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RESEARCH ARTICLE

Evaluation of the Relationship Between Socio-demographic Characteristics and Social Support with Adherence to Treatment in Patient with Multiple Sclerosis

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Abstract

Multiple sclerosis (MS) is a severe autoimmune illness that can be treated with a variety of medications. However, over a third of patients do not adhere to their treatment regimens. Drug compliance may be influenced by social support and demographic factors. This is a cross-sectional study that examines the association between Patient with MS socio-demographic characteristics and social support and their treatment adherence. We used the perceived social support scale and the treatment compliance scale to collect data on socio-demographic factors. We looked at the correlations between the scores on the three scales. We included 155 female, 45 male patients in our study. The mean age of the patients was 36.3±11.8 (±standard deviation). The rate of noncompliant patients was 15.5%. and 56.0% showed moderate-level compliance with their treatment. The mean multi-dimensional perceived social support score was 62.3±18.8. The only socio-demographic feature that impacts the social support and special person subscale scores was the marital status. We found that married patiens had significantly more social support and were significantly higher than divorced patient ($p<0.05$). This study found that PwMS compliance with their medicines is unaffected by socio-demographic characteristics or perceived social support. Larger patient groups with less perceived social support will need to be studied. On the other hand, this suggests that patient compliance is more influenced by personal factors such illness perception and beliefs than by social support.

Keywords
Multiple Sclerosis, Treatment Compliance, Perceived Social Support

INTRODUCTION

Compliance with the disease and treatment can be defined as the acceptance of the recommendations regarding lifestyle changes and regular drug use (Sabaté, 2003). Acceptance and sustainability of the treatments used in chronic diseases for a lifetime affect the success of the treatment. Non-compliance to treatment increases mortality and morbidity rates and causes an increase in the number of hospitalizations (Tavares et al., 2016).

According to a study in Brazil performed in 2016, 31% of patients with chronic disease have difficulty with compliance to their treatments. A study conducted by Cunnigham et al. in 2010 using 259 Patient with MS (PwMS) in Sweden found that only 31% of the patients used their treatments as recommended and 15% of the patients stopped early, and the rest changed their treatment (Cunningham et al., 2010). In a research with 198 patients, it was shown that 40.6% of the

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patients didn't adhere to their treatment plan (Erbay et al., 2020).

The non-compliance rate is higher in young, male patients (Tavares et al., 2016). A meta-analysis study determined that married patients showed compliance to treatment 30% more than single patients, that was associated with support and solidarity in the family(psychology & 2004, 2004). In 2012, according to a study conducted in Spain using 120 patients on interferon beta 1b treatment, 32% experienced problems in compliance with the drug (Fernández et al., 2012). When all forms of treatments were compared with fingolimod, which is an oral treatment, higher compliance was observed with the fingolimod treatment (Bergvall et al., 2014).

This study that was conducted by Köşkderelioğlu et al. in 2015, as the disease of diagnosis increase, treatment compliance decreases. Social support is defined as a physical and psychological aid provided by the family, friends, and institutions (Langford et al., 1997). The level of support on the patient significantly affects the treatment process(Üstünsoy Çobano Ğlu et al., n.d.). Another study revealed that people with high social support had 57% less anxiety than those who did not receive such support. There are several studies on factors affecting adherence to treatment in chronic diseases (Bergvall et al., 2014; ÖzdemİR & AŞİret, 2011; Tavares et al., 2016; Üstünsoy Çobano Ğlu et al., n.d.). However, the compliance of perceived social support to treatment in patients with MS has not been elucidated in Turkey. Therefore, we carried out this study to determine the relationship between the socio-demographic characteristics and perceived social support with the treatment compliance in PwMS to increase the awareness of the perceived social support.

MATERIALS AND METHODS

This study is a descriptive, cross-sectional study that inclued PwMS who were evaluated in the outpatient clinic of the Department of Neurology, Istanbul Faculty of Medicine, Istanbul University. We included 200 consecutive PwMS who were older than 18 years of age, consent to participate in the study, were on remission, and use a disease modifying treatment for more than six months. We employed the socio-demographic questionnaire, perceived social support, and Morisky treatment compliance scales using face-to-face interview method. Permission was obtained from the Ethics Committee at the Koç University (approval number: 2016289IRB2.146 and date: 10.03.2017). Additionally, written consent was obtained from the scales' patent-owners and informed consent from the patients who participate in the study.

Socio-demographic question form (SSF)

This form consists of eight-questions. and it includes questions about age, gender, marital status, working status, treatments, and the date of the MS diagnosis.

Multidimensional scale of perceived social support scale (MSPSS)

This scale was developed by Zimet et al. in 1988 to measure the social support perceived by patients (Zimet et al., 2010). The Turkish translation, validity and reliability studies were performed by Eker and Arkar in 1995 (Eker & Arkar, 1995). The scale consists of three sub-dimensions, i.e., family, friends, and a special person and each sub-dimension is comprised of four-items that inclued seven-point Likert scale. The maxium score of the MSPSS is 84 and the minimum is 12, and higher scores suggests better perceived social support.

Morisky Adherence Scale

This was developed by Morisky et al. in 1980 as a four-question survey to determine the adherence to long-term treatments (Morisky et al., 1986). According to this scale, participants who responded "no" to all of the questions were considered as "high", who responded "yes" to one or two questions were considered as "medium", who responded "yes" to three or four questions were considered "Low" compliant patients. Cronbach alpha-value of the original Morisky treatment compliance scale was 0.61. The Turkish validity and reliability studies were conducted by Vural et al. in 2012 (Bekir Vural et al., 2012).

Analysis of the Data

The data were analyzed using SPSS version 24.0 statistical software. Normality distributions of the data were examined with the Kolmogorov-Smirnov (K-S) test. Evaluation of the significance between the socio-demographic characteristics, and perceived social support score averages of the patients were analyzed with the Kruskall Wallis test. The relationship between multidimensional perceived social support scale mean scores and treatment compliance levels were analyzed by

One-way anova test. The statistical significance cut-off level was accepted as 0.05.

RESULTS

We included 200 MS (77,5% female, 22.5% male) patients. The mean age of the patients was 36.3±11.8, 62.0% were married, and 60.0% were unemployed. The mean disease duration was 7.1±4.9 and 57.5% were using oral treatment (Table 1).

Table 1. Distribution of socio-demographic features of individuals in the study (n= 200)

Sociodemographic and Professional Characteristics		n	%
Age (X±SD, Range)	36,34±11,83	18-62	
Gender	Male	45	22.5
	Female	155	77.5
Marital status	Single	76	38.0
	Married	124	62.0
Working status	Working	80	40.0
	Not working	120	60.0
Drug Form	Oral	115	57.5
	Injection	85	42.5
Duration of illness	≤1 year	13	6.5
	2-5 years	73	36.5
	6-10 years	53	26.5
	>10 years	61	30.5
Duration of preventive treatment use	≤1 year	23	11.5
	2-5 years	177	88.5
	TOTAL	200	100%

As for the treatment compliance, 28.0% of the patients was highly-compliant, 56.0% moderately-compliant, and 16% was noncompliant (Table 2).

Table 2. Treatment compliance levels of individuals participating in the study (N = 200)

Sub-Dimensions	N	%
High complince	57	28.5
Moderate compliance	113	56.0
Low compliance	30	15.5
Total	**200**	**100%**

The compliance was not affected by gender, age, and marital status. Employement, route of drug use, duration of disease, and treatments do not make a significant difference in the treatment compliance levels (P>0.05) (Table 3).

The mean of social support scale scores was 22.4±6.7 in the family sub-dimension, 19.3±8.7 in the friend sub-dimension, 20.57±7.44 in the special person sub-dimension. The total score mean was 62.3± 18.8 (Table 4).

MSPSS total mean score was 62.3±18.8 (Table 5). As expected, married patients had higher special person sub-dimension scores than single patients (p<0.02) despite similar total mean score. However, we did not find There was no statistically significant difference between MSPSS mean scores and sub-dimension averages of patients who showed high level of compliance, moderate compliance, and low compliance with the treatment used. (p>0.05) (Table 5).

Table 3. Comparison of treatment compliance of the individuals who participated in the study according to their socio-demographic characteristics (N = 200)

		Treatment compliance							
Socio-demographic and Professional Characteristics		Low compliance S	%	Moderate compliance S	%	High Compliance S	%	X^2	p
Age	<35	18	9.0	52	26.0	24	12.0	2.627	0.269
	≥35	12	6.0	61	30.5	33	16.5		
Gender	Male	7	3.5	25	12.5	13	6.5	0.024	0.988
	Female	23	11.5	88	44.0	44	22.0		
Marital status	Single	14	7.0	42	21.0	20	10.0	2.204	0.900
	Married	16	8.0	71	33.5	37	18.5		
Education	Primary	3	8.8	24	70.6	7	20.6		
	High school	10	14.1	37	52.1	24	33.8	0.073	0.353
	University	17	17.9	52	54.7	26	24.7		
Working status	Working	12	6.0	47	23.5	21	10.5	0.356	0.837
	Not working	18	9.0	66	33.0	36	18.0		
Route of drug	Oral	17	8.5	67	33.5	32	16.0	0.180	0.914
	Injection	14	7.0	49	24.5	24	12.0	0.168	0.919
Duration of illness	≤1 year	0	0	8	4.0	5	2.5		
	2-5 years	14	7.0	40	20.0	19	9.5		
	6-10 years	12	6.0	26	13.0	15	7.5	9.66	0.142
	>10 years	4	2.0	39	9.5	18	9.0		
Duration of treatment use	≤1 year	2	1.0	13	6.5	8	4.0		
	2-5 years	28	14	100	50	49	24.5	1.049	0.592

Table 4. Perceived social support scale total and sub-dimension score average of the individuals participating in the study (N = 200)

Sub-Dimensions	$\overline{X}$ **± SD**
Family	22.41±6.74
Friends	19.31±8.72
A special person	20.57±7.44
Total	62.28±18.75

Table 5. Perceived social support and treatment compliance comparison (n = 200)

	Perceived Social Support			
Level of Treatment Compliance	**Mean Family Support Score**	**Mean Friend Support Score**	**Mean Special Person Support Score**	**Mean Total Social Support Score**
High compliance	23.68±5.68	21.30±11.28	21.91±6.65	66.89±18.02
Moderate compliance	21.93±7.16	18.57±7.45	20.13±7.88	60.63±19.20
Low compliance	21.77±6.80	18.33±7.11	19.63±7.03	59.73±17.41
F	0.843	1.239	0.917	0.836
P	0.674	0.212	0.578	0.778

One way ANOVA test was used to compare groups.

DISCUSSION

This study was conducted to evaluate the relationship between socio-demographic features and perceived social support on treatment compliance in PwMS by employing two scales, i.e., MSPSS and MAS. In line with previous studies, only one third of the PwMS was highly compliant to their treatments. The adherence of patients with MS to the first-line immunomodulatory treatments (IMT) is estimated to be approximately 17%–46% in different series (McKay et al., 2018; O'Rourke et al., 2005; Portaccio et al., 2008; Río et al., 2005; Treadaway et al., 2009). Interestingly, almost half of the MS use their treatments less than 6 years(Evans et al., n.d.). According to a study by Klauer et al. discontinuation of treatment increases the risk of morbidity, mortality and unnecessary use of healthcare resources (D. Mohr et al., 2021).

Our study showed no difference between treatment compliance rates by gender. Contradictory to our findings, MSbasis study, which includes forty-four centers, found that treatment compliance was lower in females than males(Meyniel et al., 2012). Accordingly Arroyo et al. observed that women adhere to treatment at a higher rate (Arroyo et al., 2011). We found no difference in treatment compliance according to age similar to literature(Köşkderelioğlu et al., 2015). This indifference may be due to our participants was mostly between the ages of 20-40 and that they might find it easier to understand the drug treatment education.

Additionally, the marital status did not change the compliance level despite its positive effect on in perceived social support levels. This finding implies that the perceived social support does not influence the complience in patients with MS. We also found that the employement status did not change the compliance to treatment. The working conditions of PwMS can be regulated due to their illness.

On the other hand we could not find a relationship between previous treatment use and compliance, but in a study, it was found that previous treatment use increased the risk of non-adherence (Thach et al., 2018).

Interestingly, we did not find any change in the level of compliance to treatment, contrary to the literature(Popova et al., 2017). This may be because the clinic where the study was conducted was a university clinic. Patients who apply to tertiary care clinics can be expected to have higher drug adherence due to their advanced clinical conditions that require treatment.

In this study, social support of individuals was high. A study conducted by Mohr et al. showed high social support in PwMS with major depression was more effective than special therapy methods(D. C. Mohr et al., 2004). Social support increases the individual's ability to cope with stress and diseases, thereby increasing the level of welfare(Schwartz & Frohner, 2005). Acoording to another study conducted by Motl et al., high social support contributed to the increase of self-sufficiency levels(Motl et al., 2009). Social support increased the tolerance of the symptoms and increased the ability to cope with stress(Costa et al., n.d.). In this study, high levels of social support can be said to be a positive factor contributing to the disease and treatment of PwMS.

In the qualitative research conducted by Dutton et al. with 12 people in 2012, it was stated that the support of spouse, family and friends was a very important factor. Similarly, family support was observed as a common finding, and patients expressed that they accepted MS and felt much better because of their families(Mozo-Dutton et al., 2012). In a study conducted with individuals with a chronic disease, family support was found to be more likely to be seen than friend support(Lilympaki et al., n.d.).

Our study did not detect a relationship between perceived social support and treatment compliance. Its widely believed that high level of compliance could be the result of high level of social support. In a study conducted by Zamanzadeh et al., social support reduced side effects in chronic diseases and positively affected the patient's compliance to treatment(Aghaei et al., n.d.). In a study conducted by Costa et al., patients with high social support were found to have significantly higher levels of compliance to treatment(Costa et al., n.d.). These studies suggest that high social support positively affects compliance in the treatment of MS. Since the perceived social support levels are high in our study, it may not have made any significant difference over compliance with treatment.

The perception of social support is affected by personal factors. If nurses are aware of these sclerosis patients' medication therapy management is not just restricted to the clinical setting. patient care at home maintaining the medication schedule in the environment is crucial for managing the treatment with good compliance (Roper Knowles, 2011). The patient's adherence to therapy in home care is positively impacted by the patient education provided by nurses.

It is a technique that changes the course. It has been noted that follow-up (particularly in the first six months) is crucial for treatment compliance. Patient education should begin with the initial course of medication(Steinberg et al., 2010). Nurses: proper injection techniques connected to therapy; monitoring and management of potential side effects; empowerment of treatment expectations; handling of emergencies (e.g., experiencing an attack); and providing training to PwMS in their homes.

There are many limitations in our study. This study was conducted in a single referral MS center. Therefore, the disability level of the patients was higher than the general MS population. One might expect that the adherence to treatment may not be affected only by social support due to the higher disablity levels of our patients.

Declaration of Conflicting Interests

All authors declare no conflicts of interest.

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Ethical Aspect of the Study

Permission was obtained from the Ethics Committee at the Koç University (approval number: 2016289IRB2.146 and date: 10.03.2017). Additionally, written consent was obtained from the scales' patent-owners and informed consent from the patients who participate in the study.

Author Contributions

Study Design, GYY and AB; Data Collection, GYY; Data Interpretation, GYY and AB; Manuscript Preparation, GYY and AB; Literature Search, GYY and AB. All authors have read and agreed to the published version of the manuscript.

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