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Research Article /Araştırma

Allojenik kök hücre nakli ve koruyucu izolasyon sürecinde hasta ve yakınları tarafından algılanan sosyal destek ve ruh sağlığının incelenmesi: tek merkez deneyimi

Investigation of social support and mental health perceived by patients and their relatives in allogeneic stem cell transplantation and protective isolation process: a single center experience

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ABSTRACT

Aim: Hematopoietic Stem Cell Transplantation (HSCT) is preferred as an aggressive method for the treatment of hematologic cancers. High dose chemotherapy, isolation process and post-transplant complications are important sources of biopsychosocial stress for patients and their relatives. In the literature, the importance of providing psychiatric support and protecting mental health during the HSCT process is emphasized. In this context, this study aims to examine the changes in social support and mental health perceived by patients and their relatives during the HSCT process. **Materials and Methods:** In the longitudinal and prospective study, the population was determined by considering the number of transplants in the last three years, and the sample size was calculated as a minimum of 13 for each group using 95% confidence and 90% power analysis with the G*Power 3.1 program. The data were collected between June 2022 and 2023 and were conducted in three measurements using the demographic information form, DASS-21, Distress Thermometer (DT) and Multidimensional Perceived Social Support Scale (MSPSS). **Results:** Participants were 48.77 years old on average and 7.7% of them had a history of psychiatric illness. The mean age of the patients' relatives was 42.38 years. While the DT scores were not statistically significant, the DASS-21 and the CBAASDS scores were not significant in terms of temporal and group differences (p>0.05). However, one third of the patients and half of the patients' relatives were found to have significant scores in terms of psychological problems. **Conclusions:** Addressing physical, psychological and social difficulties in the HSCT process with a multidisciplinary approach is important for early recognition of mental problems.

ÖZ

Amaç: Hematopoetik Kök Hücre Nakli (HKHN), hematolojik kanserlerin tedavisinde agresif bir yöntem olarak tercih edilmektedir. Yüksek doz kemoterapi, izolasyon süreci ve nakil sonrası komplikasyonlar, hasta ve yakınları için biyopsikososyal anlamda önemli stres kaynaklarıdır. Literatürde, HKHN sürecinde psikiyatrik destek sağlanması ve ruh sağlığının korunmasının önemi vurgulanmaktadır. Bu bağlamda, araştırma, HKHN sürecinde hasta ve yakınlarının algıladıkları sosyal destek ve ruh sağlığındaki değişimleri incelemeyi amaçlamaktadır. **Gereç ve Yöntem:** Longitudinal ve prospektif tipte olan araştırmada, son üç yılın nakil sayıları dikkate alınarak evren belirlenmiş; örneklem büyüklüğü ise G*Power 3.1 programıyla %95 güven, %90 güç analizi kullanılarak her grup için minimum 13 olarak hesaplanmıştır. Veriler Haziran 2022-2023 arasında toplanmış olup, demografik bilgi formu, DASS-21, Distres Termometresi (DT) ve Çok Boyutlu Algılanan Sosyal Destek Ölçeği (ÇBASDÖ) kullanılarak üç ölçümde gerçekleştirilmiştir. **Bulgular:** Katılımcılar ortalama 48,77 yaşında olup %7,7'sinin psikiyatrik hastalık geçmişi olduğu bulunmuştur. Hasta yakınlarının yaş ortalaması 42,38 olarak tespit edilmiştir. DT puanları istatistiksel olarak anlamlı değilken, DASS-21 ve ÇBASDÖ skorları da zamansal ve grup farklılıkları açısından anlamlı bulunmamıştır (p>0.05). Bununla birlikte, hastaların üçte biri ve hasta yakınlarının yarısının psikolojik sorun açısından anlamlı puanlara sahip olduğu görülmüştür. **Sonuç:** HKHN sürecinde fiziksel, psikolojik ve sosyal zorlukların multidisipliner yaklaşımla ele alınması, ruhsal problemlerin erken fark edilmesi açısından önemlidir.

ARTICLE INFO/MAKALE BİLGİSİ

Key Words: Hematopoietic stem cell transplantation; nursing care; mental health; social support

Anahtar Kelimeler: Hematopoetik kök hücre nakli, hemşirelik bakımı, ruh sağlığı, sosyal destek

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INTRODUCTION

Hematological cancers originate from the bone marrow, which is the site of blood production, and include diseases such as acute-chronic leukemias, multiple myeloma, Hodgkin's, and non-Hodgkin's lymphoma (1). Allogeneic Hematopoietic Stem Cell Transplantation (allo-HSCT), on the other hand, is an aggressive treatment method used in the treatment of malignant and non-malignant diseases, which is frequently preferred in hematological cancers and can cause stress in biopsychosocial areas for patients (2-3-4-5). In 2018, the number of 47,468 hematopoietic stem cell transplants reported by 701 centers in 50 European countries is also increasing, with 19,630 allogeneic (41%) and 27,838 autologous (59%) (6). In Turkey, as of the end of 2014, a total of 3327 hematopoietic stem cell transplantation operations were performed, 1759 of which were autologous and 1568 of which were allogeneic (7). In 2018, 461 hematopoietic stem cell transplantation operations were performed according to the data obtained from TURKOK (8).

High-dose chemotherapy regimens applied before HSCT, the protective isolation process applied during the transplantation period, and post-transplant complications may cause mental health problems in patients and their relatives (9-10-11). The growing literature reports that the management of mental health problems in HSCT patients affects the success of transplantation and their well-being in the post-transplant period (12-13-14). In the studies, it is stated that a good psychological evaluation should be made regardless of the type of HSCT, it is important to support patients and their relatives with psychiatric approaches that include protective measures, and to protect mental health as much as possible (10-11-15).

In general, social support is linked to reduced pain and increased happiness, while social constraints are often associated with various forms of distress, including anxiety, depression, fear, and post-traumatic stress disorder (4-16). The protective isolation process during the transfer period may lead to social restrictions for both the patient and their relatives, negatively impacting the social support they perceive. Research indicates that an individual's social network is crucial in helping them process cancer-related memories, thoughts, and concerns (4-17-18).

As a result, it is of great importance for nurses to focus on mental health in addition to ensuring the physical well-being of the patient and their relatives with a holistic approach in treatment services. The psychological burden of HSCT survivors is significant; however, there is insufficient prospective data examining the relationship between mental health and the social support perceived by patients and their relatives during hospitalization for HSCT.

MATERIALS AND METHODS

Study desing and aim

The longitudinal, prospective study aims to examine changes in social support and mental health as perceived by patients and their relatives who have undergone allogeneic stem cell transplantation and are currently in protective isolation.

Participants

The Bone Marrow Service, where the research was carried out, has 6 beds and is an isolated service. 1 specialist doctor, 1 assistant doctor and 9 clinical nurses work in the Bone Marrow Service, and an average of 18 allogeneic bone marrow transplantations are performed annually in the service. In

addition, in the Bone Marrow Service, medical treatment and nursing care are provided until the discharge process (+28 days) by applying a high-dose chemotherapy regimen as of hospitalization (-7th day) and preparing the patients for transplantation (0th day) and taking protective isolation measures after transplantation.

The universe of the study was calculated by considering the number of transplants of the last three years due to the variability of the annual number of patients. When the transplants performed in the Bone Marrow Service in the last three years were examined, it was seen that 16 allogeneic transplants were performed in 2019, 21 in 2020, and 17 in 2021. In summary, an average of 18 allogeneic transplants were performed in one year, a total of 54 in the last three years. G*Power 3.1 program was used to calculate the sample size to be included in the study. Considering Karacan and Kapucu (14), which are similar to the purpose and design of the study; With 95% significance and 90% power analysis over the stress score, the sample size was calculated as a minimum of 13 for each group consisting of patients and their relatives. Considering the losses during the application, more than 20% of the sample group was included in the study with a total of 30 participants (15 patients, 15 patient relatives). Of the 30 participants, 3 did not complete the follow-up measurements (1 on the day of transplantation, 2 on the 20th day after transplantation) (Figure 1). One of the participants died due to deterioration of his medical condition (death). The study was completed with a total of 26 participants. The data collection part of the research was carried out between June 2022 and June 2023.

Inclusion and exclusion criteria

Inclusion criteria;

- Be over the age of 18
- To be hospitalized in the bone marrow transplantation unit of the relevant hospital,
- Being a stem cell transplant for the first time,
- Speaking Turkish
- Exclusion criteria;
- Not volunteering to participate in the study,

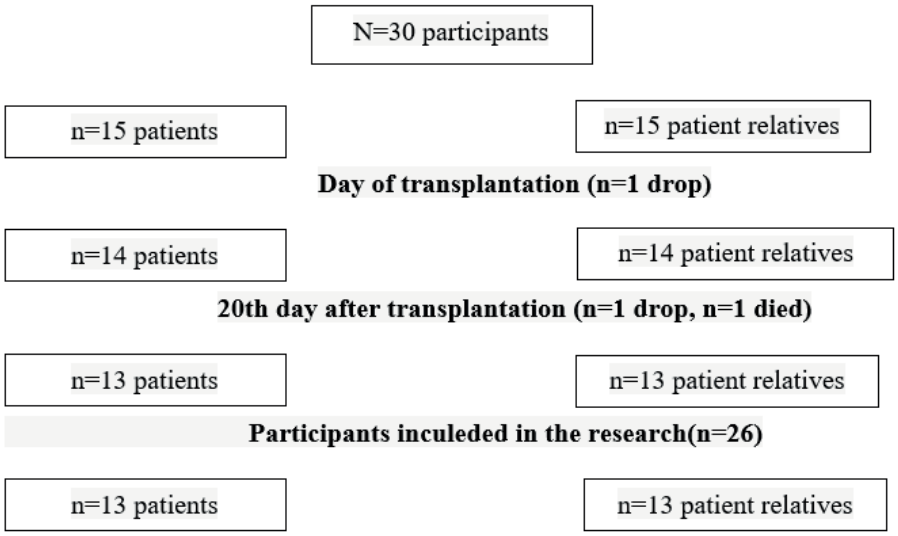

Figure 1. Flow diagram

- Having a stem cell transplant at the start of the study and continuing to be hospitalized,
- It was determined as the absence of a relative to be included in the study.

Measurements and Data Collection

The data were collected using a demographic-clinical information form that included socio-demographic details, clinical information of patients and their relatives, the Depression, Anxiety and Stress Scale (DASS-21), the Distress Thermometer (DT), and the Multidimensional Perceived Social Support Scale.

Patient Information Form: It consists of a structured form with closed-ended questions aimed at determining socio-demographic characteristics, psychosocial evaluations, and disease-related features, as prepared by the researcher in accordance with the literature review.

Patient Relatives Information Form: It is a structured form consisting of closed-ended questions to determine the socio-demographic characteristics and psychosocial evaluation of the patient's relatives in the form prepared by the researcher in line with the literature review.

Depression, Anxiety and Stress Scale (DASS-21): The Depression, Anxiety, Stress-21 (DASS-21) scale, developed by Lovibond and Lovibond as a shortened version of the original DAS-42 (19), was adapted for the Turkish population by Sarıçam, with validation and reliability established for both normal and clinical samples. In the normal sample, Cronbach's alpha coefficients were found to be 0.85 for depression, 0.80 for anxiety, and 0.77 for stress; in the clinical sample, these values were 0.87, 0.85, and 0.81, respectively. Confirmatory factor analysis indicated an acceptable fit index for the normal sample and excellent fit indices for the clinical sample. This 4-point Likert-type scale includes seven items each for the dimensions of depression, anxiety, and stress. Scores of 5 or higher on the depression subscale, 4 or higher on the anxiety subscale, and 8 or higher on the stress subscale indicate a potential problem in the respective areas (20). In the present study, Cronbach's alpha values were calculated as 0.895 for depression, 0.713 for anxiety, and 0.857 for stress.

Distress Thermometer (DT): The Distress Thermometer (DT), developed by Roth et al., is designed to assess psychosocial distress in cancer patients. It uses a visual analog scale resembling a thermometer, marked from 0 to 10, allowing individuals to self-report their level of distress (21). The DT is structured as a 3-level scale, where patients indicate the degree of distress they've experienced over the past week. A score of 4 or higher signifies clinically significant distress. The Turkish validity and reliability of the DT were established by Ozalp et al., confirming a cutoff score of 4, effectively distinguishing between cancer patients with and without distress (22).

Multidimensional Scale of Perceived Social Support: The Multidimensional Scale of Perceived Social Support (MSPSS), developed by Zimet et al. (23), underwent a validity and reliability study in Turkey by Eker et al. (24), which found high internal consistency and reliability. Using Cronbach's alpha to assess internal consistency, values ranged from 0.80 to 0.95, demonstrating acceptable internal consistency across all three sample groups. The MSPSS is a 7-point Likert scale with 12 items, divided into three subgroups that reflect sources of support: family (items 3, 4, 8, 11), friends (items 6, 7, 9, 12), and a significant other (items 1, 2, 5, 10). Scores are calculated by summing the scores within

each subgroup, with higher scores indicating greater perceived social support (24). In this study, the Cronbach's alpha value was found to be 0.910.

Data Collection

The data were collected by the researchers between June 2023 and June 2024; It was collected from patients and their relatives who met the research criteria, who were hospitalized and planned for stem cell transplantation. The consent of the patients and their relatives who participated in the study was obtained with the Informed Consent Form. Preliminary interviews were made to the patient and the patient's relatives and information about the study was given, and data (Information form, Distress thermometer, Depression, anxiety and stress scale and Multidimensional perceived social support scale) were collected at three different times (first days of hospitalization, day of transplantation and 20th day of transplantation).

Statistical Analysis

Data from the demographic clinical information form were analyzed in a computer environment using the Statistical Package for Social Sciences (SPSS) version 22 (Armonk, New York, USA). Descriptive statistics, including means, standard deviations, and median (min-max) values, were calculated for participant demographic information. The distribution of variables was assessed with the Kolmogorov-Smirnov test, which indicated a non-normal distribution. Categorical variables are presented as n (%). For group comparisons, the Mann-Whitney U test was used to compare continuous variables between two groups, and the Chi-Square test was applied to examine relationships among nominal variables. Repeated measures analysis of variance (ANOVA) was conducted (one-way for group and time, two-way for group*time) to assess differences in pre-transplant, intra-transplant, and post-transplant test means between patient and family groups. For evaluating the significance of the F-test from ANOVA, the Sphericity Assumed value was used when the sphericity assumption was met. If Epsilon's Greenhouse-Geisser value was below 0.75, the Greenhouse-Geisser and p values were applied. Findings were considered statistically significant at $p<0.05$ with a 95% confidence interval.

Ethical Statement

The study was conducted in compliance with the 1975 Declaration of Helsinki. Ethics approval was granted by the Clinical Research Ethics Committee of Istanbul University, Istanbul Faculty of Medicine (Approval No: E-29624016-050.99-1712541/03.04.2023). Required institutional permissions were also secured. Patient names were kept confidential, and permissions to use the scales in the study were obtained via email from the scale authors.

RESULT

A total of 13 hematopoietic stem cell transplant patients who met the inclusion criteria were included in the study. It was found that 84.1% of the group with a mean age of 48.77 ± 13.26 were married, 61.5% were primary school graduates, 38.5% were not working due to illness, 76.9% had children and 76.9% had income equal to their expenses. It was observed that 38.5% of the participants had a diagnosis of AML, 7.7% had a history of psychiatric illness and 15.4% received professional support. It was seen that the average score was 6.54± 3.12 for social support status (Table 1).

Relatives of 13 patients who underwent hematopoietic stem cell transplantation and

Table 1. Patient population information and psychosocial assessment (n=13)

Age	Mean±SS	48.77 ± 13.26	
	Min-max (median)	27-63 (56)	
Social Support Status	Mean±SS	6.54± 3.12	
	Min-max (median)	0-10 (6)	
		n	**%**
Employment status	Working	1	7.7
	Unable to work due to illness	5	38.5
	Not working	2	15.4
	Housewife	5	38.5
Education Status	Primary	8	61.5
	High school and equivalent	2	15.4
	University and above	3	23.1
Marital Status	Married	11	84.6
	Single	2	15.4
Child	Yes	10	76.9
	No	3	23.1
Economic Situation	My income is less than my expense	3	23.1
	My income is equal to my expense	10	76.9
Medical Diagnosis	ALL	3	23.1
	AML	5	38.5
	HL	2	15.4
	CLL	2	15.4
	MM	1	7.7
History of Psychiatric Illness	Yes	1	7.7
	No	12	92.3
Getting Professional Support	Yes	2	15.4
	I wanted to, but it didn't work out	1	7.7
	No	10	76.9

met the inclusion criteria were included in the study. The analysis revealed that 61.5% of participants had a mean age of 42.38 ± 14.37 years and were married, while 46.2% held primary school diplomas. Additionally, 30.8% were employed, 69.2% were parents, and 61.5% reported an income that was equal to their expenses. Notably, 76.9% of the participants had never donated stem cells. The average score for social support status was 4.15 ± 2.85 (Table 2).

In Table 3, there was no statistically significant difference between the patient and patient relatives groups regarding the time-independent comparisons derived from the Distress Thermometer scores. Additionally, there was no statistically significant difference in the group-time interaction. However, a statistically significant difference was observed in the comparison between the groups. In terms of intra-group comparisons, no differences were found, and no statistically significant differences emerged. When analyzing the data based on the established cut-off score for the distress thermometer, it was noted that both patients and their relatives consistently scored above the threshold in all measurements.

In Table 4, there were no statistically significant differences observed between the patient and patient relatives groups in the time-independent comparisons of the stress, anxiety, and depression sub-dimensions of scores obtained from the DASS-21 scale. Additionally, the group-time interaction revealed no statistically significant differences, and intra-group comparisons also showed no significant variations. However, there was a statistically significant difference identified in the comparison between the groups.

In Figure 2, which deals with the percentage of patients and their relatives who have problems in the measurements made during the allo-HSCT process within the information that "the scores obtained above the cut-off point indicate that they have the relevant problem" for DASS-21 and Distress thermometer, it is seen that approximately one-third of the patients and half of the patient's relatives have significantly higher scores in terms of the relevant problem.

In Table 5, no statistically significant differences were observed between the patient group and the patient relatives group in time-independent group comparisons. Additionally, there were no significant differences in time-independent comparisons or in the group-independent time-based comparisons. The group-time interaction also showed no statistically significant differences. Overall, it was noted that there were no significant differences in comparisons between the groups or in intra-group comparisons.

DISCUSSION

In this study, it has been shown that patients and their relatives need to be recognized at an early stage and to provide holistic care with effective interventions due to the multiple physical, psychological problems, social limitations and the important role that the patient's relatives have to play in the allo-HSCT and protective isolation process. The importance of providing holistic treatment and care to inpatients and their relatives in the allo-HSCT process with a multidisciplinary service approach, of which the Consultation Liasion Psychiatry (CLP) nurse is also a member, has been demonstrated.

In the study, when the sociodemographic characteristics of the patients and their relatives were taken into consideration, it was determined that the majority of them were married, primary school graduates, their income was equal to their expenses,

Table 2. Patient relatives population ınformation and psychosocial assessment (n=13)

Age	Mean±SS	42.38 ± 14.37	
	Min-max (median)	18-60 (48)	
Social Support Status	Mean±SS	4.15± 2.85	
	Min-max (median)	0-9 (5)	
		n	**%**
Employment status	Not working	2	15.4
	Working	4	30.8
	Unable to work due to illness	1	7.7
	Retired	3	23.1
	Housewife	3	23.1
Education Status	Primary	6	46.2
	High school and equivalent	3	23.1
	University and above	4	30.8
Marital Status	Married	8	61.5
	Single	4	30.8
	Divorced	1	7.7
Child	Yes	9	69.2
	No	4	30.8
Economic Situation	My income is less than my expense	4	30.8
	My income is equal to my expense	8	61.5
	My income is more than my expense	1	7.7
Is the Stem Cell Donor a Patient's Relative?	Yes	3	23.1
	No	10	76.9
History of Psychiatric Illness	Yes	0	0.0
	No	13	100.0
Getting Professional Support	Yes	0	0.0
	I wanted to, but it didn't work out	0	0.0
	No	13	100.0

Table 3. Comparison of ıntra-group and ınter-group mean distress thermometer scores of patients and their relatives

		Patient (n=13)	Patient's Relatives (n=13)	Cross-group statistics	Source of Variance		
		Mean± SS	Mean ± SS	t**/p		F	p
Distress Ther-mome-ter	1-Before Trans-plant	4.15±3.07	5.61±2.84	-1.507/0.131	Group	1.377	0.252
	2-During Trans-plantation	5.38±3.47	6.15±2.91	-0.595/0.0552	Time	1.321	0.276
	3-After Trans-plant	4.69±2.86	5.92±2.59	-1.090/0.276	Time* Group	0.210	0.812
In-group	F*/p	0.836/0.379	0.532/0.594				

F*; Repeated Measures Test; t**; Mann Whitney U test; p<0.05

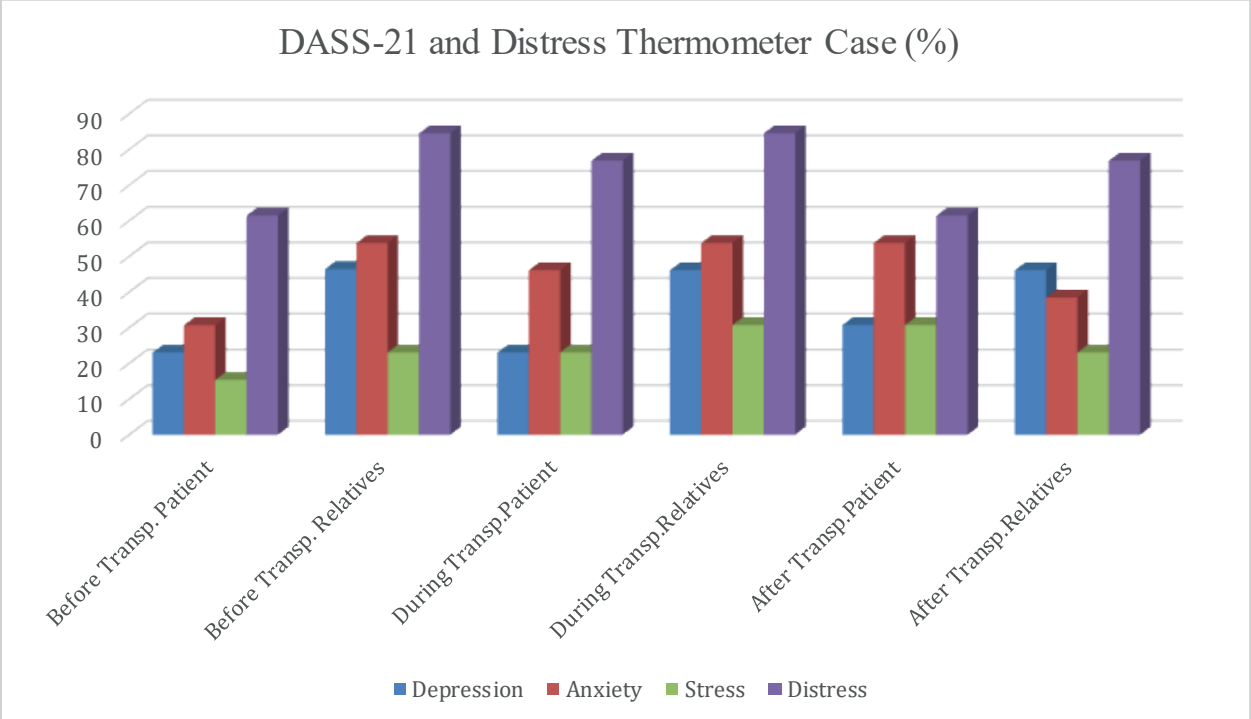

Figure 2. Proportion (%) of clinically significant cases for DASS-21 and distress thermometer at different stages of the allo-HSCT isolation period.

Table 4. Comparison of depression-anxiety-stress (dass-21) scale sub-dimension mean scores of patients and their relatives ıntra-group and ınter-group

		Patient (n=13)	Patient's Relatives (n=13)	Cross-group statistics	Source of Variance		
		Mean ± SS	Mean ± SS	t**/p		F	p
Stress	**1-Before Transplant**	4.69±4.55	6.15±5.36	-0.645/0.519	**Group**	0.953	0.339
	2-During Transplantation	4.07±4.05	5.92±4.64	-1.134/0.257	**Time**	0.632	0.541
	3-After Transplant	4.23±4.24	6.07±5.37	-0.878/0.380	**Time*Group**	0.127	0.881
In-group	**F*/p**	0.638/0.547	0.108/0.898				
Anxiety	**1-Before Transplant**	2.38±2.06	4.69±3.79	-1.553/0.120	**Group**	1.143	0.296
	2-During Transplantation	3.07±2.36	4.53±4.13	-0.518/0.605	**Time**	1.289	0.295
	3-After Transplant	4.23±3.81	4.38±4.23	-0.052/0.959	**Time*Group**	2.686	0.089
In-group	**F/p***	**3.938/0.051**	0.116/0.891				
Depression	**1-Before Transplant**	2.23±2.31	5.92±5.46	**-1.864/0.062**	**Group**	0.662	0.525
	2-During Transplantation	2.38±2.78	5.46±4.90	-1.662/0.096	**Time**	1.193	0.322
	3-After Transplant	3.84±4.57	5.30±4.98	-0.645/0.519	**Time*Group**	3.067	0.093
In-group	**F*/p**	1.859/0.198	0.555/0.589				

F*; Repeated Measures Test; t**; Mann Whitney U test; p<0.05

Table 5. Comparison of multidimensional perceived social support scale sub-dimension mean scores of patients and their relatives ıntra-group and ınter-group

		Patient (n=13)	Patient's Relatives (n=13)	Cross-group statistics	Source of Variance		
		Mean ± SD	Mean ± SD	t**/p		F	p
Family	**1-Before Transplant**	25.84±4.33	11.00±7.18	-1.479/0.139	**Group**	1.466	0.238
	2-During Transplantation	26.23±4.96	22.38±7.34	-1.845/0.065	**Time**	2.033	0.154
	3-After Transplant	26.00±4.91	24.23±7.59	-0.091/0.928	**Time*Group**	3.300	0.055
In-group	**F*/p**	0.081/0.923	3.168/0.061				
Friend	**1-Before Transplant**	24.30±5.32	22.61±5.45	-0.979/0.328	**Group**	0.939	0.342
	2-During Transplantation	25.53±3.84	21.61±7.08	-1.533/0.125	**Time**	0.137	0.873
	3-After Transplant	23.92±6.06	24.00±5.67	-0.056/0.955	**Time*Group**	1.929	0.168
In-group	**F/p***	0.810/0.433	1.347/0.279				
Special Relationship	**1-Before Transplant**	19.69±8.12	18.61±8.91	-0.466/0.641	**Group**	0.125	0.726
	2-During Transplantation	20.07±8.96	18.38±9.33	-0.492/0.622	**Time**	2.427	0.111
	3-After Transplant	22.46±6.15	22.15±8.89	-0.397/0.692	**Time*Group**	0.124	0.884
In-group	**F*/p**	1.032/0.371	2.520/0.114				
MPSDS Total	**1-Before Transplant**	72.38±13.48	70.38±20.53	-0.396/0.692	**Group**	0.817	0.375
	2-During Transplantation	69.84±14.25	64.23±19.51	-0.671/0.502	**Time**	2.712	0.088
	3-After Transplant	71.84±12.23	62.38±21.43	-0.955/0.340	**Time*Group**	1.926	0.169
In-group	**F*/p**	0.490/0.591	2.969/0.074				

F*; Repeated Measures Test; t**; Mann Whitney U test; p<0.05

and three relatives of the patients were stem cell donors. When the studies in the literature are evaluated from these perspectives, it is reported that the low level of education and economic status may cause the competencies of the patient and their relatives to be limited and increase the need for social support in the care process and therefore cause them to experience more stress, but it is seen that the research specific to stem cell transplantation patients and their relatives is quite limited (25-26-27). In addition, apart from the caregiver role of the patient's relative, being a stem cell donor (donor) brings with it some emotional burdens such as responsibility towards family members near the patient, guilt felt in recovery/regression during the disease process, and is considered as a source of stress (27-28-29-30).

Although all HSCT candidates were screened for common psychiatric symptoms (e.g., depressive symptoms, anxiety symptoms, PTSD symptoms, and sleep problems) due to the negative impact of psychiatric disorders on recovery, it is also important to periodically address mental health in terms of stressors and mental complaints that the treatment process may bring (31). When the distress thermometer and DASS-21 scale scores of patients and their relatives were examined in the allo-HSCT process; Although there was no statistically significant difference between the groups and within the group in terms of the relevant measurement methods before, during and after the transplant, it was observed that the level of distress was above the cut-off score in all groups, and a significant number of patients and their relatives had a serious average level of anxiety depression even before the transplant. In addition, it was determined that the distress and anxiety scores of the patients and their relatives were at the highest level in the measurements made on the day of transplantation. These data show that psychiatric complaints constitute an important problem for allo-HSCT patients and their relatives during isolation. Although anxiety, depression and stress scores tend to remain largely stable over time, it can also be said that existing psychiatric problems continue in the same direction throughout the treatment process, since the initial measurements have a value above the threshold. Similar to our research, it is reported in the literature that stress, especially in patients and relatives, has higher rates before and on the day of transplantation, and decreases after transplantation (32-33-34). In a prospective study in which Seo et al. evaluated anxiety and depression in patients undergoing hematopoietic stem cell transplantation, approximately 52% of participants had a significantly higher anxiety or depression score before HSCT started, while this group had higher scores for physical complaints such as fatigue and shortness of breath on the seventh day of transplantation (11). In two large-sample studies of HSCT survivors, it is reported that 20 to 30% of patients experience significantly higher psychological distress in the post-transplant period (3,35). It is thought that factors such as the evaluation method used and sample size are effective in the formation of similarities and differences between the data. In addition to these differences, psychiatric complaints are commonly reported in patients undergoing HSCT.

In addition, although there was no significant difference between the patient and the patient's relatives in all evaluations made during the entire transplantation process, it was determined that the relatives of the patients generally had higher averages. Various studies have also found that family caregivers often experience more distress than recipients (36-37-38). In their study, Waldman et al. reported that 46.6% and

16.1% of patients' relatives, respectively, experienced clinically significant symptoms of anxiety and depression (39). The relevant literature reports that the factors affecting the occurrence of stress in the patient's relatives are providing emotional support to the family member, evaluating the side effects that may occur in the patient, ensuring the patient's compliance with the drug use and treatment process, organizing hospital controls and undertaking the primary care of the patient (39-40-41). As a result of the qualitative study conducted by Sever, it was determined that the vital routines of both the patient and the patient's relatives were disrupted in the entire stem cell transplantation process and the family entered into an uncertain life (42). For this reason, it is important to fully understand the psychosocial experiences of the patient's relatives, as these experiences affect not only their own health and well-being, but also the patient's health status (13, 43-44).

The effect of social support on the reduction of psychiatric complaints has also been reported in studies conducted with other patient groups (45-46-47). In the present study, when the multidimensional perceived social support scale scores of patients and their relatives are examined, the high average score obtained in all subgroups shows that the perceived social support of the participants is high. In addition, when the social support scores perceived by the patients and their relatives during the allo-HSCT process were examined, it was observed that there was no significant difference between the groups and the participants according to the time independent of the group and in other statistical analyzes. Studies examining the effect of social support in patients after stem cell transplantation have shown that it reduces the risk of infection, prolongs survival, and is effective in active participation in self-care (48); It has been determined that the support from family, friends and other patients (information, emotion, financial and material, etc.) of patients in the isolation process has an important role in the adaptation of the diagnosis and treatment process and thus reduces stress (49). In the qualitative study conducted by Bergkvist et al. with family caregivers, it was found that those who had friends and/or family members with them did not need professional supportive counseling much compared to those who had no one to talk to and get support on their social networks, and those with a weak social network had a reinforced sense of uncertainty (50).

Study Limitations

In the study, it is thought that the biggest reason for the lack of a statistically significant difference within and between the groups in all pre-transplant and post-transplant measurements is the insufficient number of samples. In addition, this study, which was carried out as a cross-sectional research design, could not observe the long-term results of the problems of the patients and their relatives regarding their psychosocial problems and the social support they perceived. For this reason, more studies including follow-up measurements should be conducted with larger populations in order to manage the psychosocial problems of patients and their relatives by determining the psychosocial problems experienced by patients and their relatives during the transplantation process, how these problems will affect the social support they perceive, and the influencing factors.

CONCLUSION

It is of great importance for nurses to focus on mental health with a holistic approach in addition to providing physical well-being of the patient and their relatives in treatment services. The patient's primary nurse

performing routine screenings for mental health with a reliable and valid evaluation method will help the patient's mental distress to be recognized at an early stage and to manage the process without experiencing a major psychiatric problem. The employment of consultation liaison psychiatric nurses, who have roles such as improving mental health, education, counseling and providing communication within the team on these issues, has a very important place in HSCT clinics in terms of making HSCT patients go through this process more efficiently.

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