International Journal of Healthcare and Medical Sciences
ISSN(e): 2414-2999, ISSN(p): 2415-5233
Vol. 12, Issue. 2, pp: 22-28, 2026
URL: https://arpgweb.com/journal/journal/13
DOI: https://doi.org/10.32861/ijhms.122.22.28

Academic Research Publishing Group

Original Research Open Access

Analysis of Current Status and Influencing Factors of Discharge Preparation Services for Elderly Patients with Hematological Malignancies

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Article History
Received: 11 June, 2026
Revised: 9 July, 2026
Accepted: 2 August, 2026
Published: 5 August, 2026

Abstract

Objective: This study aims to elucidate the current research status of DPS (discharge preparation services, DPS) for EPHM (elderly patients with hematological malignancies, EPHM), thoroughly investigate their influencing factors, and provide theoretical foundations for optimizing continuous care management for this vulnerable population. Methods: A convenience sampling method was employed to select EPHM hospitalized at the Affiliated Hospital of Zunyi Medical University from January to December 2025. The Readiness for Hospital Discharge Scale (RHDS) was utilized to assess the current status of DPS, satisfaction levels, and recommendations for improving DPS among EPHM. Differences in discharge readiness across various demographic characteristics were compared, and multiple linear stepwise regression analysis was conducted to identify factors influencing DPS for EPHM. Results: Patients demonstrated a moderately high overall level of DPS; however, significant deficiencies were observed in assistance with home activities and medical care assistance. Univariate analysis revealed statistically significant differences in DPS across different age groups and living arrangements ($P<0.05$). Multivariate analysis indicated that, five factors significantly influenced patients' DPS scores ($P<0.05$). The ranking of influence magnitude was as follows: assistance with medical care > self-care knowledge > living arrangement > age > quality of wound/tube care guidance. Conclusion: The department of hematology should integrate DPS as an essential component of nursing management for EPHM. Through early assessment and multidisciplinary collaboration, patient satisfaction with DPS can be enhanced, thereby improving discharge safety and long-term quality of life for patients.

Keywords: EPHM; DPS; Satisfaction; Influencing factors.

1. Introduction

Hematologic malignancies are malignant clonal disorders originating from hematopoietic stem cells or lymphoid tissue, primarily including leukemia, lymphoma, and plasma cell tumors. The global annual incidence rate is approximately 12 per 100,000 people. China reports over 100,000 new cases annually, with a persistent upward trend. The elderly constitute a high-risk group, showing significantly increased incidence after age 60. The median age at diagnosis for acute myeloid leukemia reaches 68 years, while 70% of multiple myeloma patients are over 65 years old [1].

Epidemiological data indicates that China's accelerating aging population is driving an increased burden of hematologic malignancies. Elderly patients often present with comorbidities affecting multiple systems, exhibit poor treatment tolerance, and demonstrate a 30%-50% lower five-year survival rate compared to younger patients [2]. These diseases not only cause life-threatening complications such as bone marrow failure, infections, and hemorrhage, but also impose a significant socioeconomic burden, emerging as a major public health threat to elderly health. Research indicates that elderly patients with hematologic malignancies (EPHM) face higher risks of adverse reactions to chemotherapy, immunotherapy, or targeted therapy, along with increased probabilities of complications including infections, bleeding, and organ dysfunction [3].

Discharge readiness services refer to the patient's ability to safely transition to home or other care settings upon discharge, encompassing disease knowledge, symptom monitoring, medication management, follow-up arrangements, and social resource coordination [4]. Existing research indicates that discharge readiness levels are closely associated with patient readmission rates, complication occurrence, and satisfaction [5]. Is discharge preparation universally applicable for elderly patients? How effective is its implementation within the EPHM discharge preparation framework? Based on these questions, this study conducts an in-depth exploration of discharge preparation services for this vulnerable population.

2. Research Subjects and Methods

2.1. Research Subjects

(1) Sample This study will select 72 EPHM patients from a tertiary hospital. Included are EPHM patients admitted to the Hematology Department of Zunyi Medical University Affiliated Hospital between January and December 2025 with a confirmed diagnosis.

(2) Sample Selection Criteria

Inclusion Criteria:

① Age on less than 60 years old;

② Informed consent to participate in this study;

③ EPHM diagnosis meets the criteria outlined in the Ministry of Health's"Guidelines for Diagnosis and Treatment of Chronic Hematologic Malignancies" (9^{th} Edition, People's Medical Publishing House);

④ Hematologic malignancies refer to malignant tumors originating from the hematopoietic or lymphatic systems, including any of the following: leukemia, lymphoma, multiple myeloma, etc.

Exclusion Criteria:

① Patients with concurrent malignant tumors;

② Patients with cognitive impairment or communication difficulties;

③ Patients who refuse to continue participating in this study.

2.2. Research Tools

(1) General Information Survey Form for EPHM

This survey form was developed through literature review and tailored to the specific circumstances of elderly hematologic malignancy patients. It was revised based on expert consultation. The patient general information survey primarily includes gender, age, occupation, educational attainment, marital status, economic status, and living arrangements.

(2) Chinese Version of the Readiness for Discharge Scale

This study employed the Chinese version of the Readiness for Discharge Scale adapted by Lin et al., comprising 23 items across four dimensions: self-perceived condition, disease knowledge, post-discharge coping abilities, and anticipated social support after discharge. Higher scale scores indicate greater readiness for discharge among patients [6].

2.3. Research Methods

2.3.1. Survey on the Current Status of Discharge Readiness Among EPHM

An EPHM discharge readiness survey team was established, with all members receiving standardized training. Within 4 hours prior to discharge, survey team members visited patients at their bedsides to explain the study's purpose and significance. Questionnaire administration proceeded only after obtaining informed consent from both patients and their families.

2.3.2. Analysis of Factors Influencing Discharge Readiness Services for EPHM

A questionnaire was used to collect data on factors influencing discharge readiness services, including patient satisfaction with current nursing care, presence of unmet needs, readmission status, and reasons for readmission. A systematic analysis was conducted to identify factors affecting EPHM discharge readiness services.

2.3.3. Statistical Methods

Data were entered into SPSS 29.0 software. Continuous variables were described using means and standard deviations, while categorical variables were described using frequencies and proportions. Independent samples t-tests were used to compare differences in discharge readiness between patient groups. Multiple linear regression

analysis with stepwise selection was employed to identify influencing factors. A P value < 0.05 was considered statistically significant for differences or influencing factors.

2.4. Quality Control

(1)Patients completed questionnaires independently. Investigators provided explanations and clarified terms only when patients demonstrated potential misunderstanding, without inducing responses.

(2)Data entry employed a dual-operator, dual-computer method. Epidata 3.1 software performed logical error checks to prevent data entry errors.

2.5. Ethical Approval

This study obtained informed consent from all patients and their families. No invasive or harmful procedures were performed on patients; the study was beneficial without harm, adhering to ethical principles including the Declaration of Helsinki. The research protocol was approved by the Medical Ethics Committee of Affiliated Hospital of Zunyi Medical University (No.: KLL-2024-602).

3. Results

3.1. Basic Demographic Characteristics of Included Subjects

The basic demographic characteristics of the included patients are shown in Table 1. Results indicate the distribution of educational attainment: elementary school or below (62.5%) > junior high school (22.2%) > senior high school/vocational school or above (15.3%), suggesting a generally low educational level among patients. Regarding living arrangements, 65.3% of patients lived only with their spouse, 25.0% lived with their spouse and children, and 9.7% lived only with their children. Occupation distribution showed that farmers accounted for 84.7%, and 95.8% were covered by urban and rural residents' medical insurance.

Table-1. Basic Demographic Characteristics and Clinical Data of Patients

Variables	Category	Number of cases	Percentage(%)
Age	68.9±7.1*	72	68.5(60-91)[#]
Gender	Male	44	61.1
	Female	28	38.9
Occupation	Farmer	61	84.7
	Non-farmer	11	15.3
Education	Primary school or below	45	62.5
	Junior high school	16	22.2
	High school/ vocational school or above	11	15.3
Marital Status	Married	67	93.1
	Others	5	6.9
Living Arrangements	Living with spouse	47	65.3
	Living with spouse and children	18	25.0
	Living with children	7	9.7
Health Insurance Status	Resident medical Insurance	69	95.8
	Employee medical Insurance	3	4.2

Note：*Mean±SD；[#]M(Min-Max)

3.2. Current Status and Needs of Discharge Preparation Services

The confirmatory factor analysis results of the discharge readiness scale demonstrated good construct validity. The content validity index for the total scale was 0.88, with individual dimensions ranging from 0.80 to 1.00. The Cronbach's alpha coefficient for the total scale was 0.89, with individual dimensions ranging from 0.73 to 0.90 [8]. The core indicators for assessing patient discharge readiness are presented in Table 2. Interpretations of the corresponding results are provided in the last column of Table 2.

Table-2. Core Indicators for Assessing Patients' Readiness for Discharge

Assessment Dimensions	Assessment Items	$\bar{x} \pm s$	Clinical Significance
Physical Functioning	Level of pain/discomfort	6.3±2.5	Moderate pain; pain management requires attention
	Physical fitness level	6.8±2.4	Moderate physical condition
	Physical vitality	7.5±2.6	Moderate level of vitality
Self-Care Abilities	Ability to care for oneself at discharge	8.1±1.8	Good ability to care for oneself
	Knowledge of self-care after discharge	7.8±1.9	Moderate level of knowledge
	Ability to perform self-care tasks	8.0±2.3	Moderate ability to care for oneself
	Ability to perform medical care tasks	7.7±2.3	Moderate ability to manage medical care
Family Support System	Level of emotional support	8.2±1.9	Adequate emotional support
	Assistance with personal care	5.3±2.8	Insufficient support
	Assistance with activities of daily living	3.7±1.4	Severely insufficient
	Assistance with medical care	4.0±1.5	Severely insufficient

Note: Value range 0-10; except for VAS scores, 0 is the lowest (worst) and 10 is the highest (best).

Table 3 presents the analysis of discharge service guidance quality and home care needs. Detailed interpretations of the corresponding results are provided in the last column of Table 3.

Table-3. Analysis of Discharge Guidance Quality and Needs of Home Care

Evaluation Category	Service	Satisfaction ($\bar{x} \pm s$)	Requirement Rate(n,%)	Clinical Significance
Quality of Discharge Instructions	Medication Administration and Precautions	3.8±1.2	-	Guidance quality needs improvement
	Dietary and Nutritional Recommendations	4.5±0.8	-	Guidance quality is good
	Wound/Tube Care	3.2±1.6	-	**Guidance quality is poor**
	Monitoring of Symptoms and Emergency Response	3.7±1.4	-	Guidance quality needs improvement
Service Process Evaluation	Clarity of Discharge Instructions from Healthcare Providers	4.0±1.2	-	Clarity of guidance is average
	Ease of the Discharge Process	4.3±1.0	-	Process convenience is good
	Timeliness of Post-Discharge Follow-Up	0.3±0.3	-	**Follow-up system is severely lacking**
Home Care Needs	Coordination with Community Hospitals	-	64(88.9)	**Core needs**
	Home Visits for Dressing Changes/Tube Maintenance	-	6(8.3)	Low needs
	Rehabilitation Training Guidance	-	21(29.2)	Moderate needs
	24-Hour Consultation Hotline	-	15(20.8)	Important needs
	Psychological Counseling	-	15(20.8)	Psychological needs require attention

3.3. Factors Influencing Discharge Readiness Services

The results of the univariate analysis are shown in Table 4. The findings indicate statistically significant differences in discharge readiness scores across different age groups and living arrangements. Multivariate analysis revealed that, in addition to age and living arrangements, the quality of medical care assistance, self-care knowledge, and wound/catheter care guidance were all significant factors influencing patients' discharge readiness scores (P<0.05).

Table-4. Comparison of Discharge Readiness Among Patients in Different Age Groups and Living Arrangements

Group	Category	Numbers	Self-Care Knowledge	Ability to Perform Medical Care	Medical Care Assistance	Comprehensive Discharge Readiness Score	*t*	*P*
Age	<70	39	8.36±1.57	8.15±2.11	6.38±2.56	7.86±1.24	2.29	0.025
	≥70	33	7.39±1.87	7.24±2.45	7.70±1.59	7.06±1.37		
Living Arrangements	Living only with spouse	47	7.68±1.89	7.38±2.42	6.86±2.16	7.32±1.38	3.22	0.002
	Living with families	25	8.96±1.22	8.76±1.83	7.88±1.76	8.42±0.98		

Note: Comprehensive Discharge Readiness Score = (Self-Care Knowledge + Ability to Follow Medical Care Instructions + Medical Care Assistance) / 3

Table-5. the Multivariate Analysis of Factors Affecting Patients' Readiness for Discharge

Factors	Regression Coefficient(B)	Standard Error(SE)	Standardized Coefficient(β)	*t*	*P*	95%CI
Age	-0.09	0.03	-0.24	-2.83	0.006	-0.15,-0.03
Living Arrangements	-1.10	0.31	-0.35	-3.55	0.001	-1.72,-0.48
Assistance with Medical Care	1.08	0.20	0.47	5.40	<0.001	0.68,1.48
Self-Care Knowledge	0.56	0.13	0.38	4.31	<0.001	0.30,0.82
Quality of Wound/Catheter Care Instruction	0.35	0.14	0.20	2.50	0.015	0.07,0.63
Constant	11.05	1.35	-	8.19	<0.001	8.36,13.74

Note: Model fit R^2=0.61, F=16.23, *P*<0.001

4 Discussion

4.1. EPHM Readiness for Discharge Requires Improvement

The study findings indicate that while EPHM patients demonstrate generally moderate to high levels of physical functioning and self-care abilities, their family support systems exhibit significant imbalances. This suggests that discharge planning for EPHM patients requires enhancement and optimization. Analysis of the reasons: Most subjects included in this study were EPHM returning for chemotherapy. Following treatment, patients' physical functional status recovered. Additionally, specialized nurses provided health education before discharge. Combined with the fact that patients had acquired a basic understanding of relevant treatment and nursing knowledge after multiple treatment cycles, this resulted in good mastery of self-care knowledge among patients. However, in terms of family system support, an imbalance has emerged where the emotional support dimension is moderately high while the care giving support dimension is severely inadequate. This may be attributed to family caregivers being non-professionals with varying levels of care giving competence, coupled with increased care demands following the patient's discharge.

Research indicates that implementing standardized discharge preparation processes and transitional care interventions can significantly improve the discharge experience for elderly patients and reduce readmission rates [7]. Based on the findings of this study, there is an urgent need to establish an EPHM discharge preparation service system that integrates hospital-home-community coordination. This system should optimize the structure and function of the family system, enhance patients' readiness for discharge, and improve their prognosis.

4.2. Analysis of Factors Influencing Discharge Readiness in EPHM

Patients discharge readiness is influenced by multidimensional factors, which can be categorized into patient-related factors, family-related factors, and healthcare system factors.

4.2.1. Age

This study found that patients aged 70 years or older (7.06 ± 1.37) demonstrated significantly lower discharge readiness than those under 70 years old (7.86 ± 1.24, *P*=0.025). Multivariate analysis indicated advanced age as a negative factor affecting discharge readiness, with each additional year of age decreasing readiness by 0.09 points (*P*=0.006). This aligns with findings from Specht K et al. [8], indicating that older patients exhibit lower discharge

readiness scores. Additional research indicates that elderly patients with functional limitations or frailty exhibit significantly reduced readiness for discharge [9]. Contributing factors may include the widespread decline in physical function among older adults, increased reliance on family support, and the prevalence of caregivers who are themselves elderly and potentially facing health issues. Furthermore, due to cognitive limitations and sensory decline, these patients often demonstrate significantly lower capacity for information reception and comprehension compared to younger patients [10]. Therefore, in clinical practice, personalized health education tailored to the characteristics of elderly patients should be implemented. Pre-discharge instructions should be delivered in ways that are easily accepted and understood by older adults, ensuring patients receive comprehensive discharge preparation knowledge and enhancing their readiness for discharge.

4.2.2. Living Arrangements

The results of this study indicate that living arrangements significantly influence discharge readiness. Patients residing solely with their spouse demonstrated significantly lower discharge readiness (7.32 ± 1.38) compared to those living with family members (8.42 ± 0.98, P=0.002). Living solely with a spouse emerged as an independent risk factor for discharge readiness (β=-0.35, P=0.001). These findings suggest that living arrangements influence discharge readiness in elderly hematologic malignancy patients by affecting the quantity, quality, and continuity of care giving support. Living with family members provides access to a larger number of caregivers, enabling shared care giving responsibilities and reducing individual care giving burdens.

Meanwhile, for patients living with family members, the home environment facilitates more family activities, helping them integrate into family life and reinforcing their sense of role within the household. In contrast, patients residing solely with their spouse tend to have fewer social interactions, making them more prone to feelings of loneliness and diminished self-worth, which in turn can impair their self-management abilities. Given this, healthcare providers should prioritize attention toward patients residing solely with their spouses in clinical practice. This involves enhancing the care giving skills of family members, offering diverse psychological support, and addressing the limitations inherent in single-spouse care giving.

4.2.3. Family Support System

Previous studies indicate that family care plays a crucial role in improving the health of elderly cancer patients [11]. The findings of this study reveal that the family support system in EPHM is imbalanced. While emotional support from family is relatively adequate (8.2 points), assistance with daily activities at home (3.7 points) and medical care (4.0 points) is significantly insufficient. Although 88.9% of patients require coordination with community hospitals, the timeliness of follow-up scored only 0.3 points, indicating fundamental deficiencies in the continuity of care system.

Family emotional support is relatively robust, likely stemming from shared emotional resonance within families regarding the severity and uncertain prognosis of hematologic malignancies, while also aligning with China's traditional family-centered care giving philosophy. Significant deficiencies exist in home activity assistance and medical care support. On one hand, post-EPHM chemotherapy often causes pronounced bone marrow suppression, leading to symptoms like fatigue and reduced activity tolerance, which heighten the need for specialized care. This demands caregivers possess greater time, energy, and care giving knowledge. Medical system factors include the quality of discharge education, nursing staff workload, interdisciplinary collaboration levels, and the adequacy of hospital-to-community transition mechanisms [12]. Healthcare providers should prioritize addressing imbalances in family support systems to enhance discharge readiness for EPHM patients.

Additionally, there exists an issue of substandard guidance on catheter care, with the lowest satisfaction rating (3.2 points) observed for wound/catheter care methods. Multivariate analysis revealed this factor significantly impacts discharge readiness (β=0.20, P=0.015). Nursing staff should enhance health education for catheterized patients and their families regarding catheter care, including prevention of complications and unplanned catheter removal. Utilizing illustrated materials or video-based education can strengthen visual impact and improve management effectiveness.

5. Summary and Prospects

In summary, based on our findings and existing literature, we recommend that establishing specialized discharge preparation support programs for elderly patients living solely with their spouses; designing discharge guidance materials tailored to patients with low educational attainment; and providing enhanced interventions for elderly, low-literacy patients living only with their spouses to ensure home safety. Prioritize improving the quality of wound/catheter care instructions by developing visual, simplified guidance tools. Establish a “hospital-community-home” tripartite follow-up system and enhance continuity of care through multidisciplinary collaboration and post-discharge follow-ups.

Against the backdrop of healthy aging, the nursing objectives for EPHM have shifted from mere disease control to functional maintenance and quality-of-life enhancement. For EPHM patients, discharge planning assessments should be initiated early during hospitalization to develop individualized care and education plans. The impact of these interventions on readmission rates, functional recovery, and patient outcomes should be validated through evidence-based research, thereby providing stronger evidence-based support for hematology nursing management.

Funding: Science and Technology Program Project of Zunyi city, Guizhou, China (Grant No.: Zunshi Kehe HZ No. (2024) 273; PI: Li-rong LUO).

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