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Psychological well-being in patients undergoing stem cell transplantation

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ABSTRACT. The aim of the study is to determine the psychological well-being of patients who underwent stem cell transplantation. This cross-sectional study was conducted with 100 patients. Data were collected face-to-face using an introductory information form and the Brief Symptom Inventory. When the results of the patients were examined, the interpersonal sensitivity of the sub-dimensions of the scale was found to be 5.0 ± 4.06, depression 7.60 ± 5.37, and anxiety disorder 7.90 ± 5.34. There was a significant difference between the diagnosis time of the patients and all sub-factors of the scale, except phobic anxiety. It was found that the psychological state of the patients was directly related to the time of first diagnosis. As a result, the importance of following the psychological process of the patients during the treatment process was revealed when planning nursing care.

Keywords: nursing; patient; stem cell; transplantation; psychological well-being.

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Introduction

Stem cell transplantation (ST) is defined as the process of collecting stem cells from patients or a donor with matching tissue group and giving them to the patient following the completion of the preparation regime (Kapucu & Karaca, 2008). Since 1940s, many developments have been achieved in this field. Over time, it has become the sole treatment method for many diseases. In the beginning, only bone marrow was used as a source of stem cell; however, after 1990, the peripheral blood, and later, cord blood stem cells were used. Therefore, the concept once used as bone marrow transplantation is used as ST today. ST is considered to be lifesaving for the treatment of many haematologic diseases (Tanyeli, Aykut, Demirel, & Akcaoglu, 2014). It is a frequently preferred method for the treatment of haematological cancers. Even the name of the cancer disease is frightening, and its association with death, pain and suffering, future anxiety and stress caused by the things can be experienced in the treatment process for the illness, which negatively affect the patients' psychological health (Bag, 2013; Kavradim & Ozer, 2014). The patients usually think that their life will be interrupted by this unexpected situation when they learn about the diagnosis (Kartin, Dogan, & Curuk, 2018). In various studies, fear, worry, fear of death, anxiety and depression were observed in the patients following a cancer diagnosis (Milligan, et al. 2018). Moreover, due to the high-dose chemotherapy administered prior to the transplantation, along with physical symptoms, the patients experience psychological symptoms, such as anxiety, depression and anger. The patients show reluctance in the adaptation process and develop personality disorders. It unsettles their adaptation mechanism, upsets their expectations and plans for the future (Hintistan, Pekmezci, Nural, & Gulhanguner, 2015). Psychological problems, such as somatisation, anger–hostility, paranoid thoughts and phobic anxiety in the patients who received chemotherapy before the transplantation are important issues that need to be taken care of as they affect the patients' life quality, self-care, adherence to treatment and response of the illness to the treatment over time (Kapucu et al., 2015). Researchers also acknowledged that psychological problems are increasingly faced by the patients during hospitalisation for months following ST (Yanhui et al., 2019). Performing a proper psychological assessment will ensure the accurate identification of patients' needs. Therefore, the patients who had planned to undergo SN in their treatment should be addressed in terms of psychosocial treatment (Şentürk, Yaylı, &, Civelek, 2012).

Nursing care for patients undergoing hematopoietic stem cell transplant it is complex and requires a high level of competence. The nursing care and the nurse are responsible for individually personalizing the care for all patients at every stage of the procedure throughout the procedure. Nursing team the transplantation of hematopoietic stem cells, their qualifications and technical experience, and nursing care should be evaluated comprehensively. Nursing activities should be listed (Ferreira, Nascimento, Braga, & Silva-Rodrigues, 2017).

It is important for nurses to help patients express their emotions and cope with the physical and psychological stress caused by cancer. The main purpose of the supportive role of nurses is to help patients understand the sad feelings they experience (Korkmaz & Yangoz, 2013). The fact that hematopoietic stem cell transplant recipients suffer from intense side effects causes many problems. Therefore, patients need specialist and properly structured nursing care. Nurses should recognize complications and prefer early interventions for this patient population. In addition, evidence-based contributions to nursing care also support patient recovery. Hematopoietic stem cell transplant nursing has a very complex structure (Izu, Silvino, Santos, & Balbino, 2021). It is thought that this complexity also affects the psychology of the patient and this bad psychology also affects the treatment process negatively. This study aims to determine the psychological well-being of patients with ST.

Material and methods

Study design and participants

This cross-sectional study was carried out on patients treated in the Bone Marrow Transplantation Unit of Turgut Ozal Medical Centre. The data were collected by the researcher between February 2018 and August 2018. It was reported that a total of 482 patients underwent transplantation from the period after the license was obtained to the date of the study.

The population of the study consists of 100 patients who underwent stem cell transplantation between January 2018- November 2018 in the Bone Marrow Transplantation Unit of Turgut Ozal Medical Centre. Leaving out sample selection, the study aimed to reach the whole population. By completing the study with 100 patients, 100% of the population was reached.

Measurements

Introductory Information Form and for the patients' psychological symptom levels, Brief Symptom Inventory (12), Introductory Information Form and Brief Symptom Inventory were used as data collection tools. It took approximately 20 minutes for each patient to fill out the data forms.

Introductory information form: Prepared by the researchers, this form was comprised of 11 questions including age, gender, educational status, marital status, employment status, occupation, social security, level of income, number of children, how long before the patient received a diagnosis and how many days ago stem cell transplantation took place in order to obtain information about the characteristics of patients.

Brief symptom inventory (BSI): It was developed by Deragatis in 1992 to measure the psychological symptom level (Derogatis, 1992). Its validity and reliability were made by Sahin, Durak, and Ugurtas (2002). It is a Likert-type scale that individuals can answer on their own. Individuals are asked to select one of the options, such as 'none', 'a little', 'moderate', 'considerable' and 'too much' for each item. Each response is assigned a point value, from 0 to 4. The point range that can be obtained from the scale is between 0 and 212. Higher scores indicate the frequency of the individual's symptoms. BSI is the short version of Symptom Checklist-90-Revised (SCl-90-R). It consists of 53 items, 9 sub-scales and 3 global indices. The global severity index is obtained as '(S + OKB + KD + D + AB + H + FA + PD + P + EM)/53' and positive symptom total is the total score obtained by accepting all items (all positive values) as 1 except the items marked as 0. Positive symptom distress index is calculated as '(S + OKB + KD + D + AB + H + FA + PDP + EM)/positive symptom total'.

Scale reliability: In statistics, Cronbach's alpha coefficient is used as an estimate of the reliability of a psychometric test. It might have calculated either for each item in the scale or an average value for all items in the scale. The reliability of the scale is accepted as good if the coefficient is found equal or greater than 0.70 (Kilic, 2016). In three separate studies, Cronbach's alpha internal consistency coefficients obtained from the total score of scale ranged between 0.96 and 0.95; whereas, the coefficients obtained for sub-scales ranged between 0.55 and 0.86. In this study, Cronbach's alpha internal consistency coefficient value was found to be 0.98.

Data analysis

The collected data were analysed using frequencies, percentage distributions and arithmetic means. After Kolmogorov Smirnov test, in the independent groups, t-test and ANOVA test were used for normal distribution, while Mann–Whitney U and Kruskal–Wallis tests were used for non-normal distribution. For all the data, $p < 0.05$ was accepted as statistically significant.

Ethics

As an ethical doctrine, 'informed consent' was received as it is necessary to ensure the protection of human dignity and individual rights. Individuals participated in the study were informed that they would be free to participate in the study. Following the approval of the Malatya Inonu University Clinical Research Ethics Committee, the study was started (Ethics Committee approval code: 2019/244). No conflict of interest has been declared by the authors.

Manuscript all human studies have been reviewed by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in an appropriate version of the Declaration of Helsinki.

Results

The findings of the study conducted to determine the psychological well-being of patients who were admitted to the Bone Marrow Transplantation Unit of Malatya Turgut Ozal Medical Centre for stem cell transplantation and had undergone bone marrow transplantation are presented in this section.

When the socio-demographic characteristics of the patients are examined; It is observed that the average age of the patients is 47.01 ± 15.90, the youngest patient age is 18, the oldest patient age is 76, 65% of these patients are male and 35% are female. 74% of them are married, 49% primary education, 33% secondary education, 18% graduated from university and higher schools, 68% of them have medium income, 28% consider their income situation as bad, 86% It was determined that he stated that he is not working at the moment (Table 1).

Table 1. Distribution of patients by socio-demographic features.

Socio-demographic Features		(S=100)	%
Gender	Female	35	35
	Male	65	65
Marital Status	Married	74	74
	Unmarried	26	26
Education	Primary education	49	49
	Secondary Education	33	33
	High education	18	18
Working Status	Working	14	14
	Not working	86	86
Income level	Good	4	4
	Middle	68	68
	Bad	28	
		X± SD	Min-Max
Age		47.01±15.90	18-76
Stem Cell Transplant Duration		4.14±3.83	0-20

When the mean scores obtained from the BSI were analysed, it was found that the interpersonal sensitivity was 5.0 ± 4.06, depression 7.60 ± 5.37 and anxiety disorder 7.90 ± 5.34, which indicated mild levels of symptoms. The highest mean score 7.90 ± 5.34 (min-max value, 0-21) was found in anxiety disorder. When the total score means, 48.55 ± 42.87 (min-max value, 0-178), obtained from the scale were analysed, the means of the other sub-factors were within the normal range. The results obtained from the study show that there is no deviation in the normal level of psychological well-being, and the mild level shows that there are deviations in the state of minimal well-being (Table 2).

When the sub-factors of BSI were compared with gender from the demographic data, women were found to experience mild levels of psychological problems: obsessive compulsive disorder was 7.45 ± 5.0, interpersonal sensitivity 6.05 ± 3.33, depression 8.17 ± 5.05, anxiety 8.28 ± 5.44 and hostility 6.65 ± 4.47.

Men were also found to have mild levels of psychological problems ($p > 0.05$): obsessive compulsive disorder was 7.30 ± 5.36, interpersonal sensitivity 5.93 ± 4.42, depression 7.29 ± 5.55, anxiety 7.69 ± 5. 31 and hostility 6.46 ± 4.59 (Table 3).

Table 2. Mean scores of psychological symptom levels of participants in the study.

BSI sub-factors	BSI mean scores		
	X ± SD	Min - Max	Problem severity level
Somatization disorder	7.88 ± 6.46	0-25	normal level
OCD	6.0 ± 5.21	0-21	normal level
Interpersonal sensitivity	5.0 ± 4.06	0-16	mild level
Depression	7.60 ± 5.37	0-23	mild level
Anxiety disorder	7.90 ± 5.34	0-21	mild level
Hostility	5.0 ± 4.52	0-19	normal level
Phobic anxiety	5.96 ± 5.17	0-19	normal level
Paranoid thoughts	5.72 ± 4.63	0-19	normal level
Psychoticism	2.0 ± 4.48	0-19	normal level
Additional items	2.0 ± 3.64	0-15	normal level
Total	48.55 ± 42.87	0-178	normal level

Table 3. Comparison of brief symptom inventory with gender and marital status characteristics.

Gender					
Sub-factors	X ± SD Female (n = 35)	X ± SD Male (n = 65)	t	p	Problem severity level
Somatization	8.31 ± 6.28	7.64 ± 6.59	0.491	0.624	normal level
Obsessive compulsive Disorder	7.45 ± 5.0	7.30 ± 5.36	0.136	0.892	mild level
Interpersonal sensitivity	6.05 ± 3.33	5.93 ± 4.42	0.151	0.880	mild level
Depression	8.17 ± 5.05	7.29 ± 5.55	0.778	0.438	mild level
Anxiety	8.28 ± 5.44	7.69 ± 5.31	0.528	0.599	mild level
Hostility	6.65 ± 4.47	6.46 ± 4.59	0.205	0.838	mild level
Phobic anxiety	6.45 ± 5.31	5.69 ± 5.12	0.703	0.484	normal level
Paranoid thoughts	5.40 ± 4.50	5.89 ± 4.73	-0.505	0.615	normal level
Psychoticism	5.85 ± 4.35	5.95 ± 4.58	-0.102	0.919	normal level
Additional items	4.00 ± 3.58	4.04 ± 3.69	0.765	0.952	normal level
Total Score	62.73 ± 41.19	59.95 ± 44.03	0.128	0.721	
Marital Status					
Sub-Factors	X±SD Married (n = 74)	X±SD Single (n = 26)	t	p	Problem severity level
Somatization	7.22 ± 5.81	9.73 ± 7.86	-1.486	0.90	married: normal single: mild
Obsessive compulsive Disorder	6.74 ± 4.53	9.11 ± 6.58	-1.700	0.045*	married: normal single: mild
Interpersonal sensitivity	5.60 ± 3.67	7.03 ± 4.93	-1.352	0.185	mild level
Depression	7.00 ± 4.71	9.30 ± 6.74	-1.612	0.116	married: normal single: mild
Anxiety	7.33 ± 4.75	9.50 ± 6.58	-1.539	0.076	mild level
Hostility	6.14 ± 4.18	7.61 ± 5.32	-1.428	0.273	married: normal single: mild
Phobic anxiety	5.29 ± 4.63	7.84 ± 6.19	-1.918	0.03*	married: normal single: mild
Paranoid thoughts	5.22 ± 4.16	7.11 ± 5.63	-1.564	0.074	married: normal single: mild
Psychoticism	5.54 ± 3.93	7.00 ± 5.70	-1.207	0.154	married: normal single: mild
Additional entries	3.51 ± 3.07	5.50 ± 4.66	-2.021	0.016*	normal level
Total score	56.20 ± 37.61	74.37 ± 53.79	9.053	0.003*	

*Refers to the results obtained significantly.

When the sub-factors were compared with the marital status, interpersonal sensitivity and anxiety in the married patients were 5.60 ± 3.67 and 7.33 ± 4.75, respectively. In single patients, only additional items were found to be normal with a mean of 5.50 ± 4.66, while all the other sub-factors were slightly problematic. There

was a significant difference among obsessive compulsive disorder, phobic anxiety and additional items ($p < 0.05$), while no significant difference was observed among the rest ($p > 0.05$), (Table 3).

When the sub-factors were compared with the employment status, interpersonal sensitivity in the patients who were still working was found 5.07 ± 3.42. In patients who were unable to continue work, interpersonal sensitivity was 6.12 ± 4.15, anxiety 8.16 ± 5.36 and hostility 6.73 ± 4.58. No significant difference was found between the patients who continued working and were unable to do so ($p > 0.05$), (Table 4).

Table 4. Comparison of the brief symptom ınventory with the working status characteristics of the patients.

	Employment status				
Sub-factors	X ± SD Working (n = 14)	X ± SD Not Working (n = 86)	MWU	p	Problem severity level
Somatization	6.14 ± 5.58	8.16 ± 6.57	490.0	0.268	normal level
Obsessive compulsive disorder	6.14 ± 4.70	7.55 ± 5.29	520.5	0.422	normal level
Interpersonal sensitivity	5.07 ± 3.42	6.12 ± 4.15	547.0	0.588	mild level
Depression	6.42 ± 5.27	7.79 ± 5.39	515.0	0.391	normal level
Anxiety	6.28 ± 5.09	8.16 ± 5.36	481.5	0.233	employed: normal unemployed: mild
Hostility	5.28 ± 4.08	6.73 ± 4.58	484.5	0.245	employed: normal unemployed: mild
Phobic anxiety	4.28 ± 4.44	6.23 ± 5.25	440.5	0.108	normal level
Paranoid thoughts	5.14 ± 4.14	5.81 ± 4.72	563.5	0.705	normal level
Psychoticism	5.21 ± 4.69	6.03 ± 4.46	526.0	0.453	normal level
Additional items	2.85 ± 3.27	4.22 ± 3.67	422.5	0.071	normal level
Total score	50.05 ± 39.48	62.95 ± 43.55	0.361	0.366	

*Refers to the results obtained significantly.

When the sub-factors were compared with educational status, the levels of interpersonal sensitivity and hostility in primary school graduates were found to be mild with a mean of 5.67 ± 3.38 for interpersonal sensitivity and 6.65 ± 4.32 for hostility. The levels of hostility and interpersonal sensitivity in secondary school graduates were found to be mild with a mean of 6.00 ± 4.40. In tertiary school graduates, somatisation was 9.16 ± 8.34, obsessive compulsive disorder 8.55 ± 6.58, interpersonal sensitivity 6.77 ± 5.11, depression 8.61 ± 7.17, anxiety 8.88 ± 6.64, hostility 7.16 ± 5.39 and paranoid thoughts 7.11 ± 5.77. No significant difference was found between the patients' educational status and the scale sub-factors ($p > 0.05$), (Table 5).

Table 5. Comparison of the brief symptom inventory with the educational status characteristics of the patients.

	Education					
Sub-factors	X±SD Primary (n = 49)	X±SD Secondary (n = 33)	X±SD Higher education (n = 18)	KW	p	Problem severity level
Somatization	7.63 ± 6.00	7.54 ± 6.07	9.16 ± 8.34	0.127	0.938	primary, secondary: normal higher education: mild
Obsessive compulsive disorder	7.12 ± 4.76	7.06 ± 5.09	8.55 ± 6.58	0.271	0.873	primary, secondary: normal higher education: mild
Interpersonal sensitivity	5.67 ± 3.38	6.00 ± 4.40	6.77 ± 5.11	0.103	0.950	mild level
Depression	7.48 ± 4.87	7.21 ± 5.06	8.61 ± 7.17	0.218	0.897	primary, secondary: normal higher education: mild
Anxiety	7.95 ± 5.12	7.27 ± 4.95	8.88 ± 6.64	0.458	0.796	primary, secondary: normal higher education: mild
Hostility	6.65 ± 4.32	6.00 ± 4.40	7.16 ± 5.39	0.909	0.635	mild level
Phobic anxiety	5.83 ± 5.02	5.78 ± 4.95	6.61 ± 6.16	0.015	0.992	normal level
Paranoid thoughts	5.38 ± 4.22	5.45 ± 4.54	7.11 ± 5.77	0.945	0.623	primary, secondary: normal higher education: mild
Psychoticism	5.00 ± 4.15	5.00 ± 5.51	4.50 ± 7.44	1.333	0.281	normal level
Additional items	4.12 ± 3.38	3.54 ± 3.07	4.66 ± 5.12	1.132	0.568	normal level
Total Score	59.46 ± 39.03	57.91 ± 41.09	70.42 ± 55.71	0.546	0.854	

*Refers to the results obtained significantly.

When the sub-factors of the BSI were compared with the income level, hostility in the patients with a good level of income was found to be mild with a mean of 6.00 ± 2.70, while interpersonal sensitivity in the patients

with a moderate level of income was found to be mild with a mean of 5.75 ± 4.37 and 6.35 ± 4.70 for hostility. In patients with a poor level of income, obsessive compulsive disorder was 8.07 ± 4.73, interpersonal sensitivity 6.71 ± 3.45, depression 8.50 ± 4.64, anxiety 9.50 ± 5.05, hostility 7.03 ± 4.35 and phobic anxiety 6.82 ± 5.09. Anxiety levels were considerably high in the patients with a poor level of income ($p < 0.05$). No significant difference was found in the other sub-factors of the BSI (Table 6).

When the comparison of mean scores for BSI and socio-demographic characteristics were analysed, the highest mean scores were found as follows: 62.73 ± 41.19 for female, 74.37 ± 53.79 for single, 70.42 ± 55.71 for higher education level, 62.95 ± 43.55 for not working and 45.34 ± 5.49 for poor income. However, the only significant difference was found between marital status and the mean scale score ($p < 0.05$). Those who were married had higher levels of psychological well-being than the single respondents.

Table 6. Comparison of the brief symptom inventory with the income status characteristics of the patients.

	Income					
Sub-Factors	X ± SD Good (n = 4)	X ± SD Moderate (n = 28)	X ± SD Poor (n = 68)	KW	p	Problem severity level
Somatization	5.00 ± 3.55	7.77 ± 6.73	8.53 ± 6.12	1.954	0.376	normal level
Obsessive Compulsive Disorder	4.50 ± 2.08	7.23 ± 5.49	8.07 ± 4.73	2.637	0.268	good, moderate: normal poor: mild
Interpersonal Sensitivity	4.75 ± 1.50	5.75 ± 4.37	6.71 ± 3.45	2.927	0.231	good: normal moderate, poor: mild
Depression	5.25 ± 2.98	7.36 ± 5.73	8.50 ± 4.64	2.287	0.319	good, moderate: normal poor: mild
Anxiety	3.50 ± 1.91	7.50 ± 5.41	9.50 ± 5.05	7.885	0.019	good, moderate: normal poor: mild
Hostility	6.00 ± 2.70	6.35 ± 4.70	7.03 ± 4.35	1.207	0.547	mild level
Phobic Anxiety	3.25 ± 1.89	5.76 ± 5.30	6.82 ± 5.09	3.123	0.210	good, moderate: normal poor: mild
Paranoid Thoughts	4.50 ± 1.91	5.67 ± 4.96	6.00 ± 4.10	0.845	0.655	normal level
Psychoticism	3.50 ± 2.08	5.79 ± 4.65	6.57 ± 4.24	2.776	0.250	normal level
Additional items	2.00 ± 1.41	3.94 ± 3.87	4.53 ± 3.19	4.099	0.129	normal level
Total Score	17.05 ± 8.50	38.56 ± 7.28	45.35 ± 5.49	0.854	0.142	

*Refers to the results obtained significantly.

When the sub-factors of BSI were compared with the time since the patients were first diagnosed, it was found that all the sub-factors in the patients who were diagnosed before the time range of 1-5 months were found to be in the normal range. In patients whose diagnosis time was in the range of 6-12 months, additional items were found within the normal range with a mean of 5.46 ± 4.40, and the other sub-scales were found to be mildly problematic. In patients whose diagnosis time was 12 months or above, interpersonal sensitivity was 5.98 ± 4.06 and depression 7.88 ± 5.51. There was a significant difference between the time of diagnosis and the scale sub-factors ($p < 0.05$) except for phobic anxiety ($p > 0.05$). The patient whose response was in the range of 6-12 months for the question about how long ago they were diagnosed showed higher levels of psychological disorders (Table 7).

Discussion

It is known that any type of cancer diagnosis can cause psychological problems in patients. In haematological cancers, it is thought that the challenging treatment process may result in patients suffering from psychological breakdowns, thus affecting the treatment process. Therefore, this study was conducted to determine the psychological well-being of patients who underwent ST. Since the studies conducted on the psychological well-being of patients who underwent ST are limited, the results of this study were discussed with the results of the studies conducted with different patient groups in the literature.

The analysis was carried out based on the total mean score of BSI taken by the patients and sub-scale mean scores. When the overall means were analysed, the levels of interpersonal sensitivity, anxiety disorder and depression were found to be mild although no significant difference was found. Furthermore, the means for the other sub-scales were within the normal range (Table 2).

Table 7. Comparison of time of diagnosis of st patients and mean scores of brief symptom inventory sub-factors.

	Time of diagnosis (month)					
Sub-factors	X ± SD 1-5 months	X ± SD 6-12 months	X ± SD 12 months and above	KW	p	Problem severity level
Somatization	5.93 ± 5.03	10.76 ± 7.06	7.77 ± 6.81	9.150	0.01*	1-5 months: normal 6-12 months: mild 12 months and above: normal
Obsessive Compulsive Disorder	5.72 ± 4.43	9.80 ± 6.01	7.36 ± 5.21	3.736	0.005*	1-5 months: normal 6-12 months: mild 12 months and above: normal
Interpersonal Sensitivity	4.74 ± 3.43	7.40 ± 4.34	5.98 ± 4.06	8.490	0.014*	1-5 months: normal 6-12 months: mild 12 months and above: mild
Depression	6.02 ± 4.54	9.00 ± 5.79	7.88 ± 5.51	7.856	0.02*	1-5 months: normal 6-12 months: mild 12 months and above: mild
Anxiety	6.44 ± 4.42	9.76 ± 6.14	8.14 ± 5.23	6.306	0.043*	1-5 months: normal 6-12 months: mild 12 months and above: normal
Hostility	5.11 ± 3.56	8.00 ± 4.65	6.53 ± 4.52	8.270	0.016*	1-5 months: normal 6-12 months: mild 12 months and above: normal
Phobic Anxiety	4.86 ± 3.99	7.66 ± 6.17	5.85 ± 5.33	3.154	0.207	1-5 months: normal 6-12 months: mild 12 months and above: normal
Paranoid Thoughts	4.11 ± 3.32	7.43±5.15	6.37 ± 5.12	8.711	0.002*	1-5 months: normal 6-12 months: mild 12 months and above: normal
Psychoticism	4.51 ± 3.45	8.03±4.61	5.92 ± 4.48	12.620	0.002*	1-5 months: normal 6-12 months: mild 12 months and above: normal
Additional items	2.88 ± 2.60	5.46±4.40	4.03 ± 3.64	7.878	0.019*	normal level

*Refers to the results obtained significantly.

Morrison, Pai, and Martsolf (2018) several barriers were found for self-management of the treatment process with adolescents and young adults after Hematopoietic Stem Cell Transplantation. It is seen that there are psychological problems among these obstacles. At the end of the study, the importance of good attitude, social support and holistic approach is emphasized (Morrison et al., 2018). In our study, it is seen that psychological well-being is at a high level. The reason for this is thought to be that the participants expressed their extremely positive experiences in nursing care and personally expressed that they were told from the beginning to the end of the treatment process.

When the mean values of the total score are evaluated according to the socio-demographic data, the highest mean values were found in single female patients who were not working and had a poor income. However, of these variables, only in marital status, the mean of scale scores differed significantly. When marital status was evaluated according to the sub-factors, a significant difference in phobic anxiety, obsessive compulsive disorder and additional items was observed between married patients and single patients. This result reveals that the married male patients, who have a lower education level, higher income and are working, have better psychological state (Table 3-6).

According to the Mental Health Profile Survey of Turkey, in a period of 12 months, the rate of mental disorders in the society was found to be higher in women (Ozturk & Ulusahin, 2015). Bag (2013) stated that depression was higher in the female patients, who were diagnosed with cancer than the male patients with the same diagnosis (Bag, 2013). The results of the literature are in parallel with the results of this study.

Marques et al. (2018) In their study with patients who underwent stem cell transplantation, people's being at the peak of their productive life increased the state of anxiety in addition to treatment, they stated that they were worried about interrupting their professional activities due to their health conditions and because they thought that their family income would decrease. In the same study, it was stated that the presence of a spouse or partner can serve as an emotional support to the transplant patient at different treatment stages from the time of diagnosis and especially during hospitalization where social isolation is relatively long (Marques et al., 2018). The results of the study support the results of this research.

McCall, Parks, Smith, Pope, and Griggs (2002) stated that the lower levels of education are a risk factor for major depressive disorder and the individuals with lower levels of education experience high levels of anxiety and depression (McCall et al., 2002). However, in this study, as the level of education increased, an increase was observed in all the sub-dimensions of psychological problems (Table 5). Therefore, the results of this study are not parallel with the studies conducted by Mc Call et al. (2002). Contrary to what was expected, as the level of education increased, susceptibility to psychological disorders increased. This difference is thought to have arisen from the well-educated patients' negative beliefs in the effectiveness of the treatment.

In the study conducted by Hintistan et al. (2015) on cancer patients, a significant difference was found between individuals' occupation and somatisation, interpersonal sensitivity, depression, anxiety and psychoticism, and the mean scores for somatisation, interpersonal sensitivity, depression, anxiety and psychoticism in housewives were found to be higher. The same study found significant differences between patients' income level and interpersonal sensitivity, depression, anxiety and psychoticism. On the other hand, this study found that the mean scores for all the sub-factors of BSI was higher in the non-working patients with a low income. It is in parallel with the results in literature.

A significant difference was found when the BSI mean scores were compared with the time of diagnosis. It was observed that the psychological well-being of patients with the time of diagnosis ranging from 6 to 12 months declined; however, the situation changed in a positive direction over time (Table 7). This difference depending on the time is thought to have arisen from the adoption phase of the disease.

A qualitative study conducted by Kartin et al. (2018) indicated that physical symptoms developed over time were perceived by patients as a distressful and consuming process. The patients had difficulty in meeting even their most basic needs, which eventually wore them out (Kartin et al., 2018). Comparing the results of this study with the results of the study conducted by Kartin et al. (2018). it becomes clear that the time of diagnosis should be considered when assessing the patients' perceptions. The study conducted by Song and So (2015) on patients who underwent allogeneic haematopoietic ST pointed out that special nursing initiatives should be developed for immune response in the body against the transplantation in the acute period following the transplantation. It was noted that programmes that would help reduce the severity of symptoms, bring depression under control and increase coping capacity are very important (Song & So, 2015).

Conclusion

As a result of the statistical evaluation of all the demographic characteristics, the patients who were in worse condition in psychological terms were single. It was found that the psychological state of patients was directly related to the time that they received a diagnosis. In the light of these results, certain approaches to provide psychological support to the patients undergoing an ST and allow them to express themselves should be adopted. Moreover, it is recommended to consider the time of diagnosis while planning, and to improve nursing care by consulting patients to reduce their anxiety.

References

Bag, B. (2013). Long-term psychosocial problems in cancer patients. *Current Approaches in Psychiatry*, *5*(1), 109-126. DOI: http://dx.doi.org/10.5455/cap.20130508

Derogatis, L. R. (1992). *The brief symptom inventory (BSI). Administration, scoring and procedures manual II*. Baltimore, MD: Clinical Psychometric Research.

Ferreira, M., Nascimento, L. C., Braga, F. T., & Silva-Rodrigues, F. M. (2017). Competências de enfermeiros nos cuidados críticos de crianças submetidas a transplante de células-tronco hematopoéticas. *Revista Eletrônica de Enfermagem, 19*(1), 1-10. DOI: http://dx.doi.org/10.5216/ree.v19.43604

Hintistan, S., Pekmezci, H., Nural, N., & Gulhanguner, S. (2015). Psychological symptoms in patients receiving chemotherapy. *Journal of Cumhuriyet University School of Nursing, 4*(1), 1-9.

Izu, M., Silvino, Z. R., Santos, L. M., & Balbino, C. M. (2021). Nursing care for patients undergoing hematopoietic stem cell transplantation. *Acta Paulista de Enfermagem, 34*(1), 1-7Kapucu, S., & Karaca, Y. (2008). Patient assesment in blood stem cell transplantation and care. *Journal of Cumhuriyet University School of Nursing, 12*(3), 52-59.

Kapucu, B. B., Duman, B., Kumbasar, H., Gurman, G., Gunduz, M., Beksac, M., ...Sahin, U. (2015). The effect of pre-transplant psychological status on engraftment in multiple myeloma patients undergoing autologous peripheral stem cell transplantation. *Turkish Journal of Psychiatry, 26*(2), 20-21.

Kartin, P. T., Dogan, N., Curuk, G. N., Ozdemir, U., Tasci, S., Varal, F., & Cetin, M. (2018). Phenomenological approach to experiences of individuals preperad for stem cell transplantation. *Journal of Health Sciences, 27*(2), 137-141.

Kilic, S. (2016). Cronbach's alpha reliability coefficient, *Journal of Mood Disorders, 6*(1), 47-48.

Korkmaz, M., & Yangoz, S. T. (2013). The role of the nurse in providing patient adaptation to cancer diagnosis. *International Refereed Academic Journal of Sports Health and Medical Sciences, 8*(3), 77-86.

McCall, N. T., Parks, P., Smith, K., Pope, G., & Griggs, M. (2002). The prevalance of major depression or dysthymia among aged medicare fee-for-service beneficiaries. *International Journal of Geriatric Physiciatry, 17*(6), 557-565. DOI: https://doi.org/10.1002/gps.642.

Marques, A. C. B., Szczepanik, A. P., Machado, C. A, M., Santos, P. N. D., Guimarães, P. R. B., & Kalinke, L. P. (2018). Hematopoietic stem cell transplantation and quality of life during the first year of treatment. *Revista Latino-Americana Enfermagem, 26*(1), 1-10. DOI: https://doi.org/10.1590/1518-8345.2474.3065

Milligan, F., Martinez, F., Aal, S. H. M. A., Ahmed, S. A., Joby, B., Matalam, J. S., ... Melepeedikayil, S. S. (2018). Assessing anxiety and depression in cancer patients. *British Journal of Nursing, 27*(10), 18-23. DOI: https://doi.org/10.12968/bjon.2018.27.10.S18

Morrison, C. F., Pai A. L. H., & Martsolf, D. (2018). Facilitators and barriers to self-management for adolescents and young adults following a hematopoietic stem cell transplant. *Journal of Pediatric Oncology Nursing, 35*(1), 36-42. DOI: http://dx.doi.org/10.1177/1043454217723864.

Ozturk, M. O., & Ulusahin, A. (2015). *Mental health and disorders*. Ankara, TR: Psychiatric Society Journal.

Song, C. E., & So, H. S. (2015). Factors influencing changes in quality of life in patients undergoing hematopoietic stemcell transplantation: a longitudinal and multilevel analysis. *Journal of Korean Academy of Nursing*, *45*(5), 694-703. DOI: https://doi.org/10.4040/jkan.2015.45.5.694

Sahin, N. H., Durak, A., & Ugurtas, S. (2002). The validity, reliability and factor structure of the brief symptom inventory (BSI). *Turkish Journal of Psychology, 13*(2), 125-135.

Şentürk, V., Yaylı, M., &, Civelek, A. Y. (2012). A patient journal: The psychosocial aspects of a bone marrow transplant patient. *The Journal Kriz, 12*(1), 55-65. DOI: https://doi.org/10.1501/Kriz_0000000200

Tanyeli, A., Aykut, G., Demirel, A. O., & Akcaoglu, T. (2014). Hematopoietic stem cell transplantation and its history. *Archives Medical Review Journal, 23*(1), 1-7. DOI: https://doi.org/10.17827/aktd.66502

Kavradim, S. T., & Ozer, S. C. (2014). Hope in patients with cancer. *Current Approaches in Psychiatry, 6*(2), 154-164. DOI: http://dx.doi.org/10.5455/cap.20130901084242

Yanhui, L., Peiyi, Y., Yuting, Y., Peiling, H., Maoquan, Q., Wang, B., ... Peng, X. (2019). Cognitive and psychological outcomes of pediatric allogeneic hematopoietic stemcell transplantation survivors in a single center in China. *Medicine, 98*(39), 1-6. DOI: http://dx.doi.org/10.1097/MD.0000000000017307