lymphoma have systemic symptoms such as fever, night sweats, emaciation, and itchy skin as well as an enlargement of the lymph nodes [1-3]. According to the pathology, and the clinical characteristics and prognosis of lymphoma, it is often divided into two categories: non-Hodgkin lymphoma and Hodgkin lymphoma, and it is further subdivided into 37 subtypes. There are some differences in the clinical manifestations of the different types. Because the diagnosis of lymphoma mainly depends on the pathological and immunological examination of the tumor tissue, and the early lymphoma symptoms are not obvious, the rates of missed diagnoses and misdiagnoses are high [4-6].

Epidemiological studies show that there is a significant difference in the distribution of malignant lymphomas in the world. The incidence of this disease in western countries is significantly higher than it is in Asian countries. According to an International Anti-Cancer Union report, malignant lymphoma ranks seventh among malignant tumors in developed countries and ninth in developing countries. Italy, Canada, and the United States are high prevalence areas for malignant lymphoma, and Western Europe, China, and Japan are low prevalence areas. Malignant lymphoma has two high-risk age groups, which consist of people between 15-34 years old and those above 50 years old [7-9]. In recent years, with the adjustments in Chinese residents' lifestyles, changes in their dietary structure, and the gradual emergence of the population aging trend, the incidence of malignant lymphoma has been increasing yearly, and the disease has brought a huge burden to the development of the country and society. With the improvements in the chemotherapy regimens for lymphoma, the long-term survival rates of patients with various types of lymphoma have significantly improved. However, due to the long period of chemotherapy and the complicated treatment plan, combined with the significant toxic and side effects of the chemotherapy drugs, the treatment will cause physical and psychological damage to patients and seriously reduce their quality of life. The data show that about 42% of patients with malignant lymphoma undergoing chemotherapy develop severe oral mucositis, and 67% of the patients suffer from malnutrition [10, 11]. A good nursing intervention can reduce the incidence of the adverse reactions of chemotherapy and meanwhile alleviate the patient's bad mood.

Transitional care refers to the continuous care of patients from hospital to home, and continuous post-discharge home interview and nursing guidance. This model of care has achieved good results in the out-of-hospital intervention of various diseases [12]. This study aims to analyze the feasibility of implementing transitional care for patients with malignant lymphoma undergoing chemotherapy, hoping to provide a theoretical basis for improving the quality of life and self-management efficacy of patients with malignant lymphoma undergoing chemotherapy.

Materials and methods

General information

139 patients with malignant lymphoma undergoing chemotherapy in our hospital from January 2018 to March 2019 were recruited for this study and randomly divided into a study group (69 patients) and a control group (70 patients).

Inclusion criteria: (1) Patients diagnosed with malignant lymphoma through a pathological examination and undergoing chemotherapy [13], (2) Patients with a clear consciousness matching up the investigation, (3) Patients with complete medical records, and (4) Patients ≥18 years old.

Exclusion criteria: (1) Patients also suffering from psychiatric disorders, (2) Patients also suffering from severe liver and kidney dysfunction, (3) Patients with an expected survival time of ≤6 months, (4) Patients with poor nursing compliance, and (5) Pregnant or lactating women.

The removal criteria included: (1) Voluntary withdrawal during the intervention period, and (2) Loss of follow-up during the intervention period.

Intervention methods

The patients in the control group were given routine chemotherapy care for malignant lymphoma, including dietary intervention, skin care, and psychological help, etc. At the same time, the regular re-examination system was strictly implemented in order to closely observe the dynamics of the patients' physical functioning and to carry out the corresponding treatments. This study was approved by the Ethics Committee of Ruijin Hospital, Shanghai Jiao Tong University School of Medicine. All the study participants provided written informed consent before participating in the study.

In addition to the treatment provided to the control group, the patients in the study group were also given transitional care. On the day of a patient's discharge, the responsible nurse formulated the out-of-hospital nursing requirements based on the patient's condition, including medication, follow-up visits, and routine

self-protection measures. Transitional care for the patients was carried out by telephone, WeChat and Internet. The specific regimen was as follows.

Establish a transitional care team, consisting of a senior nurse, a doctor, and four responsible nurses. The purpose is to mobilize the power of the hospital and the patient's family to provide uninterrupted transitional care for the patient. The team is mainly responsible for the patient's condition assessment, consultation and guidance, and follow-up education.

Carry out training for the transitional care team. The main training content includes the common complications of malignant lymphoma chemotherapy, and transitional care points. At the same time, the nursing intervention regimen was actively discussed in regular meetings.

Carry out the transitional care. Before discharge, the transitional care team and the patient's attending doctor would evaluate the patient's condition and develop a personalized discharge regimen according to the treatment situation, and then distribute a health guidance manual to the patient and his family, which mainly included disease guidance and precautions. Requiring the patients and their families to actively communicate in case of problems, the team chatted with them by a patient network group (WeChat group, QQ group, etc.). The team staff would carry out untimed health education and answer questions and would share nursing matters needing attention. At the same time, regular meetings were organized to encourage the patients to support each other. Follow-up visits were carried out as appropriate. In addition to providing reminders for the periodic reexaminations, the team staff can also carried out follow-up visits according to the actual situation of the patients and launched interviews for patients with worsening conditions to carry on the medical support in cooperation with the community medical institutions.

Outcome measurement and evaluation standards

The patients' quality of life during the different intervention periods: The EORTC QLQ-C30 (the Chinese version) was used to assess the quality of life of the patients in the two groups during the first course, the third course, and the sixth course of chemotherapy. The scale is composed of 15 items, which includes 5 functional scales (physical role, and cognitive, emotional, and social functioning), 3 symptom scales (fatigue, pain, and nausea and vomiting), a global health status, and 6 single items (dyspnea, insomnia, appetite loss, constipation, diarrhea and financial difficulties). The total possible score is 100 points. The higher the score, the better the quality of life [14].

Self-management efficacy of patients during the different intervention periods: The SUPPH Scale (the Chinese version) was used to evaluate the self-management efficacy of the patients in the two groups during the first course, the third course, and the sixth course of chemotherapy. The scale has three parts: positive attitude, self-decision, and self-decompression, with a total of 29 items. A 1-5 level rating method is used: 1 means no confidence, 2 means little confidence, 3 means confidence, 4 means a lot of confidence, and 5 means a high abundance of confidence. The higher the score is, the better the self-management efficacy [15].

Unhealthy emotion scores of the patients during the different intervention periods: The self-rating anxiety scale (SAS) and the self-rating depression scale (SDS) were used to evaluate the unhealthy emotions of the patients in the two groups before the intervention, during the first, third, and sixth courses of chemotherapy, and the differences between the two groups were compared. The SAS scale contains 20 items that can reflect patient anxiety, including 15 positive scores and 5 reverse scores, and which adopts a 1-4 scoring system. In China, the national norm of 49 points or below is considered to be no anxiety, 50-59 is considered mild anxiety, 60-69 is considered moderate anxiety, and 70 and above is considered severe anxiety. The SDS scale consists of 20 items, including 10 positive scores and 10 reverse scores, and which adopts a 1-4 four-level scoring system. In China, the national norm of 52 points or below is considered to be no depression, 53-62 is considered mild depression, 63-72 is considered moderate depression, and 73 and above is considered severe depression.

Statistical analysis

SPSS 20.0 software was used for the statistical analysis. The measurement data were ex-

Table 1. Comparison of the general clinical indexes of the patients in the two groups ($\bar{x} \pm s$)/[n (%)]

General clinical indexes		Study group (n=69)	Control group (n=70)	t/X^2	*P*
Gender	Male	30	30	0.005	0.941
	Female	39	40		
Average age (year)		50.19±4.44	49.98±4.76	0.269	0.788
Average weight (kg)		61.28±3.21	62.19±3.61	1.57	0.119
educational level	illiterate	9	10	0.123	0.767
	Elementary education	17	16		
	junior middle school education	20	21		
	Academic	23	23		
Marital status	Married	50	51	0.223	0.678
	Single	7	7		
	Divorced	7	6		
	Widowed	5	6		
family income	<1000	9	8	0.331	0.671
	1000-3000	30	30		
	>3000	30	32		
Profession	In-service	8	9	0.443	0.651
	Retired	20	20		
	Freelance	21	20		
	Peasant	20	21		
Residence	Rural	29	30	0.01	0.921
	Urban	40	40		

pressed as ($\bar{x} \pm S$) and used Student's t tests. The count data were expressed as n (%) and used χ^2 tests. The statistical analysis of the continuous variables at the different time points was conducted using Student's t tests, and P<0.05 was considered statistically significant [16].

Results

Comparison of the general clinical indexes of the patients in the two groups

It was found that the general clinical indexes such as gender, average age, average weight, educational level, family income, marital status, and residence of the patients in the two groups were comparable and did not have statistically significant differences (P>0.05) (**Table 1**).

Comparison of the quality of life scores in each dimensionality between the two groups during the different periods of chemotherapy

The functional scale and single item scores of the patients in the study group were higher than those in the control group during the third and sixth courses of chemotherapy (P<0.05). The scores of the symptom scale of the patients in the study group were higher than those in the control group during the sixth course of chemotherapy (P<0.05) (**Figure 1**).

Comparison of the self-management efficacy scores between the two groups during the different chemotherapy periods

There was no statistically significant difference in the SUPPH scale scores between the two groups during the first course of chemotherapy (P>0.05). The SUPPH scale scores of the patients in the study group were higher than they were in the control group during the third and sixth courses of chemotherapy (P<0.05) (**Figure 2**).

Comparison of the anxiety scores between the two groups before and after the chemotherapy

After the evaluation, it was found that there was no significant difference in the SAS scores in the two groups before the intervention

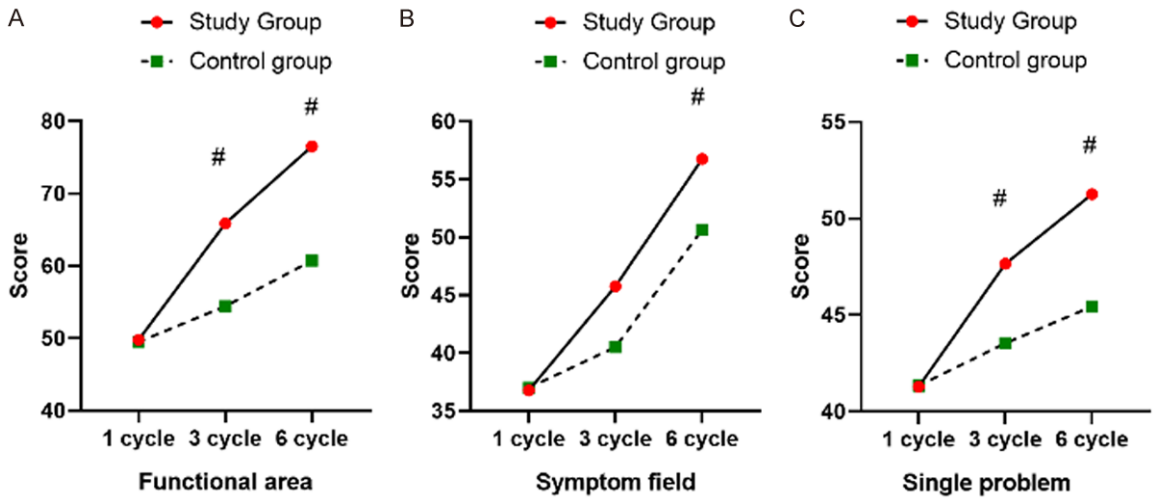

Figure 1. Comparison of the quality of life scores between the two groups during the different chemotherapy periods. The functional scale (A) and single items (C) scores of the patients in the study group were higher than those in the control group during the third and sixth courses of chemotherapy ($P<0.05$). The symptom scale scores of the patients in the study group were higher than they were in the control group during the sixth course of chemotherapy ($P<0.05$) (B). "#" indicates that the difference between the two groups is statistically significant.

($P>0.05$). During the first, third, and sixth courses of the chemotherapy, the SAS scores of the study group were significantly lower than they were in the control group, with a significant difference between the groups ($P<0.05$) (**Figure 3**).

Comparison of the depression scores between the two groups before and after the chemotherapy

After the evaluation, it was found that there was no significant difference in the SDS scores between the two groups before the intervention ($P>0.05$). During the first, third, and sixth courses of the chemotherapy, the SDS scores of the study group were significantly lower than those of the control group, with a significant difference between the groups ($P<0.05$) (**Figure 4**).

Discussion

Transitional care refers to a nursing intervention model that ensures that patients can receive different levels of cooperative and continuous care in different health care institutions through a series of action designs. Originating from a clinical nursing test at the Pennsylvania School of Nursing, the transitional model has been gradually applied to the care of various chronic diseases and has received more and more attention from medical workers [17, 18]. In recent years, humanism has become more intense in nursing work. The new nursing concept abandons the traditional concept of taking disease as the center and turns it into the center of patient care. It implements humanistic care in the entire process of patient treatment, focusing on the use of psychological guidance and self-potency development to improve patient prognoses.

Transitional care was introduced into the Hong Kong area of China and first used in clinical practice in 2002. The Taiwan area of China first proposed the "4C" (comprehensiveness, collaboration, continuity, and coordination) transitional care model. It is popularized and used in clinical treatment and out-of-hospital intervention for patients with various chronic diseases [19]. Clinical practice has found that transitional care can significantly improve the quality of life of stroke patients outside the hospital, enhance their self-care ability and self-efficacy. A study indicated that transitional care can significantly reduce the incidence of adverse emotions such as anxiety and depression for out-of-hospital patients, which can help improve treatment compliance [20]. Statistics indicate that since 2008, transitional care has been promoted and applied to many diseases such as hypertension, diabetes, cardiovascular disease, and tumors, etc. The research results show that patients' self-care consciousness and mastery of health knowledge are significantly improved after intervention [21].

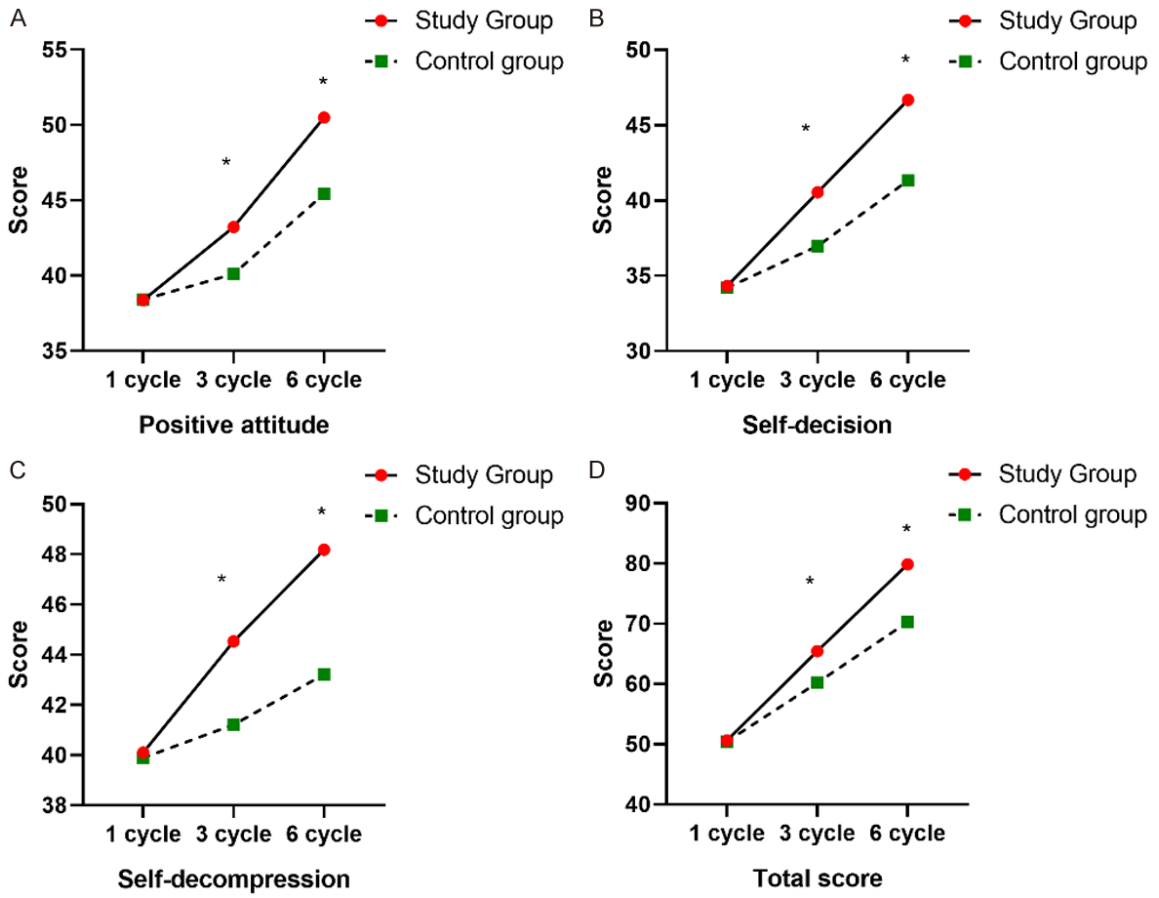

Figure 2. Comparison of the self-management efficacy scores between the two groups during the different periods of chemotherapy. The positive attitude (A), self-decision (B), and self-decompression (C) scores of the patients in the study group were higher than they were in the control group during the third and sixth courses of chemotherapy ($P<0.05$). The total scores in the study group were higher than those in the control group during the third and sixth courses of chemotherapy ($P<0.05$) (D). * indicates that the difference between the two groups is statistically significant.

Malignant lymphoma is a malignant tumor that can pose a serious threat to human health. It is one of the fastest-rising diseases in recent years. A global epidemiological study showed that with 380,000 new cases of lymphoma worldwide in 2012, it ranks 8th among malignant tumors. Domestic research also indicated that the incidence and mortality of malignant lymphomas have been increasing yearly [22]. A systemic disease, lymphoma can invade almost any organ and tissue in the body. Chemotherapy is one of the main treatments for the disease. However, due to the long treatment course, complicated treatment regimen, and great toxic and side effects, most patients undergoing chemotherapy will experience symptoms such as bone marrow suppression, hair loss, gastrointestinal toxicity, immunosuppression, etc., which damages the patient's body function and mental health, and may even aggravate the illness and shorten the survival time of the patient. It is urgent to take appropriate nursing interventions for patients with malignant lymphoma to alleviate the impact of the toxic and side effects on the patients' quality of life.

In this study, the feasibility of implementing transitional care for patients with malignant lymphoma undergoing chemotherapy was analyzed by setting up different groups. The results showed that compared with the patients in the control group who were given routine care, the patients in the study group with transitional care had better scores on the standard scales. By comparing the scores on the functional scales, the symptom scales, and the single items in the EORTC QLQ-C30 scale at different time points, it was found that the patients in

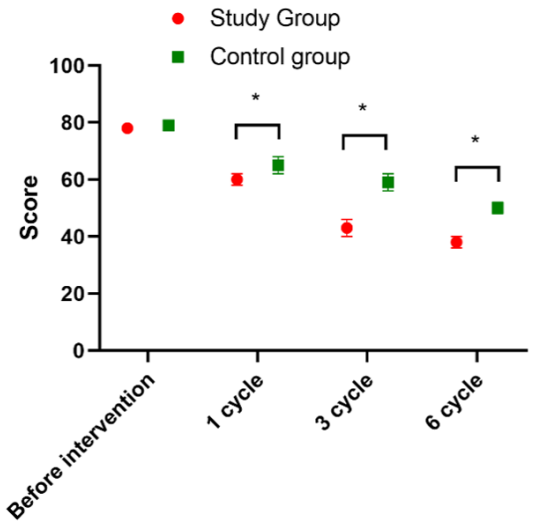

Figure 3. Comparison of SAS scores between the two groups before and after the intervention. There was no significant difference in the SAS scores between the two groups before the intervention (P>0.05). During the first, third, and sixth courses of chemotherapy, the SAS scores of the patients in the study group were significantly lower than they were in the control group, with significant differences between the groups (P<0.05). * indicates that the difference between the two groups is statistically significant.

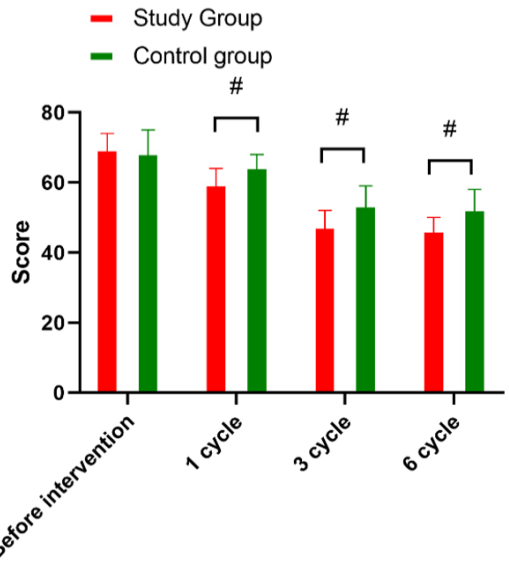

Figure 4. Comparison of the SDS scores between the two groups before and after the intervention. There was no significant difference in the SDS scores between the two groups before the intervention (P>0.05). During the first, third, and sixth courses of chemotherapy, the SDS scores of the patients in the study group were significantly lower than they were in the control group, with significant differences between the groups (P<0.05). # indicates that the difference between the two groups is statistically significant.

the study group scored better in emotional functioning, suggesting that transitional care can help soothe the patients' emotions. At the same time, the global health status scores of the patients in study group were also higher than they were in the control group, suggesting that the patients in the study group had better quality of life. A study pointed out that patients with malignant tumors undergoing chemotherapy often had more significant unhealthy emotions for a variety of reasons, including worries about the illness, economic pressure, physical pain, etc. [23, 24]. There are significant differences in the functional scale scores in this study. The reason may be that transitional care requires medical staff to maintain long-term contact with the patients and provide them with necessary health knowledge, which can make the patients feel that they are being cared for. Meanwhile the soothing and question answering by the medical staff can also help stabilize a patient's emotions and relax the patient's body and mind, so that the patient can establish a positive treatment attitude and face up to life and the disease [25, 26]. The patient salon mentioned can provide a platform for patients to communicate with each other, so that patients can get more treatment experience, and they can also get encouragement and support from each other. These have virtually increased the patient's confidence in treatment and improved the patient's clinical symptoms.

By comparing the self-management efficacy between the two groups at different times, the results showed that the positive attitude, self-decision, self-decompression and self-management efficacy scores in the study group were significantly higher than those in the control group. A study showed that self-efficacy would have a certain impact on the treatment effect of patients with malignant tumors undergoing chemotherapy, and good self-management ability will help with the implementation of the treatment regimen [27]. The transitional care implemented in the study group can promote the patient's self-realization, improve the patient's will and resolution to face up to the disease, help transform the patient's health awareness, and reshape the patient's self-personality and self-cognition through frequent

communication with others. At the same time, the psychological counseling of the medical staff, the companionship and encouragement of the family, and the communication and comfort of the fellow sufferers are all sources of motivation and confidence for patients to adhere to treatment, which helps improve the patients' self-management efficacy and lay a good foundation for subsequent treatment. As for the difference between the two groups of patients' negative emotions after intervention, some studies have shown that most of the patients with malignant lymphoma, affected by the disease, will have significant anxiety and depression, even affecting the development of their treatment. Some scholars have carried out targeted psychological intervention for the patients with malignant lymphoma, and the results showed that the patients' psychological state has been significantly improved, and their unhealthy emotions have been significantly alleviated, which is similar to the results of this study.

To sum up, transitional care can help improve the self-efficacy and self-management abilities of patients with malignant lymphoma undergoing chemotherapy, and it can also greatly improve the quality of life of patients, especially their social functioning. The shortcomings of this study are as follows: (1) Due to limited manpower and time, the intervention time for the enrolled patients was insufficient, so there is a lack of a long-term intervention effect analysis for the patients with malignant lymphoma undergoing chemotherapy; (2) The transitional care methods mainly relied on the implementation of the Internet or mobile phones are narrowly focused, which limits the observation of patients in remote areas to a certain extent. In view of the above deficiencies, we plan to carry out clinical studies with a larger sample size, longer follow-up times, and more diverse intervention methods, in order to provide a more informative theoretical reference for improving the quality of life of patients with malignant lymphoma undergoing chemotherapy.

Disclosure of conflict of interest

None.

Address correspondence to: Weiyi Zhu, Department of Nurse, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China. Tel: +86-18917762676; E-mail: hy21369@rjh.com.cn; Huiling Qiu, Department of Nurse, State Key Laboratory of Medical Genomics, Shanghai Institute of Haematology, National Research Center for Translational Medicine at Shanghai, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, 5th Floor, Building 2, No. 197, Ruijin Second Road, Huangpu District, Shanghai, China. Tel: +86-13636578764; E-mail: huilingqiu100@163.com

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