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Implementation and Evaluation of Discharge Planning for Patients Undergoing Umbilical Cord Blood Transplantation

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Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
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Conflict of interest: None declared

Background: Umbilical cord blood transplantation (UCBT) patients have high rates of unplanned readmissions and poor quality of life (QoL). The aim of this study was to evaluate the effects of discharge planning on unplanned readmissions, self-efficacy, QoL, and clinical outcomes.

Material/Methods: Patients who received their first UCBT from April 2022 to March 2023 were included. Participants (n=72) were assigned to a control group (CG: received usual care) or an intervention group (IG: received discharge planning from admission to 100 days after UCBT). The cumulative readmission rates 30 days after discharge and 100 days after UCBT were analyzed using the log-rank test. Self-efficacy and QoL were assessed at admission and 100 days after UCBT using the General Self-Efficacy Scale and FACT-BMT version 4, clinical outcomes derived from medical records.

Results: Sixty-six patients completed the study. Discharge planning did not reduce readmission rates 30 days after discharge (20.59% vs 31.25%, P=0.376) or 100 days after UCBT (29.41% vs 34.38%, P=0.629). However, the IG showed significantly better self-efficacy (P<0.001), and except for social and emotional well-being, all the other dimensions and 3 total scores of FACT-BMT in the IG were higher than for the controls at 100 days after UCBT (P<0.05).

Conclusions: The discharge planning program can improve self-efficacy and QoL of UCBT recipients. The implementation of discharge planning for patients undergoing UCBT was necessary for successful hospital-to-home transitions.

Keywords: Discharge Planning • Stem Cell Transplantation • Hospital Readmissin • Quality of Life

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Introduction

Umbilical cord blood transplantation (UCBT) is an important curative treatment for many malignant or nonmalignant hematologic disorders, especially for patients who lack a matched family donor [1]. With the continuous progress of transplantation technology and supportive care, the number of UCBTs performed and survival rates are significantly increasing, and more than 40 000 UCBTs have been performed worldwide [2]. However, patients treated with UCBT have higher rates of readmission than with other kinds of hematopoietic stem cell transplantation (HSCT) [3]. In addition, HSCT recipients face severe challenges after discharge, such as continued immunosuppression and management of transplant-related complications, which seriously affects their quality of life (QoL) [4,5].

Previous studies have demonstrated that discharge planning can reduce hospital readmissions within 30 days after discharge, and promote self-efficacy and QoL of patients with other diseases [6-8]. Kucharczuk et al [6] reported that the 30-day unplanned readmission rate was decreased by 29.0% after an evidence-based discharge planning intervention. Hu et al [7] conducted an innovative transitional care program for kidney transplant recipients, which reduced the patients' readmission rates within 30 days after discharge. Lin et al [8] reported that a hospital-to-home transitional care program improved the self-efficacy and QoL of the stroke survivors, and reduced unplanned hospital readmissions during the 24-week follow-up. To date, only 1 study has explored the feasibility of a discharge intervention named "Rooming in" for caregivers of pediatric HSCT recipients, and they demonstrated that "Rooming in" could lower the coping difficulty scores of caregivers [9]. However, no study has focused on the effects of discharge planning on UCBT recipients; in addition, the impact of discharge planning on patients' readmission rates, self-efficacy, QoL, and clinical outcomes are still uncertain.

Our study aimed to determine whether discharge planning was more beneficial for UCBT recipients than usual care. The hypotheses of this study were as follows: (1) UCBT recipients in the discharge planning group will have a lower rate of unplanned readmissions than those in the controls, and (2) UCBT recipients in the discharge planning group will have higher self-efficacy and QoL, and better clinical outcomes than those in the control group.

Material and Methods

Patients

The study was conducted from April 2022 to March 2023 in the First Affiliated Hospital of University of Science and Technology of China (USTC). A total of 80 patients who received their first UCBT were enrolled in the study. Eligibility criteria: (1) age ≥18 years; (2) Karnofsky performance score ≥70; (3) ability to read and speak Chinese; and (4) agreement to and signing of the informed consent form. The exclusion criteria were as follows: (1) evidence of cardiovascular, orthopedic, or neurological deficits; (2) cognitive dysfunction; and (3) a life expectancy less than 3 months. Seventy-two patients met the inclusion criteria and participated in the study. At admission, patients were assigned to a control group (CG: from April 2022 to August 2022) or an intervention group (IG: from September 2022 to April 2023) by comparing usual care with discharge planning. The study protocol was approved by the ethics commission of the First Affiliated Hospital of USTC (NO. 2022KY-039).

Intervention

Intervention Group

A nurse-led multidisciplinary team was organized to implement discharge planning for UCBT recipients in September 2022, which comprised 1 chief physician, 1 physical therapist, and 5 nurses. The discharge planning program was based on the theory of "Timing It Right" [10], which was conducted 5-7 days before admission to 100 days after UCBT. The program included 5 different phases: event/UCBT, stabilization, preparation, implementation, and adaptation (**Table 1**). Patients were assessed face-to-face before admission and were provided individualized professional educative programs during hospitalization. Patients were discharged from the hospital once their neutrophil count had recovered and they were free of any severe complications. Following hospital discharge, all patients were asked to remain close to the hospital with their caregivers until 100 days after UCBT, and they were reviewed by HSCT physicians once a week. In addition, patients received weekly telephone follow-ups and monthly home visits from the research team, and patients could consult the WeChat group or the HSCT network consulting clinic at any time when needed.

Control Group

During the hospital stay, all patients were reviewed by physicians individually and received professional care from the nursing team daily. The day before discharge, instructions on diet, medication, exercise, emotional support, and symptom self-observation were provided by HSCT nurses. Following discharge, the patients received the same observation at clinics.

Measures

The primary outcome measures were unplanned hospital readmissions within 30 days after discharge and at 100 days after

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Table 1. Discharge planning based on the theory of "Timing It Right."

Phase	Time	Setting	Care content and patient needs
Event/UCBT	5-7 days before Admission Short duration	Home	Information: preparation for admission Emotional: psychological and social support assessment Training: physical activity level assessment Methods: offering health education online, face-to-face assessment at admission
Stabilization	Acute phase of UCBT Moderate duration	Hospital	Information: management of symptom and complications Emotional: mental and relaxation training, social support Training: moderate intensity exercise intervention, 3 days/weekly Methods: individualized professional care, face-to-face coaching
Preparation	After engraftment Moderate duration	Hospital	Information: preparation for discharge Emotional: mental and relaxation training, social support Training: moderate intensity exercise intervention, 5 days/weekly Methods: individualized professional care, face to face coaching
Implementation	First few weeks after discharge Moderate duration	Home	Information: management of every-day home care Emotional: mental and relaxation training, social support Training: moderate intensity exercise intervention, 5 days/weekly Methods: individualized home care guidance, telephone follow-up, home visit, online coaching via WeChat group and HSCT network consulting clinic
Adaptation	After a period of adjustment in the home Long duration	Home	Information: returning to their community Emotional: mental and relaxation training, social support Training: moderate to vigorous intensity exercise intervention, 5 days/weekly Methods: individualized home care guidance, telephone follow-up, home visit, online coaching via WeChat group and HSCT network consulting clinic

UCBT, a key time point in transplant medicine. Readmissions were identified as events due to transplant-related reasons following an index admission for UCBT.

Secondary outcomes included self-efficacy, QoL, and clinical outcomes. Self-efficacy and QoL were evaluated at admission and at 100 days after UCBT. Clinical outcomes were derived from medical records.

Self-efficacy was documented using the 10-item General Self-Efficacy Scale (GSES), which was developed by Schwarzer et al [11], to evaluate the participants' confidence to cope with stressful or challenging demands. The scale was rated on a 4-point Likert scale, with each item ranging from 1 (not at all confident) to 4 (total confidence); a higher total score corresponded to higher self-efficacy. The internal consistency of the Chinese version was 0.91 [12].

QoL was assessed via the validated Chinese version of the Functional Assessment of Cancer Therapy-Bone Marrow Transplantation (FACT-BMT) version 4 [13]. The scale is a validated tool developed by McQuellon et al [14] and consists of 5 dimensions: physical well-being (PWB, 7 items), social well-being (SWB, 7 items), emotional well-being (EWB, 6 items), functional well-being (FWB, 7 items), and bone marrow transplant subscale (BMTS, 10 items). The questionnaire was scored using a 5-point Likert scale, with each item ranging from 0 (not at all) to 4 (very much). For the negative statements, the score must be converted from 4 to 0, and a higher score demonstrates better QoL. The Cronbach's alpha coefficient of the Chinese version ranged from 0.71 to 0.92 [13].

Clinical outcomes included engraftment kinetics (days to neutrophil engraftment and to platelet engraftment), transplant-related complications (number of infections, grade of acute graft-versus-host-disease [aGVHD], and hemorrhagic cystitis), weight loss, and hospital length of stay (LOS).

Statistical Analysis

Data were analyzed using SPSS for Windows Version 22.0 (SPSS, Inc., Chicago, IL, USA). For demographic and medical variables, the normal data were presented as the means and standard deviations (mean±SD) and analyzed with an independent *t* test. Nonnormal data were presented as the median with ranges (median [range]) and compared by the Mann-Whitney *U* test,

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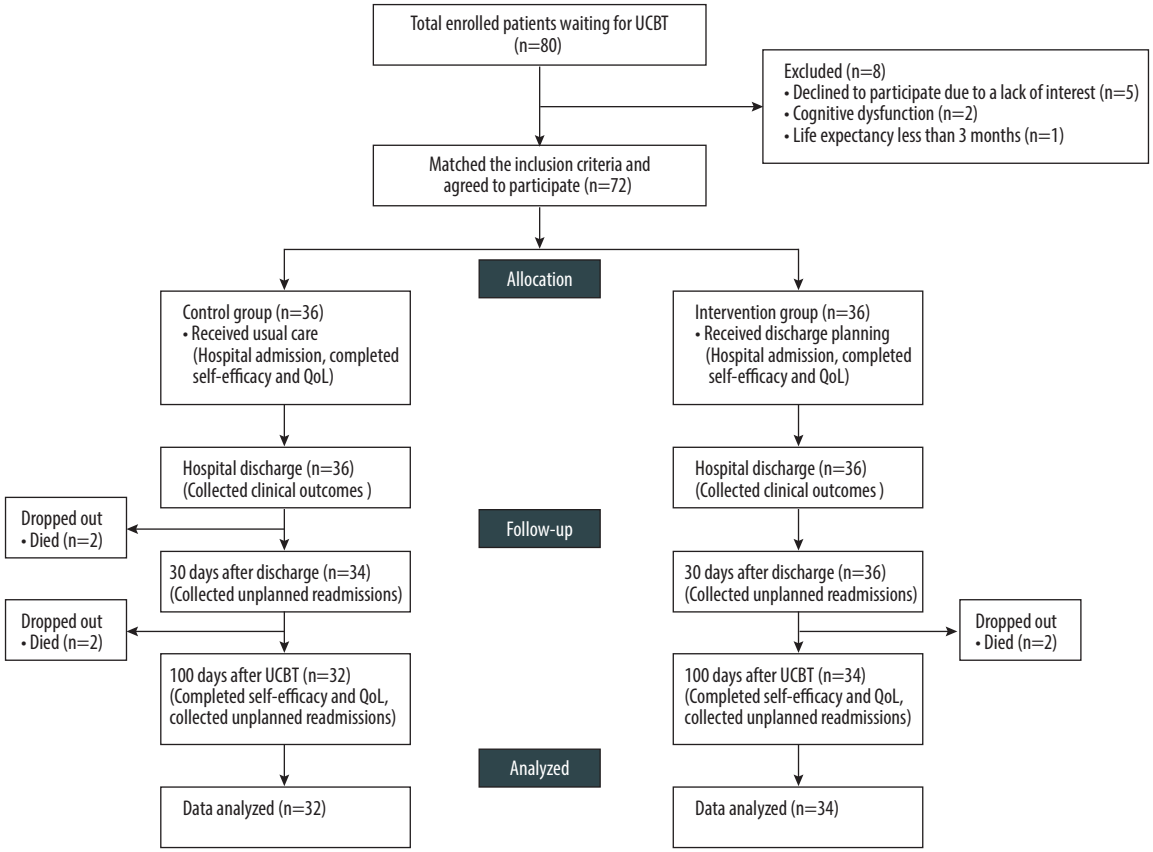

Figure 1. The recruitment flow diagram. (*Word 2007, Microsoft Office*).

while categorical data were presented as numbers (n) and examined by the chi-square test or a Fisher exact test.

Patients who died during their transplant admission and those who died before 30 days from discharge or 100 days after UCBT were excluded. The cumulative unplanned hospital readmission incidences 30 days after discharge and 100 days after UCBT were analyzed using the log-rank test. Between-group intervention effects on self-efficacy and QoL at 100 days after UCBT were assessed using analysis of covariance. When $P<0.05$, the results were considered statistically significant.

Results

Recruitment

The recruitment flow diagram is presented in **Figure 1**. A total of 80 patients who received their first UCBT were recruited, of which 72 met the inclusion criteria and participated in the study, and 6 patients were withdrawn because of death.

Patient and Medical Characteristics

Of the 66 patients – CG: n=32; mean age (37.19±11.52) years; IG: n=34; mean age (36.21±10.41) years) – no significant differences in demographic and medical characteristics were noted (**Table 2**).

Discharge Planning on Unplanned Hospital Readmission

The readmission rates of 30 days after discharge in the CG and IG were 31.25% and 20.59%, respectively (**Figure 2**; $P=0.376$). The cumulative incidences of unplanned readmission at 100 days after UCBT were 34.38% in the CG and 29.41% in the IG (**Figure 3**; $P=0.629$). The main reasons for readmissions were blood product transfusions and aGVHD in the IG, and infection in the CG at 30 days after discharge and 100 days after UCBT (**Supplementary Figure 1**).

Effect of Discharge Planning on Self-Efficacy

The total GSES scores were decreased in the CG (28.31±3.77 vs 28.94±5.68), but the scores were increased in the IG (30.35±3.66 vs 27.65±5.99) at 100 days after UCBT (**Figure 4**; $P<0.001$).

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Table 2. Patient and medical characteristics.

Parameter		CG (n=32)	IG (n=34)	*p* value
Age at transplantion (years)	Mean±SD	37.19±11.52	36.21±10.41	0.717
	Median (range)	33.5 (19, 59)	37 (18, 53)	0.903
Gender	Number			0.418
Male		21	19	
Female		11	15	
BMI (kg/m^2)	Mean±SD	23.99±3.47	23.65±3.90	0.710
Marital status	Number			0.116
Single		11	9	
Married		18	25	
Divorced		3	0	
Education level	Number			0.903
Primary or under		14	16	
Secondary		5	6	
Tertiary or above		13	12	
Employment	Number			0.663
Yes		7	9	
No		25	25	
Primary Diagnosis	Number			0.082
AML/MDS		16	26	
ALL		12	6	
Others		4	2	
KPS	Number			0.585
70-80		12	15	
90-100		20	19	
Time since diagnosis (months)	Median (range)	6.5 (2,216)	6 (2,132)	0.887
Conditioning regimen	Number			0.950
Flu/Bu/Cyclo		30	32	
TBI/Cyclo		2	2	

BMI – body mass index; AML – acute myelogenous leukemia; MDS – myelodysplastic syndrome; ALL – acute lymphoblastic leukemia; KPS – Karnofsky performance score; Flu – fludarabine; Bu – busulfan; Cyclo – cyclophosphamide; TBI – total body irradiation.

Effect of Discharge Planning on QoL

The total scores of QoL were 97.47±8.37 and 107.50±9.41 in the CG and IG at 100 days after UCBT (**Table 3**; *P*<0.001). In addition, the scores of PWB, FWB, BMTS, FACT- general, and FACT- trial outcome index at 100 days after UCBT were also higher in the IG than in the controls (**Table 3**; *P*<0.05).

Effect of Discharge Planning on Clinical Outcomes

No significant differences were found for engraftment kinetics, transplant-related complications, weight loss, or hospital LOS (**Table 4**).

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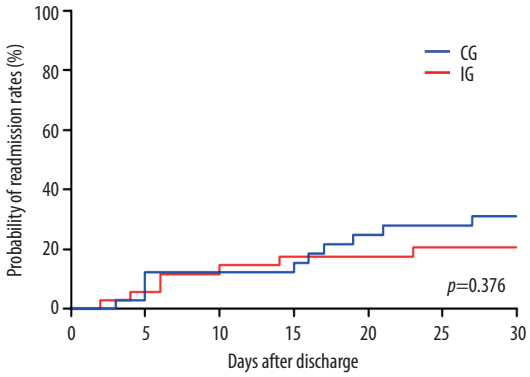

Figure 2. The incidences of 30-day readmission rates after discharge. (*Prism 9, GraphPad Software*).

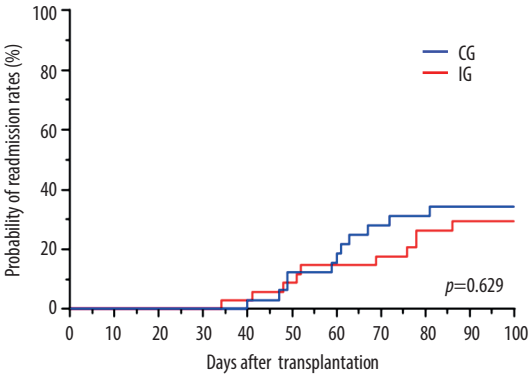

Figure 3. The incidences of 100-day readmission rates after transplantation. (*Prism 9, GraphPad Software*).

Discussion

This is the first study to implement and evaluate discharge planning for patients undergoing UCBT. The findings indicated that discharge planning did not reduce unplanned readmissions. However, it improved UCBT recipients' self-efficacy and QoL.

Discharge planning was not effective at reducing unplanned readmission rates for UCBT recipients. The finding is in line with those of previous studies reporting that discharge planning for older patients did not reduce hospital readmissions [15,16]. However, the result is not consistent with reports that the discharge planning program was associated with lower readmission rates in patients with chronic disease [17,18]. Regarding the incidence of unplanned readmissions, Dhakal et al [3] reported that the overall incidence of 30-day readmission was 24.4% for allo-HSCT. However, cord blood had significantly higher readmission rates than peripheral blood (aOR=2.4; 95% CI=1.83-3.16). Crombie et al [19] showed that 33.3% of

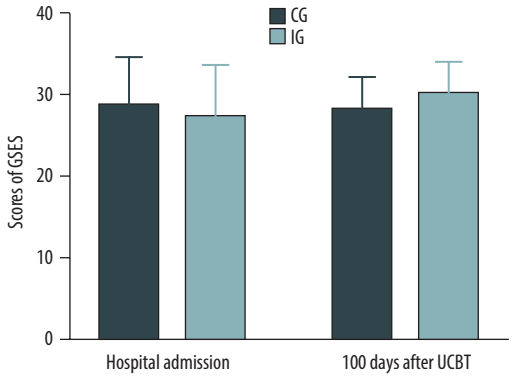

Figure 4. Mean scores of GSES. (*Prism 9, GraphPad Software*).

patients were readmitted within 30 days after discharge, and 46.3% were readmitted by 100 days after UCBT. In the present study, the readmission rates at 30 days after discharge and 100 days after UCBT in the IG were lower than that in other studies, which may be related to long-term LOS. Additionally, patients fully recovered during hospitalization.

It is well known that UCBT is associated with delayed immune reconstitution and a high incidence of aGVHD [20,21]. Delayed immune reconstitution increases infection risks and the need for blood product transfusions, requiring more healthcare resource utilization [22]. Acute GVHD is a common complication of HSCT; approximately 30% of patients who receive UCBT develop aGVHD [21]. Previous studies have confirmed that patients with aGVHD had significantly more medical visits than those with no GVHD within 100 days after HSCT [23,24]. The main reasons for readmissions in the IG were blood product transfusions and aGVHD. However, infection was the most common cause of readmissions in the CG in this study, which is supported by previous reports [19,22,25].

By improving self-efficacy, the positive effect of a discharge plan intervention was demonstrated. This finding is consistent with those of previous studies involving other populations, such as spinal cord injury patients and stroke survivors [8,26]. Liu et al [26] reported that transitional care improved patients' self-efficacy at 12-week and 24-week follow-ups. The improvement in our study might be associated with the nurse-led intervention, which involved both knowledge and skills for self-care during hospitalization. In addition, the WeChat group, HSCT network consulting clinic, and home visits supported solving problems immediately after discharge, all of which contributed to helping patients build their self-confidence.

Patients' QoL was enhanced by the implementation of discharge planning program in UCBT recipients. The results are in line with previous studies, which demonstrated that QoL was improved

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Table 3. Mean scores of FACT-BMT.

Variable	Arm	N	Hospital admission	100 days after UCBT	*p* value
PWB	CG	32	20.75±4.60	17.39±4.17	0.015
	IG	34	21.79±3.88	19.98±3.89	
SWB	CG	32	21.78±4.69	21.14±4.93	0.388
	IG	34	21.80±4.77	22.10±4.02	
EWB	CG	32	20.40±2.89	18.97±2.31	0.920
	IG	34	18.21±3.72	19.09±3.26	
FWB	CG	32	15.90±5.60	14.87±4.26	<0.001
	IG	34	16.85±4.40	18.67±3.90	
BMTS	CG	32	27.72±4.59	25.03±2.19	<0.001
	IG	34	28.32±3.96	27.65±2.32	
FACT-G	CG	32	78.82±12.40	72.38±7.58	<0.001
	IG	34	78.65±11.06	79.85±8.59	
FACT-BMT TOI	CG	32	64.34±11.66	57.38±6.92	<0.001
	IG	34	66.97±9.52	66.24±6.19	
FACT-BMT total	CG	32	106.5±16.06	97.47±8.37	<0.001
	IG	34	106.97±13.72	107.50±9.41	

PWB – physical well-being; SWB – social well-being; EWB – emotional well-being; FWB – functional well-being; BMTS – bone marrow transplant subscale; FACT-G – Functional Assessment of Cancer Therapy general; FACT-BMT – FACT-bone marrow transplantation; FACT-BMT TOI – FACT-BMT trial outcome index.

Table 4. Effects of discharge planning on clinical outcomes.

Outcomes		CG (n=32)	IG (n=34)	p value
Time to neutrophil engraftment (days)	Median (range)	15 (10-23)	16 (12-32)	0.085
Time to platelet engraftment (days)		34 (20-109)	34 (23-98)	0.586
Infections	Number			
bacterial infections		18	14	0.221
fungal infections		7	9	0.663
viral infections		20	18	0.432
aGVHD	Number			0.527
Non-aGVHD		23	24	
Grade 1-2		4	7	
Grade 3-4		5	3	
Hemorrhagic cystitis	Number	10	8	0.482
Loss of weight >10%	Number	14	18	0.455
Hospital LOS	Median (range)	53.5 (35, 79)	49 (33, 72)	0.245

aGVHD – acute graft-versus-host-disease; LOS – length of stay.

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after transition care [8,27]. Improvements in PWB and FWB were closely related to the benefits of the tailored exercise intervention in our program, which helped UCBT recipients maintain a better personal status. A study demonstrated that exercise can increase patients' muscle strength and promote their functional capacity [28]. For BMTS, discharge planning may be effective for improving QoL by the patient-centered novel components, which ensured continuity of care and reduced symptom burden of patients. No changes were found between groups in SWB and EWB, which may be associated with our emotional intervention measures, lack of involvement from psychiatrists, and failure to identify key psychosocial problems and reduce their psychosocial burden. Further research is necessary to guide psychosocial interventions under professional psychiatrists.

Our study had some limitations. First, it was not a randomized trial, and the nature of the study design limited our ability to determine the effectiveness of the discharge plan intervention, but the baseline data of the 2 groups were comparable. Second, the subjects were selected from among UCBT patients, which limits generalizability to other types of transplant patients. Finally, this was a single-center trial, which may have biased our results. The present findings need to be confirmed by larger multicenter randomized studies.

Conclusions

This study demonstrated that discharge planning was useful for improving self-efficacy and QoL in UCBT recipients. Overall, our findings suggest that for successful hospital-to-home transitions, the implementation of discharge planning is important, but further studies are needed to confirm these benefits.

Acknowledgements

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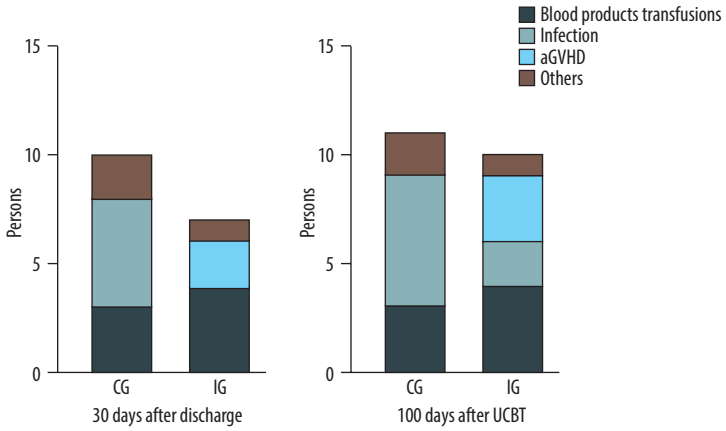
Declaration of Figures' Authenticity

All figures submitted have been created by the authors, who confirm that the images are original with no duplication and have not been previously published in whole or in part.

Supplementary Figure



Supplementary Figure 1. The main reasons for readmissions at 30 days after discharge and 100 days after UCBT in both groups. (*Prism 9, GraphPad Software*).

References:

1. Yun HD, Varma A, Hussain MJ, et al. Clinical relevance of immunobiology in umbilical cord blood transplantation. J Clin Med. 2019;8(11):1968-84
2. Mayani H, Wagner JE, Broxmeyer HE. Cord blood research, banking, and transplantation: Achievements, challenges, and perspectives. Bone Marrow Transplant. 2020;55(1):48-61
3. Dhakal B, Giri S, Levin A, et al. Factors associated with unplanned 30-day readmissions after hematopoietic cell transplantation among US hospitals. JAMA Netw Open. 2019;2(7):e196476
4. Cheon J, Lee YJ, Jo JC, et al. Late complications and quality of life assessment for survivors receiving allogeneic hematopoietic stem cell transplantation. Support Care Cancer. 2021;29(2):975-86
5. Nakagaki M, Gavin NC, Hayes T, et al. Implementation and evaluation of a nurse-allied health clinic for patients after haematopoietic stem cell transplantation. Support Care Cancer. 2022;30(1):647-57
6. Kucharczuk C, Lightheart E, Kodan A, et al. Standardized discharge planning tool leads to earlier discharges and fewer readmissions. J Nurs Care Qual. 2022;37(1):54-60
7. Hu RJ, Gu B, Tan QL, et al. The effects of a transitional care program on discharge readiness, transitional care quality, health services utilization and satisfaction among Chinese kidney transplant recipients: A randomized controlled trial. Int J Nurs Stud. 2020;110:103700

Indexed in: [Science Citation Index Expanded] [Index Medicus/MEDLINE] [Chemical Abstracts] [Scopus]

8. Lin S, Xiao LD, Chamberlain D, et al. Nurse-led health coaching programme to improve hospital-to-home transitional care for stroke survivors: A randomised controlled trial. Patient Educ Couns. 2022;105(4):917-25
9. Gladbach C, Patton LJ, Xu XH, et al. Transition from hospital to home following hematopoietic stem cell transplantation: a feasibility study for "Rooming in". J Pediatr Oncol Nurs. 2021;38(1):42-50.
10. Cameron JI, Gignac MA. "Timing It Right": A conceptual framework for addressing the support needs of family caregivers to stroke survivors from the hospital to the home. Patient Educ Couns. 2008;70(3):305-14
11. Schwarzer R, Jerusalem M. Generalized Self-Efficacy Scale. In J. Weinman. 1995;35-37
12. Zhang J X, Schwarzer R. Measuring optimistic self-beliefs: A Chinese adaptation of the General Self-Efficacy Scale. Psychologia. 1995;38(3):174-81
13. Lau AK, Chang CH, Tai JW, et al. Translation and validation of the Functional Assessment of Cancer Therapy-Bone Marrow Transplant (FACT-BMT) Version 4 quality of life instrument into traditional Chinese. Bone Marrow Transplant. 2002;29(1):41-49
14. McQuellon R, Russell G, Cella D, et al. Quality of life measurement in bone marrow transplantation: Development of the Functional Assessment of Cancer Therapy-Bone Marrow Transplant (FACT-BMT) scale. Bone Marrow Transplant. 1997;19(4):357-68
15. Mabire C, Dwyer A, Garnier A, et al. Effectiveness of nursing discharge planning interventions on health-related outcomes in discharged elderly inpatients: A systematic review. JBI Database System Rev Implement Rep. 2016;14(9):217-60
16. Mabire C, Dwyer A, Garnier A, et al. Meta-analysis of the effectiveness of nursing discharge planning interventions for older inpatients discharged home. J Adv Nurs. 2018;74(4):788-99
17. Zhu QM, Liu J, Hu HY, et al. Effectiveness of nurse-led early discharge planning programmes for hospital inpatients with chronic disease or rehabilitation needs: A systematic review and meta-analysis. J Clin Nurs. 2015;24(19-20):2993-3005
18. Facchinetti G, D'Angelo D, Piredda M, et al. Continuity of care interventions for preventing hospital readmission of older people with chronic diseases: A meta-analysis. Int J Nurs Stud. 2020;101:103396
19. Crombie J, Spring L, Li SL, et al. Readmissions after umbilical cord blood transplantation and impact on overall survival. biol blood marrow transplant. 2017;23(1):113-18
20. Sanchez-Petitto G, Rezvani K, Daher M, et al. Umbilical cord blood transplantation: Connecting its origin to its future. Stem Cells Transl Med. 2023;12(2):55-71
21. Tang B, Zhu X, Zheng C, et al. Retrospective cohort study comparing the outcomes of intravenous busulfan vs. total-body irradiation after single cord blood transplantation. Bone Marrow Transplant. 2019;54(10):1614-24
22. Majhail NS, Miller B, Dean R, et al. Hospitalization and healthcare resource utilization of Omidubicel-Onlv versus umbilical cord blood transplantation for hematologic malignancies: Secondary analysis from a Pivotal Phase 3 Clinical Trial. Transplant Cell Ther. 2023;29(12):749.e1-e5
23. Yu J, Lal L, Anderson A, DuCharme M, et al. Healthcare resource utilization and costs associated with acute graft-versus-host disease following allogeneic hematopoietic cell transplantation. Support Care Cancer. 2020;28(11):5491-99
24. Farhadfar N, Leather HL, Wang S, et al. Severity of acute graft-versus-host disease and associated healthcare resource utilization, cost, and outcomes. Transplant Cell Ther. 2021;27(12):1007.e1-e8
25. Yamagishi Y, Konuma T, Miwa Y, et al. Risk factors and survival impact of readmission after single-unit cord blood transplantation for adults. Int J Hematol. 2019;109(1):115-24
26. Liu T, Xie S, Wang Y, et al. Effects of app-based transitional care on the self-efficacy and quality of life of patients with spinal cord injury in China: Randomized controlled trial. JMIR Mhealth Uhealth. 2021;9(4):e22960
27. Lyu QY, Huang JW, Li YX, et al. Effects of a nurse led web-based transitional care program on the glycemic control and quality of life post hospital discharge in patients with type 2 diabetes: A randomized controlled trial. Int J Nurs Stud. 2021;119:103929
28. Duregon F, Gobbo S, Bullo V, et al. Exercise prescription and tailored physical activity intervention in onco-hematology inpatients, a personalized bedside approach to improve clinical best practice. Hematol Oncol. 2019;37(3):277-84

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