

## Supportive Care Requirement in Accordance with the Therapeutic Purposes of Hematologic Malignancies Undergoing Chemotherapy

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### ABSTRACT

Blood cancer is disease which keeps the separation of platelets amid hematopoiesis, prompting strange cell development. Very lately, improved chemotherapy and hematopoietic undeveloped cell transplantation have upgraded the treatment of blood cancer. This investigation broke down the contrasts between three treatment bunches in steady consideration necessities of patients with blood malignant growth at a college clinic, especially in connection to remedial purposes in such patients.

### INTRODUCTION

Blood cancer is a malignant disease that prevents the differentiation of blood cells during hematopoiesis, leading to abnormal cell growth [1]. Despite the steady worldwide growth in its prevalence [2], recently, improved chemotherapy and hematopoietic stem cell transplantation have enhanced the treatment of blood cancer [1]. However, many patients experience adverse physical and mental effects during diagnosis and treatment, in addition to physical symptoms such as pain, fatigue, and lack of appetite, leading to a decline in their physical and social functioning [3-6]. These adverse reactions are a result of both the disease manifestation and treatments, which are different from the treatments of solid cancers [7,8]. The quality of life may decrease after hematopoietic stem cell transplantation [9,10]. Thus, the well-being of patients with blood cancer must be monitored during treatment [11]. Therefore, while the needs of patients need to be identified to provide supportive patient care, not many studies have assessed the needs of patients based on the nature of the disease and treatment.

This study analyzed the differences between three treatment groups in supportive care requirements of patients with blood cancer at a university hospital, particularly in relation to therapeutic purposes in such patients.

### METHODS

The study was conducted from February 2016 to May 2016. Subjects were 100 patients diagnosed with blood cancer at K Hospital, a general hospital in Daegu, were hospitalized for chemotherapy or outpatient treatment and knew disease diagnosed and could communicate with interviewers. The

institutional review board of K national university hospital approved the study (no. 2016-02-020). All participants provided written informed consent prior to starting the survey. Subjects were excluded if they didn't know their own disease or couldn't communicate with interviewers. The questionnaire used in this study consisted of 13 questions regarding the general and disease characteristics of the patients and 59 questions regarding supportive care needs [12] that were validated in other Korean study [13]. Some disease related data were obtained using hospital information system. The patients were divided into three groups, the chemo radiation at first diagnosis (1<sup>st</sup> Dx) group, the consolidation and maintenance treatment (CM) group and chemo radiation before hematopoietic stem cell transplantation (HST) group. To analyze the differences among treatment purposes, p values were calculated in the analysis of single variation when determining calibration intervals. All statistical tests were performed using SPSS 22.0 and the statistical significance level for the hypothesis test was 0.05.

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## RESULTS AND DISCUSSION

Of the 100 patients studied, 51 were aged >50 years and 58 were male. Blood cancers included acute myeloid leukemia in 43 patients, acute lymphocytic leukemia in 22 and other

blood tumors in 35. The durations between diagnosis and study enrollment were <6, 6-12 months and  $\geq$  12 months for 38, 33 and 29 patients, respectively. In total, 75 patients experienced relapse, 93 received only chemotherapy, and seven received chemo- and radiotherapy (**Table 1**).

**Table 1.** General and disease-specific characteristics of participants.

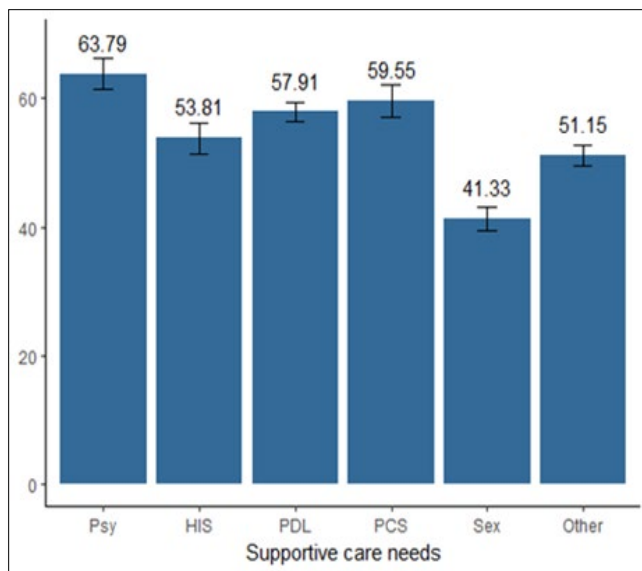
Characteristics	Categories	N
Age	<50	49
	$\geq$ 50	51
Gender	Male	58
	Female	42
Marriage	Yes	32
	No	68
Job	Yes	27
	No	73
Education	$\leq$ Middle School	25
	High School	44
	College	31
Diagnosis	AML	43
	ALL	22
	Others	35
Duration	<6 months	38
	6-12 months	33
	$\geq$ 12 months	29
Recurrence	Yes	75
	No	25
Treatment Method	Chemotherapy	93
	Chemotherapy+Radiation	7
<b>Total</b>		<b>100</b>

AML: Acute Myeloblastic Leukaemia; ALL: Acute Lymphoblastic Leukaemia; Other: Include Chronic Myeloblastic Leukaemia; Multiple Myeloma; Myelodysplastic Syndrome; Aplastic Anaemia; Malignant Lymphoma

The inter area scores of supportive care needs are shown in **Figure 1**. The scores for psychological, health system and information, physical and daily living, patient care and support, sexual, and other needs were 63.79, 53.81, 57.91, 59.55, 41.33 and 51.15 points, respectively.

The results of analyses of supportive care needs in accordance with therapeutic purposes are presented in **Table 2**. Multivariate analysis was performed with adjustments for age, sex, marital status, occupational status, education, diagnosis, duration of treatment, purposes of treatment and recurrence ( $p < 0.2$  in the univariate analysis). As observed in the univariate analysis, psychological, health system and information, and patient care and support needs varied depending on the therapeutic purpose ( $p < 0.001$ ) and physical and daily living, sexual, and other needs. The score for psychological needs was higher in patients in the consolidation and maintenance treatment (CM) group than those in the chemo radiation at first diagnosis (1<sup>st</sup> Dx) and chemo radiation before hematopoietic cell (HST) groups ( $p < 0.001$ ). The health system and information needs score

was the highest in the 1<sup>st</sup> Dx group, followed by the HST and CM groups ( $p < 0.001$ ). The patient care and support needs score was the highest in the HST group, followed by the CM and 1<sup>st</sup> Dx groups ( $p < 0.001$ ).



**Figure 1.** Supportive care needs of participants.

Psy: Psychological Needs; HIS: Health System and Information Needs; PDL: Physical and Daily Living Needs; PCS: Patient Care and Support Needs; Sex: Sexual Needs; Other: Other Needs

**Table 2.** Adjusted means of supportive care needs according to purposes of treatment.

	1 <sup>st</sup> Dx (A)	CM (B)	HST (C)	F value	P	Post-hoc test (Tukey method)		
						A-B	A-C	B-C
<b>Psy</b>	52.6 (45.6-59.6)	84.7 (79.7-89.6)	46.3 (40.7-51.9)	69.30	<0.001	<0.001	0.377	<0.001
<b>HSI</b>	93.9 (90.7-97.2)	33.8 (31.6-36)	52.7 (50.2-55.1)	559.36	<0.001	<0.001	<0.001	<0.001
<b>PDL</b>	53.4 (46.6-60.1)	58.8 (54-63.5)	59.7 (54.4-65)	20.79	0.067			
<b>PCS</b>	32.2 (27.8-36.7)	47.3 (44.1-50.4)	90.5 (86.9-94.2)	287.20	<0.001	<0.001	<0.001	<0.001
<b>Sex</b>	37.4 (30.5-44.2)	43.6 (38.7-48.5)	41.1 (35.4-46.7)	00.64	0.528			
<b>Other</b>	49.3 (42.4-56.3)	54 (49-59.1)	48.9 (43.5-54.3)	10.13	0.326			

Psy: Psychological Needs; HIS: Health System and Information Needs; PDL: Physical and Daily Living Needs; PCS: Patient Care and Support Needs; Sex: Sexual Needs; Other: Other Needs; 1<sup>st</sup> Dx: Chemoradiation at First Diagnosis; CM: Consolidation and Maintenance Treatment; HST: Chemoradiation before Hematopoietic stem cell transplantation

Although these findings revealed that psychological needs were the highest in these patients, there were differences in the need for care depending on the study participant and disease type. Jung and Yi [6] reported high scores for health systems and information needs in patients with blood tumor and Hwang et al. [14] also reported the same result in breast

cancer. Other studies on patients with blood tumors [15,16] also revealed high psychological and physical needs. In this study, the health system and information needs of patients receiving treatment after the first diagnosis were the highest. In contrast to our study, more than half of the subjects in the study by Jung and Yi [6] had been diagnosed at <6 months

before enrollment; thus, the health system and information needs were likely to be higher.

In this study, we analysed the supportive care needs of patients with blood cancer who underwent treatment for a long period, which differs from the treatment of other solid malignancies. In the 1<sup>st</sup> Dx group, the patients had the highest need for supportive care in the health system information area because of the intensive treatment from the time of diagnosis, without having the time for psychological preparations due to the nature of the treatment for hematological malignancies. Patients may not have sufficient time for communication with the medical staff, and the medical staffs often fail to understand the exact nature of information that the patients desire [17]. Therefore, early identification of patients' needs as well as sufficient explanation of the disease and treatment process is important.

The need for psychological care was the highest in the CM group. Increased energy expenditure continued anorexia and destroyed fat deposits during cancer chemotherapy increase fatigue, in addition to a variety of physiological, psychological, and social factors that contribute to the development of fatigue in patients undergoing chemotherapy [5]. In addition, because of the nature of hematological malignancies, the prognosis of the treatment remains uncertain. Therefore, during long-term chemotherapy, patients experience a variety of emotional changes, such as fear, anxiety and hopelessness [18]. Psychological needs tend to increase during multiple chemotherapy regimens after induction therapy.

Patient care and support needs were the highest in the HST group because these patients remain isolated from family and relatives and are socially marginalized following transplantation [19]. Because sensory stimuli are reduced or deprived, psychosocial problems arise, and patients face many physical and mental risks following transplantation [7]. Furthermore, the need for direct care could be heightened due to long-term illness and treatment effects.

## CONCLUSION

The purpose of this study was to investigate the supportive care needs of patients with hematological malignancies who were treated with chemotherapy. During long-term anticancer chemotherapy, there were significant differences in supportive care needs according to the treatment goals. To provide patient-oriented medical services, supportive care needs should be assessed and appropriate services should be provided.

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