



Original Article

The coping methods for stress of multiple sclerosis patients and the related psychiatric symptoms

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Abstract

Objectives: This study aims to describe the ways that multiple sclerosis (MS) patients cope with stress in their lives and to evaluate symptoms of psychiatric problems.

Methods: The sample was chosen from 245 MS patients who are registered with the Multiple Sclerosis Association Turkey, Ankara Office and agreed to participate in the study. Data were collected by administering an introductory information form, Ways of Coping Inventory (WCI) and the Brief Symptom Inventory (BSI).

Results: Patients with MS were more likely to use problem-oriented approaches in coping and most experienced depression and hostility as psychiatric disorders. There was a positive correlation between the helpless approach in the emotional-oriented approach and psychiatric symptoms.

Conclusion: MS patients should be considered to be at risk for psychiatric disorders. Effective coping strategies that reduce the use of the helpless approach for coping with stress should be supported in terms of preventive mental health.

Keywords: Coping with stress; multiple sclerosis; nursing; psychiatric symptoms.

What is known on this subject?

- Stress is an important factor that affects the occurrence and course of MS.

What is the contribution of this paper?

- Studies have found that MS patients used problem-oriented approaches more as a way of coping, and they experienced depression and hostility as psychiatric symptoms the most.

What is its contribution to the practice?

- Patients with MS who are often monitored at general clinics due to their physical problems can be supported in coping with stress to offset symptoms of psychiatric problems by a holistic perspective from nurses.

Multiple Sclerosis (MS) is a chronic disease which occurs primarily during the young adult period.^[1] Coordination and motor disturbances, cognitive losses, fatigue, sexual, bowel and urinary problems that occur based on the disease involvement may negatively affect the life of patients.^[2,3] Disabilities that occur with the progression of the disease cause

new problems, uncertainties and stressors on subjects such as self-perception, role performance, life expectations and relationships.^[3,4] A study has emphasized that the rate of stressful life events and domestic problems that MS patients face was higher than that of healthy individuals.^[5]

Stress is an important factor affecting the occurrence and course of MS.^[6-8] A study examining MS exacerbations after stressful life events has stated that stress triggered these exacerbations.^[7] Another study has found that negative outlook, ineffective coping, depression and insufficient social support along with stress can trigger an exacerbation, and emphasized the importance of coping with stress effectively for disease compliance.^[8] After the diagnosis of MS, patients and their relatives are encouraged to live a "stress-free life" and "avoid stress" because of the negative effects on the disease process, thus increasing the sensitivity of patients towards stress.

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How MS patients cope with comorbid problems and increased sensitivity is important and should be assessed by healthcare providers. A study examining patients' methods of coping and their symptoms of psychiatric problems has reported that patients with MS used problem- and emotion-oriented coping less than a control group and they demonstrated depression findings more.^[9] Another study has found that patients using problem-oriented coping had fewer psychiatric issues and lower lesion load of the disease.^[10] Ineffective coping of MS patients as well as low levels of social support and negative perceptions weaken the individuals in terms of problem solving and increase the possibility for psychiatric problems to occur.^[8]

Psychiatric problems experienced by MS patients are as follows: anxiety, depression, bipolar mood disorder, substance abuse and psychosis.^[11-13] Anxiety stands out at the beginning of the disease because of uncertainties and lack of knowledge, however, frustrations increase through the years with the disease. Therefore, depression becomes prominent.^[12] Studies in the literature have reported that female patients experience depression and anxiety at a higher level than male patients. Similarly, young patients experience depression and anxiety at a higher level than older patients with similar physical disabilities.^[13,14] Depression, fatigue and cognitive losses are identified as the invisible reflection of MS and they negatively affect quality of life.^[15]

It is important for patients to manage stressful situations which affect the course of disease. Effectively coping with the disease is fundamental as there are no definitive treatments of MS and living a stress-free life is not possible. The nurse who interacts with the MS patient should provide care based on disease symptoms in cooperation with the patient, teach the patient effective coping skills as well as fulfilling the patient's need for information, therefore, empowering the patient.^[16] There is significance in understanding the coping methods of patients diagnosed with MS with stress and determining symptoms of psychiatric issues to plan nursing interventions with a holistic perspective. Therefore, this study aimed to determine the ways MS patients cope with stress and symptoms of psychiatric problems.

Study Questions

1. What are the coping methods of MS patients with stress?
2. What are the psychiatric issues that occur with MS patients?
3. What are the coping methods with stress and psychiatric issues of MS patients in terms of sociodemographic characteristics?
4. Are the coping methods with stress and psychiatric issues of MS patients correlated?

Materials and Method

The Population and Sample of the Study

The study population included 270 patients with MS registered at the Multiple Sclerosis Association Turkey, Ankara

Office. The researchers did not select sampling and aimed to reach the whole population. Of the patients, ten declined to participate, nine were excluded from the study due to the existence of another chronic disease and six were unable to be contacted. Therefore, the study was conducted with 245 patients.

The inclusion criteria were as follows: age 18 or above, being literate, not diagnosed with another chronic disease, having an up to date score on the Expanded Disability Status Scale (EDSS) measured by a neurology clinic and agreeing to participate. EDSS is used to measure the severity of disability or symptoms related to MS in Turkey as well as around the world. Data obtained through neurological examination and patients' complaints are assessed by scoring between zero and ten. Zero point indicates "normal neurological examination," 5.5 points indicate "able to walk for 100 meters without help or resting" and 10 points indicate "death due to MS".^[17]

Data Collection Forms

An Introductory Information Form which included sociodemographic characteristics and disease-related information, the Ways of Coping Inventory (WCI) which included coping methods and the Brief Symptom Inventory (BSI) which included psychiatric symptoms were used.

Introductory Information Form: This form included ten questions on patients' age, gender, marital status, education level, employment status, income level, disease duration, EDSS score, existence of social support received during disease process and routinely used medications.

Ways of Coping Inventory: This inventory was developed by Folkman and Lazarus^[18] and its Turkish validity and reliability study was conducted by Şahin and Durak^[19] in 1995. Subscales of WCI were classified under two main headings: problem-oriented approaches (optimistic, self-confident approach and social support seeking) and emotion-oriented approaches (helpless and submissive). The inventory included 30 items in a Likert-type scale. Each question was scored as does not apply and/or not used "0", used somewhat "1", used quite a bit "2" and used a great deal "3", and each subscale was scored separately. Subscale mean scores were obtained by dividing the total scores obtained from each subscale into the number of questions. Increase in total score of each subscale indicates that individual used that method of coping more frequently.

Items in the five subscales scores of the inventory, factor analysis and min-max scores that can be obtained:

- Optimistic approach: Items numbered 2, 4, 6, 12 and 18, $\alpha=68$; 0-15 points
- Self-confident approach: Items numbered 8, 10, 14, 16, 20, 23 and 26, $\alpha=80$, 0-21 points
- Helpless approach: Items numbered 3, 7, 11, 19, 22, 25, 27 and 28, $\alpha=73$, 0-24 points

- Submissive approach: Items numbered 5, 13, 15, 17, 21 and 24, $\alpha=70$, 0-18 points
- Social support seeking: items numbered 1, 9, 29 and 30, $\alpha=47$, 0-12 points.

Internal consistency coefficients of the subscales of the WCI were found as follows: 0.69 for optimistic approach, 0.88 for self-confident approach, 0.73 for helpless approach, 0.72 for submissive approach and 0.50 for social support seeking.

Brief Symptom Inventory: This inventory was developed by Derogatis (1992)^[20] and its Turkish validity and reliability study was conducted by Şahin and Durak^[21] in 1994. BSI included anxiety, negative self, somatization and hostility subscales and 53 items. No cut point determined for assessment was available. Participants were asked to choose one of the point options which were none "0", mild "1", moderate "3" and severe "4". Higher scores indicated that those symptoms were experienced by the individuals more. Subscale mean scores were obtained by dividing the total scores obtained from each subscale into the number of questions. If the mean scores of each subscale were lower than 1.00, it indicated that no pathological problem existed, whereas if the mean scores of each subscale were higher than 1.00, it indicated that psychological disorders exist.^[20]

Items in the five subscales of the inventory, factor analysis and min-max scores that can be obtained are as follows:^[21]

- Anxiety: Items numbered 12, 13, 28, 31, 32, 36, 38, 42, 43, 45, 46, 47, 49, $\alpha=0.87$, 0-52 points
- Depression: Items numbered 9, 14, 16, 17, 18, 19, 20, 25, 27, 35, 37, 39, $\alpha=0.88$, 0-48 points
- Negative Self: Items numbered 15, 21, 22, 24, 26, 34, 44, 48, 50, 51, 52, 53, $\alpha=0.87$, 0-48 points
- Somatization: Items numbered 2, 5, 7, 8, 11, 23, 29, 30 and 33, $\alpha=0.75$, 0-36 points
- Hostility: Items numbered 1, 3, 4, 6, 10, 40, 41, $\alpha=0.76$, 0-28 points.

Internal consistency coefficients of the subscales of BSI were found as follows: 0.89 for anxiety, 0.90 for depression, 0.87 for negative self, 0.62 for somatization and 0.78 for hostility.

Place and Time of the Study

Data were collected in meetings organized at and by the Multiple Sclerosis Association Turkey, Ankara Office on 26.03.2011, 30.04.2011, 28.05.2011 and 29.05.2011.

Ethical Principles of the Study

Written permission of the Multiple Sclerosis Association of Turkey, Ankara Office was obtained, then ethical committee approval was obtained from Ankara Hacettepe University Scientific Researches Ethics Committee. Verbal and written consents of participants were obtained stating they participated voluntarily.

Limitations of Study

The study was limited to patients with MS disease who reside in Ankara and who were registered at the Multiple Sclerosis Association of Turkey, Ankara Office in 2011.

Statistical Analysis

The data analysis was conducted with SPSS 15 program. The assessment of whether the study data meet the parametric test hypotheses was conducted with Kolmogorov-Smirnov Test and the result showed that it did not. Dependent variables obtained in the study were WCI and BSI subscales while the independent variables were sociodemographic characteristics and disease-related features. Numbers, percentages, arithmetic mean and standard deviation values were used to present the data. Mann-Whitney U test was used to compare the difference between two groups; and Kruskal Wallis test was used to compare the differences between three or more groups.

Results

Table 1 shows the distribution of patients based on their sociodemographic and disease-related characteristics. Of the patients, 36.9% were between the ages of 30 and 39, 66.5% were female, 60.8% were married, 52.2% were unemployed and 55.5% had equal income and expenses. Moreover, of the patients, 67.2% had EDSS scores between 0–3.5, 89.3% received emotional, social or economic support during the disease process and 80.4% used medications regularly.

Table 2 shows the subscale mean and total scores of WCI and BSI. Patients' subscale mean scores of WCI indicate that patients mostly used the self-confident approach (2.09 ± 0.66) followed with the optimistic approach (1.86 ± 0.68). The least used approach by the patients was the submissive approach (1.15 ± 0.58). According to BSI mean scores, patients obtained more points on depression (1.17 ± 0.85) and (1.16 ± 0.83) hostility subscales and their mean scores were higher than 1.00. Their mean scores on anxiety, negative self, and somatization subscales were lower.

Table 3 and Table 4 illustrated patients' methods of coping with stress based on their sociodemographic characteristics and disease-related features. Patients who were university or higher education graduates adopted self-confident approach statistically and significantly more than high school (Table 3) graduates. In addition, patients whose EDSS scores ranged between 0 and 3.5 points employed the same approach statistically and significantly more than those who scored 6 points or higher, and those who received interferon treatment utilized this approach statistically and significantly more than those who received other treatments (Table 4) ($p<0.05$).

The helpless approach was used more by married patients than single patients, and by primary school graduates more than university and higher education graduates (Table 3); Pa-

Table 1. The distribution of sociodemographic and disease-related characteristics of patients

Descriptive characteristics	n*	%
Age (n=244)		
19-29	76	31.1
30-39	90	36.9
40 and above	78	32.
Gender (n=245)		
Male	82	33.5
Female	163	66.5
Marital status (n=245)		
Married	149	60.8
Single	96	39.2
Education level (n=245)		
Primary school	63	25.7
High school	97	39.6
College/License	85	34.7
Employment status (n=245)		
Employed	94	38.4
Unemployed	128	52.2
Retired	23	9.4
Income-expense status (n=243)		
Less income than expense	75	30.9
More income than expense	33	13.6
Income equal to expense	135	55.5
Disease-related information		
EDSS (n=245)		
0-3.5	165	67.3
4-5.5	48	19.6
6 and above	32	13.1
Years since diagnosis (n=244)		
0-1	29	11.9
2-5	84	34.4
6 and above	131	53.7
Receives social support (n=243)		
No	26	10.7
Yes	217	89.3
Uses medication (n=245)		
No	48	19.6
Yes (n=197)	197	80.4
- Interferon	141	71.6
- Other	56	28.4

*As some questions were not answered, n was given for each variable separately.

tients who used the helpless approach received support more than patients who did not (Table 4) (p<0.05).

The submissive approach was used more by patients who were married, primary school graduates, unemployed (Table 3) and those receiving support (Table 4) (p<0.05).

Table 5 and Table 6 examined the psychiatric symptoms of patients with MS. Patients who were married and who received

Table 2. Distribution of patients' min-max and mean scores on WCI and BSI (n=245)

	Subscale mean score (By dividing the number of questions)	
	Mean±SD	Min-Max
WCI		
Optimistic approach	1.86±0.68	0-2
Self-confident approach	2.09±0.66	0-3
Helpless approach	1.33±0.75	0-2
Submissive approach	1.15±0.58	0-2
Social support seeking	1.79±0.66	0-3
BSI		
Anxiety	0.8±0.69	0-4
Depression	1.17±0.85	0-5
Negative self	0.80±0.73	0-5
Somatization	0.72±0.65	0-4
Hostility	1.16±0.83	0-3

WCI: Ways of Coping Inventor; BSI: Brief Symptom Inventory; SD: Standard deviation; Min: Minimum; Max: Maximum.

support experienced anxiety more than patients who were single and who did not receive support at a significant level (Tables 5 and 6) (p<0.05). Depression levels of patients who were female, primary and high school graduates, unemployed and who had lower income level were statistically significantly higher than patients who were male, university graduates, employed and who had higher income levels (Table 5) (p<0.05). Patients who were married and primary school graduates, who had lower income level, and who were diagnosed 6 years ago or earlier experienced negative self at a statistically significantly higher level (Tables 5 and 6) (p<0.05). Patients who were female, high school graduates and received support experienced somatization at a higher level (Tables 5 and 6), and patients who were married, high school graduates, and had lower income levels experienced hostility at a higher level (Table 5) (p<0.05).

Table 7 examined the correlation between the subscales of WCI and BSI, and a positive significant correlation was found between the helpless approach and anxiety, depression and negative self (p<0.05).

Discussion

MS Patients and Ways of Coping with Stress

This study found that the levels of using self-confident, optimistic approaches and social support seeking among the subscales of BSI were higher than those of the helpless and submissive approaches (Table 2). This result indicated that patients with MS used problem-oriented approaches more than emotion-oriented approaches as ways of coping. A systematic review of 38 studies on MS patients' coping mechanisms

Table 3. Comparison of WCI mean scores based on patients' sociodemographic characteristics

Sociodemographic characteristics	Ways of Coping Inventory									
	Optimistic approach		Self-confident approach		Helpless approach		Submissive approach		Social support başvurma	
	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p
Age										
19–29 years (n=76)	9.7±3.2	0.330	15.2±4.5	0.404	9.9±8	0.795	6.3±3.1	0.058	7.3±2.6	0.632
30–39 years (n=90)	8.8±3.6		14.3±4.9		11.1±9.6		6.8±3.7		7.1±2.2	
40 and above (n=78)	9.4±3.3		14.5±4.4		10.1±9.2		7.6±3.4		6.9±2.9	
Gender										
Female (n=163)	9.3±3.3	0.229	14.5±4.7	0.670	9.3±8.7	0.399	6.4±3.7	0.053	7.1±2.7	0.944
Male (n=82)	9.1±3.5		14.7±4.4		11±9.2		7.2±3.3		7.1±2.6	
Marital status										
Single (n=96)	9.7±3.4	0.077	14.7±5	0.416	8.8±8.2	0.002	6.3±3.4	0.028	7.2±2.3	0.365
Married (n=149)	9.3±3.3		14.5±4.3		11.5±9.4		7.3±3.4		7.1±2.8	
Educational level										
Primary (n=63)	8.9±3.5	0.112	14.3±4.6	0.044	11.8±10 ^a	<0.001	9±3 ^{ab}	<0.001	6.7±2.8	0.114
High school (n=97)	8.9±3.5		13±3.1 ^a		11±9.4		6.8±3.4 ^b		7.2±2.7	
University and higher (n=85)	9.9±3.2		16±3.9 ^a		8.4±7.5 ^a		5.6±3.2 ^a		7.4±2.3	
Employment status										
Employed (n=94)	9.5±3.4	0.508	15.1±5.6	0.288	10±9	0.057	6±3.4 ^a	0.038	6.9±2.5	0.481
Unemployed (n=128)	9.1±3.4		14.3±5.7		11±9.1		8±3.4 ^a		7.3±2.6	
Retired (n=23)	8.9±3.6		14±4.5		14±4.5		6.7±3.5		7±2.9	
Income-expense status										
Less income than expense (n=75)	7.5±4.9	0.094	15.5±4.9	0.118	6.5±2.1	0.226	7.4±3.4	0.057	9±1.4	0.428
More income than expense (n=33)	8.7±3.3		13.8±4.6		12.9±10		5.8±3.3		7.2±2.6	
Income equal to expense (n=135)	10.1±2.7		15.6±3.4		8.8±9.5		6.9±3.5		7.6±2.7	

x^{a,b,c}: Subgroups causing differences, p<0.05 was determined.

*Mann-Whitney U test was used to compare the difference between two groups; and Kruskal Wallis test was used to compare the differences between three or more groups.

WCI: Ways of Coping Inventor; SD: Standard deviation.

has found that patients primarily used emotion-oriented and avoidance strategies and used active problem-oriented coping approaches at a lower rate than the general population.^[22] A study conducted with 50 patients diagnosed with MS in Turkey has found patients mostly used the self-confident approach followed by the helpless approach.^[23] An important finding of this study is that patients used all problem-oriented approaches more. This result may arise from the fact that the study was conducted with patients who are members of an MS association, whereas other studies were frequently performed with patients who were admitted to the hospital or selected from general population. Services provided to patients in MS associations (information meetings, home visits, psychotherapies, yoga, etc.) positively affect patients' compliance with the disease and symptom management, and when the association activities can support the patients socially and physically, it is easier to cope with stress.

This study found that patients with high level of education, EDSS score between 0–3.5 and taking interferon were more likely to use the self-confident approach than the problem-oriented approach. A study examining coping methods found that the higher the level of education is, the more effective the problem-oriented approach is and the result is similar to the results of the present study.^[24] Another study found that patients with an EDSS score of three to six used more problem-solving and cognitive techniques than other patients.^[25] Considering that patients with EDSS score of six and above cannot walk without help and their permanent disability is high, it is thought that these patients are not self-confident due to increased environmental dependence, increased cognitive losses and inadequate self-sufficiency. Patients with lower level of disability are often able to continue working, perform their roles, and look to the future more securely due to the less severe course of the disease.

Table 4. Comparison of WCI mean scores based on patients' disease-related features

Disease-related features of patients	Ways of Coping Inventory									
	Optimistic approach		Self-confident approach		Helpless approach		Submissive approach		Social support başvurma	
	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p
EDSS										
0–3.5 (n=165)	8.9±3.4	0.074	17.1 ^a	<0.001	9.1±8.8	0.451	6.1±3.6	0.059	7.2±2.4	0.533
4–5.5 (n=48)	8.5±3.6		15.1±4.2		10.4±8.6		6.3±3.5		8.5±2.6	
6 and above (n=32)	7.9±3.6		12.4±4.7 ^a		11.2±8.2		7.4±3.3		7.3±2.7	
Years since diagnosis										
0–1 yıl (n=29)	9.3±3.4	0.452	14.8±4.7	0.748	10.5±9	0.892	6.2±2.7	0.351	7±2.7	0.132
2–5 yıl (n=84)	9.5±3.2		14.7±4.2		8.7±8		7±3.6		7.2±2.2	
6 and more years (n=131)	8.4±3.5		13.3±4.4		12.6±10.7		7±3.5		8±2.5	
Receives social support										
No (n=27)	8.7±3.6	0.418	15.1±4.4	0.592	6.9±5.7	0.006	5.3±3.4	0.020	7±2.6	0.700
Yes (n=218)	9.3±3.4		14.5±4.6		10.4±9.7		7.1±3.4		7.2±2.6	
Uses medication										
No (n=48)	9.2±3.3	0.623	14.8±4.3	0.032	10.4±5.2	0.828	6.2±3.8	0.964	7±2.5	0.848
Interferon (n=142)	9.3±3.4		17±4.8 ^a		10.1±6.1		7.5±3.3		7.1±2.2	
Other** (n=55)	10.1±3.6		12.9±4.2 ^a		10.7±5.6		7.1±2.9		7.6±2.4	

^{a,b,c}: Subgroups causing differences, $p < 0.05$ was determined. **: Patients using Copaxone, Tysabri, Mitoxandrone.

*Mann-Whitney U test was used to compare the difference between two groups; and Kruskal Wallis test was used to compare the differences between three or more groups.

WCI: Ways of Coping Inventor; EDSS: Expanded Disability Status Scale; SD: Standard deviation.

Disease modifying medications (interferon) are used in patients who have 0–5.5 points on the EDSS and who can walk without help. Use of this medication slows down the progress of disease, and may reduce the duration of attacks/severity of episodes and the disability occurring after the episodes. This strengthens the sense of struggle against the disease, increases compliance and makes patients feel safe.

This study found that emotion-oriented approaches were used more by patients who were married, primary school graduates, unemployed, had low income and received support during the disease process. Both the helpless approach scores (11.5±9.4) and submissive approach scores (7.3±3.4) of the married patients were higher than the general study subscale means (10.67±6.04) (6.93±3.4). The study reported that patients with MS experienced fatigue irrespective of disability, and that this complaint is accompanied by depression, which makes it difficult for them to fulfill their domestic responsibilities.^[26] Of the patients, 66.5% were female. This may mean that the majority of married patients are also responsible for the care of their spouse/children, if any, and routine household chores. It is thought that patients are negatively affected, their self-esteem decreases and they use the helpless and submissive approaches more because of failure to perform these roles effectively due to disease symptoms. In addition, while single patients may receive primary social support more intensely because they live in the same household as their parents, there may be

a difference in that married patients receive social support from people who are formed by marriage ties such as spouses/in-laws.

The study found that unemployed patients used the submissive approach more. A study has found that the career of patients had been adversely affected by MS, early retirement and unemployment had increased and income level had decreased since the early stages of the disease.^[27] Another study found that MS had a negative impact on the career of 54% of the patients.^[4] Non-working patients use the submissive approach more frequently. There is a negative change in their working life and possible career plans as a result of facing illness in the most productive period of their lives, decreasing income, resulting in loss of work/status/career and early retirement.

MS patients who received social support used the helpless and submissive approaches more than those who did not. There are different results in the literature suggesting that individuals with chronic diseases are positively affected^[28] or negatively affected^[29] or have no difference^[30] after social support. A study found that patients evaluating the negative dimensions of receiving social support felt guilty, dependent and experienced anxiety.^[30] Support seeking behavior increases during periods when individuals cannot solve their problems and they feel helpless, therefore it is important to get appropriate support when necessary.

Table 5. Comparison of BSI mean scores based on patients' sociodemographic characteristics

Sociodemographic characteristics	Brief Symptom Inventory									
	Anxiety		Depression		Negative self		Somatization		Hostility	
	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p
Age										
19–29 years (n=76)	9.9±8	0.795	13.1±8.9	0.729	8.3±7.5	0.297	6.2±5.2	0.947	8.5±5.9	0.052
30–39 years (n=90)	11.1±9.6		14.7±10.7		10.7±9.3		6.2±5.8		9.8±5.8	
40 and older (n=78)	10.1±9.2		13.9±10.7		9.4±9		6.8±7.3		7±5.7	
Gender										
Female (n=163)	9.3±8.7	0.089	15.2±9.2	0.006	8.4±8.4	0.051	7.2±6.8	0.015	7.5±5.3	0.113
Male (n=82)	11±9.2		11.5±10.5		10.2±8.9		5±4.9		8.6±6	
Marital status										
Single (n=96)	8.8±8.2	0.018	12.6±9.3	0.138	7.8±7.8	0.003	5.6±5.1	0.210	7.2±5.4	0.022
Married (n=149)	11.5±9.4		14.8±10.6		10.9±9.2		7.2±6.8		8.9±6	
Educational level										
Primary school (n=63)	11.7±10.1	0.050	15±10.5 ^a	0.002	11±9.6 ^a	0.008	6.2±5.8	0.001	9±5.6	0.002
High school (n=97)	11.4±9.3		16±10.9 ^b		10.7±9.3		8±6.9 ^a		9.3±6.3 ^a	
University and higher (n=85)	8.4±7.5		11±8.2 ^{a,b}		7.3±6.9 ^a		5±8.6 ^a		6.4±5 ^a	
Employment status										
Employed (n=94)	10±9	0.462	12±9.5 ^a	0.018	9.1±8.5	0.320	5.8±5.9	0.118	8.2±6.1	0.212
Unemployed (n=128)	11±8.1		15.5±10.2 ^a		10.1±8.8		7.1±6.2		8.4±5.5	
Retired (n=23)	9.5±9		13.6±11.9		8.5±9.7		6±7.9		6.9±5.3	
Income-expense status										
Less income than expense (n=75)	12.9±10.5	0.057	17±11.1 ^a	0.008	12±9.9 ^{a,b}	0.007	7.7±6.6	0.085	7.7±6.6 ^{a,b}	<0.001
More income than expense (n=33)	8.8±8.5		9±5.6 ^a		7.9±8.8 ^a		5.6±5.8		5.6±5.8 ^a	
Income equal to expense (n=135)	9.5±8.1		11.7±9		8.6±8.8 ^b		6±6.2		6±6.2 ^b	

x^{a,b,c}: Subgroups causing differences, p<0.05 was determined.

*Mann-Whitney U test was used to compare the difference between two groups; and Kruskal Wallis test was used to compare the differences between three or more groups.

BSI: Brief Symptom Inventory; SD: Standard deviation.

Psychiatric Symptoms of Patients with MS Patients

This study found that depression and hostility were higher in patients with MS, and anxiety, negative self-image and somatization were not pathological (Table 2). A systemic review has analyzed 118 studies examining psychiatric disorders in patients with MS and found that the most common disorder was depression (23.7%) and anxiety (21.9%).^[11] Similarly, while depression was at a high level, anxiety was not at a pathological level. Considering that anxiety is caused by lack of knowledge about the disease and perception of uncertainty,^[12] meeting informational needs of MS members with education contributes to the reduction of anxiety. In a study comparing the psychiatric symptoms of MS patients and healthy populations, depression, anxiety, somatization and negative self of MS patients were found to be significantly higher than the healthy population and these patients were found to be at risk for psy-

chiatric symptoms.^[31] Similarly, a study conducted in Turkey found that patients with MS had a higher risk of depression than the healthy population.^[32] Depression is associated with disease-related loss^[12] and ineffective coping,^[9,10] while hostility is caused by having a chronic and unknown disease at a young age, the perception of stigma of chronic diseases in the community and having a disease. The feeling may arise from a sense of injustice.

A review toward the factors affecting the emergence of psychiatric symptoms indicated that anxiety rate is high among the patients who are married and receive support while depression rate is high among unemployed women with a poor educational and income status. Negative self is high among the people who are married, have poor educational and income status, and were diagnosed six years ago or earlier. Somatization rate is high among the women who have poor

Table 6. Comparison of BSI mean scores based on patients' disease-related features

Disease-related features of patients	Brief Symptom Inventory									
	Anxiety		Depression		Negative self		Somatization		Hostility	
	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p
EDSS										
0-3.5 (n=165)	7.4±11.5	0.451	10.8±9.8	0.051	6.5±7.7	0.093	4.5±5.2	0.130	6.8±5.7	0.214
4-5.5 (n=48)	6.5±10.4		12.5±9.5		7.3±8.2		5.7±5.8		6.1±5.2	
6 and above (n=32)	8.2±10.1		12.9±8.7		8.9±8.5		5.1±6.4		7.4±6.3	
Years since diagnosis										
0-1 year (n=29)	8.3±7.8	0.260	14±10.2	0.753	9.6±8.7a	0.033	6.4±5.8	0.344	8.4±5.8	0.493
2-5 years (n=84)	11.6±10.8		12.3±8.9		7.7±7.7		6.2±7.1		6.5±4.9	
6 and more years (n=131)	10.8±8.5		12.9±8.7		12.5±9.9a		7.1±7.7		7.5±6.6	
Receives social support										
No (n=27)	6.4±5.7	0.014	10.9±7.8	0.170	6.2±5.1	0.053	3.2±5.1	0.006	6.5±5	0.096
Yes (n=218)	11±9.2		14.4±10		10±9		6.9±7.8		8.4±5.9	
Uses medication										
No (n=48)	9.5±9.6	0.908	12.6±9.9	0.840	9±8.6	0.939	6.4±6.2	0.174	8.6±6.3	0.314
Interferon (n=142)	8.5±8.4		13.1±9.2		7.5±8.2		5.1±5.8		8.9±7.2	
Other** (n=55)	8±7.9		13.4±9.5		7.9±9.5		4.9±7.1		7.2±5.8	

x^{a,b,c}: Subgroups causing differences, p<0.05 was determined. **: Patients using Copaxone, Tysabri, Mitoxandrone.

*Mann-Whitney U test was used to compare the difference between two groups; and Kruskal Wallis test was used to compare the differences between three or more groups.

BSI: Brief Symptom Inventory; EDSS: Expanded Disability Status Scale; SD: Standard deviation.

Table 7. Correlation between the mean scores of the WCI and BSI

		Ways of Coping Inventory				
		Optimistic approach	Self-confident approach	Helpless approach	Submissive approach	Social support başvurma
Brief Symptom Inventory						
Anxiety	r	-0.190	-0.251	+0.591	+0.270	-0.075
	p	0.003*	0.000*	0.000*	0.000*	0.244
Depression	r	+0.300	-0.310	+0.821	+0.291	-0.112
	p	0.000*	0.000*	0.000*	0.000*	0.081
Negative self	r	-0.212	-0.282	+0.615	+0.332	-0.121
	p	0.001*	0.000*	0.000*	0.000*	0.059
Somatization	r	-0.121	-0.203	+0.404	+0.185	-0.102
	p	0.059	0.001*	0.000*	0.004*	0.110
Hostility	r	-0.268	-0.190	+0.441	+0.209	-0.043
	p	0.000*	0.003*	0.000*	0.001*	0.501

*Pearson correlation test was used for the correlational analysis. **P<0.05 was determined. WCI: Ways of Coping Inventory; BSI: Brief Symptom Inventory.

educational status and receive support while hostility is high among the married patients with poor educational and income status.

A Norwegian study assessed depression and anxiety levels in terms of gender. In contrast to this study, depression and

anxiety levels were significantly higher in male patients than in female patients.^[33] The differences between these results are caused by cultural factors. In Turkey, culture dictates that women are primarily the family caregivers. When women are ill, problems with family, children and spouses are intensified

and divorces may increase. Women use somatization more to gain secondary benefit from being ill and to remain at the center of attention. This results in depression, feelings of inadequacy and fear of abandonment. Somatization is a culturally learned behavior that is commonly used by women as a way of self-expression.^[34]

As education levels increased, depression, negative self, somatization and hostility complaints decreased. Another study found that somatization complaints decreased as education level increased.^[24] Considering that MS individuals cope more effectively with higher education levels or educational support and live more in harmony with the disease, education is likely to affect psychiatric symptoms.

The unemployed patients were found to have more depressive symptoms. A study has found that 28% of patients had to give up their career completely due to disability.^[35] Hostility scores decreased as income level increased. There is a positive correlation between work and the income-expenditure balance, and the income-expenditure balance changes with the effect of work and the disease. In the study, while the general average score of depression subscale was 14.03 ± 10.23 , it was found to be 17 ± 11.1 in low-income patients and 9 ± 5.6 in high-income patients (Table 5). There is a significant effect of income-expenditure balance on depression. A study found that following MS diagnosis, the patient's capacity to work decreased, and his/her family took on a caregiver to meet the needs of the individual. The income of this family decreased while the expenses increased due to increased health expenditures.^[36] Negative factors such as inability to perform work, job loss, burden and feelings of guilt cause depressive affect in these patients.

The negative self-perception of patients increased along with the years since diagnosis. While the overall mean score of negative self-subscale in this study was 9.65 ± 8.8 , the negative self-score of patients with a diagnosis for 6 years and longer was 12.5 ± 9.9 . There was a relationship with the increase in addiction, loneliness, low social support and negative effects on career, which was compatible with the literature in this study. One study has found that patients experienced more cognitive loss, fatigue, and depression after 10 years of diagnosis.^[37] As the year of diagnosis increases, dependence addiction increases, quality of life decreased, and problems in work and social life caused negative self-perception.

Correlation Between the WCI and BSI Scores of Patients with MS

When the correlation between WCI and BSI was examined, a correlation between patients' coping methods and psychiatric symptoms was observed. No psychiatric correlations were found in patients who used problem-oriented coping while a positive significant correlation was found between anxiety, depression and negative self-subscales of patients who used emotion-oriented coping.

A study examining the way MS patients' ways of coping found that patients used emotion-oriented coping style more when their psychological stress levels increased.^[38] A study has found a negative significant correlation between depression and use of social support.^[39] Another study has found that psychiatric symptoms such as perceived stress severity, anxiety, and depression are associated with effective and ineffective ways of coping of MS patients and psychiatric symptoms had a positive correlation with emotion-oriented coping methods.^[40] The results of the present study supported these results. This correlation is a significant finding on the planning of support provided to patients. Improving and supporting MS patients' ability to cope with their disease might contribute to managing situations that cause stress and with appropriate strategies decrease psychiatric symptoms of patients.

Conclusion

The study found that MS patients mostly used problem-oriented approaches of the WCI (self-confident approach, optimistic approach and social support seeking) and experienced depression and hostility on the subscales of BSI at a higher level.

Problem-oriented approaches were mostly used by patients who had higher education levels (university or higher), 0–3.5 on EDSS and used interferon. Emotion-oriented approaches were mostly used by patients who were married, who had lower education levels (primary school), low income levels and received support during the disease process.

Patients who were married and had received support experienced anxiety more. Patients who were female, unemployed, had lower education and income levels experienced depression more. Patients who were married, had low education and income levels, and 6 or more years since diagnosis experienced negative self more. Patients who were female, had lower education level and received support experienced somatization more. Patients who were married, and had low education and income levels experienced hostility more.

A positive significant correlation was found between the use of the helpless approach and anxiety, depression and negative self complaints.

- Accordingly, patients with MS should be regarded as a high-risk group in terms of psychiatric symptoms such as depression and hostility.
- Patients who are married, female, unemployed, and have low levels of education and income, as well as increased disability and disease duration should be regarded as high-risk group in terms of coping with stress ineffectively and emerging psychiatric symptoms.
- Patients who use the helpless approach among emotion-oriented approaches should be assessed for psychiatric symptoms and self-awareness. Communication, problem solving and relaxation techniques should be developed and utilized to support the use of effective approaches.

- Psychosocial interventions within the scope of psychiatric nursing should be administered to patients who can be monitored at general clinics due to their physical problems and who are in the high-risk group for psychiatric symptoms. These interventions should be generalized.
- Further studies which administer interventions on larger patient groups and use different methods should be planned.
- Healthcare providers should encourage patients to join MS associations as being a member of a MS association may support coping with stress effectively.

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