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Original Article

Comparing the personality factors in MS patients and healthy people

Mohammad Nadi Sakhvidi*, Mahshid Sadeghi Parizi, Fatemeh Peyghambari

Department of psychiatry, shahid sadoughi university of medical sciences, Yazd, Iran

Correspondence: Mohammad Nadi Sakhvidi, Department of psychiatry, shahid sadoughi university of medical sciences, Yazd, Iran.

ABSTRACT

Background and objective: Multiple Sclerosis (MS) is a chronic diseases with unknown cause leading to inflammation and loss of myelin in the central nervous system (brain and spinal cord). It will finally lead into nervous system dysfunction. Given the effect of personality on MS, the objective of this research was to compare the personality factors of MS patients and healthy people. Methodology: This research was a case-control study. Data were collected by using field method and through questionnaire. The data were analyzed by SPSS17 software using T-test, ANOVA and Chi-square tests. Results: according to the research results, the highest mean and standard deviation of self-directedness (SD) were seen in the control group (11.8 ± 3), the highest mean and standard deviation of harm avoidance (HA) were seen in the case group (12.6 ± 2.5), the highest mean and standard deviation of self-transcendence (ST) were seen in the case group (7.9 ± 2) and the highest mean and standard deviation of perseverance (P) were seen in the case group (2.8 ± 0.9). Based on ANOVA test, significant differences were seen between case and control groups in terms of self-directedness (SD), harm avoidance (HA), self-transcendence (ST) and perseverance (P) ($P < 0.05$). In addition, the correlations between age and harm avoidance (HA) ($P = 0.048$) ($r = 0.198$), between cooperation (CO) and reward dependence (RD) ($P = 0.001$) ($r = 0.337$), between reward dependence (RD) and self-transcendence (ST) ($P = 0.008$) ($r = 0.263$) and perseverance (P) ($P = 0.005$) ($r = 0.278$) were positive and significant based on Pearson correlation test, while a significant and negative correlation was found between self- directedness and harm avoidance ($P = 0.000$) ($r = -0.395$). Conclusion: based on the research results, in patients with multiple sclerosis, significant and positive correlation was found between age and harm avoidance (HA), between co-operation (CO) and reward dependence (RD), and between reward dependence (RD) and self-transcendence (ST) and perseverance (P), which can be a great contribution for medical community in self-monitoring issue to reduce the cost of treatment and suffering of disease in affected patients.

Keywords: Multiple Sclerosis, personality factors, self-directedness, self-transcendence, perseverance

Introduction

Multiple sclerosis or MS is a progressive neurological disease and one of the major diseases of the central nervous system. It degrades the myelin sheath in the central nervous system. It is also one of the diseases which can lead to disability [1]. It seems that this disease is related to auto-immune responses [2]. MS is one of the most common neurological diseases affecting the adults [3]. The age for onset of this disease is 20-40 years [4]. The prevalence of this disease in women is almost twice than that of men [5]. It is estimated that 20,000 people are affected by this disease in Iran [6].

This disease has various clinical manifestations. Numerous studies have reported significant differences between its prevalence and clinical manifestations in different parts of the world [7]. Nowadays, in spite of significant advances in medical knowledge, the main cause and the definitive treatment of this disease have not yet been recognized [8].

The first incident in the lesions of this disease is the degradation of the blood-brain blockage, followed by infiltration around the ventricle of mononucleosis, leading to degradation in some areas of myelin [9]. There are 4 patterns including relapsing, progressive-remitting, progressive primary, secondary, and progressive-relapsing patterns [10]. Experts believe that genetics is involved in development of MS disease, meaning that people

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with MS have probably inherited this disease since their birth. People who are susceptible to MS will be affected by it only when the environmental factors trigger the onset of this disease [11]. MS is commonly manifested simultaneously with coping with situations such as family formation, job selection and providing financial security [8], confirming the effect of environmental factors and individual and racial differences on this disease. Scientists and philosophers have long believed that there is a mutual relationship between physical diseases and psychological harms. From health psychology point of view, not only disease might lead into psychological problems, but also psychological factors are involved in the development of the physical diseases [12, 13]. Various investigations have revealed that MS patients have differences with normal people in some aspects of personality, including personality traits of neuroticism, conscientiousness, and agreeableness [2, 6, 12, and 13]. This matter reflects the important role of personality in this disease. Given the relationship between personality traits and the disease, the scientific investigations of personality in health has led to the identification of different patterns of personality, some of which have been considered as personality traits susceptible to certain diseases [14].

Moradi et al (2016) carried out a research with the aim of comparing the characteristics of stress, coping strategies, and personality type C, and personality type D in patients with multiple sclerosis and normal people. Results revealed a significant difference between the two groups in the scales of stress, the avoidance coping method and the thoughtful problem-solving method, the total score of the personality type C and the social inhibition component personality type D scale. In all the indicators mentioned, except for solving the thoughtful problem solving, the patient group received the higher scores [15]. MeheriNejad et al conducted a research in 2012 to compare the personality traits of patients with multiple sclerosis and normal people. In the mentioned study, 76 patients with MS and 76 healthy people were examined.The results of the analyses revealed a significant difference in personality dimensions based on the test performed between MS and normal patients in terms of neuroticism and agreeableness [16].

HosseinZadeh et al (2013) examined self-destruction personality characteristics and integrative self-knowledge in patients with multiple sclerosis and healthy individuals. The results revealed that the level of self-harm, interpersonal sensitivity and aggression in patients with multiple sclerosis was higher than that in healthy subjects. However, integrative self-knowledge was lower in patients with multiple sclerosis than in healthy subjects [17]. In a study conducted by Zhi Chen et al in China in 2011 on 469 people, they concluded that depression syndrome is different from the nature and character pattern and the positive symptoms score was predicted mainly by the TCI score [18]. As little effort has been made in this regard and based on the high rates of MS patients and the high cost imposed on patients and treatment centers, as well as the high risk of disability caused by the complications, this research might provide promising results for medical community and self-monitoring of the patients. Thus, given the importance of the effect of personality factors on the incidence of multiple sclerosis in patients, this research evaluated the personality factors of MS patients and compared them with those in healthy subjects.

Methodology

This is an observational and case control study. A total of 100 MS patients and 100 non-affected patients were included into research. Statistical population was selected among the population of patients referring to MS Center in Tehran. Data were collected by field method and through questionnaire. The collected data were entered into computer after controlling them in spss17 software. Then, the needed tables and indicators were prepared and T-test, ANOVA and chi-square tests were used for statistical comparisons. In addition, all information derived from patients and the control group remained confidential without mentioning the name.

Results

According to the results of Table 1, the mean and standard deviation of age were 38.1 ± 9.2 years in the case group and 30.4 ± 10.5 years in the control group. Based on the T test, a significant difference was seen between the two groups in terms of age (P <0.05). The mean of the participants in the research was found 34.2 ± 10.6.

Table 1. Mean and standard deviation of age in subjects of case and control studied groups

Groups	n	mean ± SD	min	max	P value
case	100	2.9±1.38	9	63	
control	100	5.10±4.30	18	60	000.0
total	200	6.10±2.34	18	63	

Table 2 presents the frequency and percentage of case and control groups in terms of gender and job. The chi-square test results show no significant difference between case and control groups in terms of gender (P = 1.000). A significant difference was found between the two groups in terms of age based on the chi-square test (P <0.05).

Table 2. Frequency and percentage of case and control groups in terms of gender and job

Variable		groups		total	P value
		case	Control		
gender	male	(% 28) 28	(% 28) 28	(% 28) 56	1.000
	female	(% 72) 72	(% 72) 72	(% 72) 144	
Total		100	100	100	
Job status	housewife	(% 32.3) 31	(% 14/3) 14	(% 32.2) 45	0.000
	worker	(% 14.6) 14	(% 31.6) 31	(% 32.2) 45	
	Self-employed	(% 18.8) 18	(% 5.1) 5	(% 11.9) 23	
	student	(% 5.2) 5	(% 41.8) 41	(% 23.7) 46	
	retired	(5 26) 25	(% 4.1) 4	(% 14.9) 29	
	others	(% 3.1) 3	(% 3.1) 3	(% 3.1) 6	
total		(100) 196	(100) 98	(100) 194	

Table 3 presents the mean and standard deviation of case and control groups based on diversity-seeking, self-directedness, harm avoidance, cooperation, reward dependence, self-transcendence and perseverance. Based on the ANOVA, there was no significant difference between case and control groups in terms of diversity-seeking (P = 0.160), cooperation (P = 0.082) and reward dependence (P = 0.553). Analysis of variance (ANOVA) showed significant difference in case and control groups in terms of self-directedness (SD), harm avoidance (HA), self-transcendence (ST0 and perseverance (P <0.05).

Table 3. Mean and standard deviation of case and control groups based on the criteria of diversity-seeking, self-directedness, harm avoidance, cooperation, reward dependence, self-transcendence, and perseverance.

groups		n	mean± SD	min	max	P value
novelty - seeking(NS)	case	100	8.1±2.11	6	15	
	control	100	8.2±7.10	4	19	160.0
	total	200	3.2±9.10	4	19	
Self-directedness (SD)	case	100	5.2±2.9	5	21	
	control	100	3±8.11	5	17	000.0
	total	200	3±5.10	5	21	
Harm avoidance (HA)	case	100	5.2±6.12	3	18	
	control	100	8.2±4.9	4	17	000.0
	total	200	3±05.11	3	18	
Cooperation (CO)	case	100	7.2±1.14	8	22	
	control	100	2.3±4.13	3	22	082.0
	total	200	3±8.13	3	22	
Reward dependence (RD)	case	100	8.1±02.8	3	12	
	control	100	9.1±8.7	4	13	553.0
	total	200	9.1±9.7	3	13	
Self-transcendence (ST)	case	100	2±7.9	6	14	
	control	100	2±5.8	3	14	000.0
	total	200	1.2±1.9	3	14	
Perseverance (P)	case	100	9.0±8.2	0	5	
	control	100	1.1±4.2	0	5	003.0
	total	200	1±6.2	0	5	
total	case	100	6.5±01.68	54	85	
	control	100	5.7±3.64	49	85	000.0
	total	200	9.6±1.66	49	85	

Table 4 presents the results of the correlation between diversity-seeking, self-directedness, harm avoidance, cooperation, reward dependence, self-transcendence and perseverance in the case group. The results showed positive and significant correlation between age and harm avoidance (HA) (P = 0.048) (r = 0.198), between cooperation (CO) and reward dependence (RD) (P = 0.001) (r = 0.337), between reward dependence (RD) and self-transcendence (ST) (P = 0.008) (r = 0.263) and perseverance (P) (P = 0.005) (r = 0.278) based on Pearson correlation test. However, negative and significant correlation was found between two criteria of self-directedness (SD) and harm avoidance (HA) (P = 0.000) (r = -0.395).

Table 4. Correlation between criteria of diversity-seeking, self-directedness, harm avoidance, cooperation, reward dependence, self-transcendence and perseverance in case group

case	Age	Novelty-seeking (NS)	Self-directedness (SD)	Harm avoidance (HA)	Cooperation (CO)	Reward-dependence (RD)	Self-transcendence(ST)	Perseverance(P)
Novelty-seeking(NS)	Pearson correlation	0.025						
	P value	0.801						
	n	100						
Self-directedness (SD)	Pearson correlation	-0.092	0.021 -					
	P value	0.364	0.836					
	n	100	100					
Harm avoidance (HA)	Pearson correlation	0.198	0.008	-0.395				
	P value	0.048	0.934	0.000				
	n	100	100	100				
Cooperation (CO)	Pearson correlation	0.066	0.122	-0.075	0.104			
	P value	0.511	0.227	0.460	0.303			
	n	100	100	100	100			
Reward-dependence (RD)	Pearson correlation	-0.001	0.040 -	-0.175	0.017	0.337		
	P value	0.994	0.689	0.077	0.868	0.001		
	n	100	100	100	100	100		
Self-transcendence(S	Pearson correlation	-0.018	0.107	-0.080	0.134	0.073	0.263	
	P value	0.860	0.289	0.430	0.184	0./471	0.008	

T)	n	100	100	100	100	100	100		
Perseverance (P)	Pearson correlation	0.175	0.021 -	-0.053	0.008	0.138	0.278	0.035	
	P value	0.081	0.839	0.599	0.939	0.169	0.005	0.732	
	n	100	100	100	100	100	100	100	
total	Pearson correlation	0.109	0.395	0.142	0.370	0.701	0.358	0.371	0.310
	P value	0.281	0.000	0.159	0.000	0.000	0.000	0.000	0.002
	n	100	100	100	100	100	100	100	100

Table 5 shows correlation between diversity-seeking, self-directedness, harm avoidance, cooperation, reward dependence, self-transcendence and perseverance in the control group. It was reported that the correlation between diversity-seeking (NS) and harm avoidance (HA) (P = 0.004) (r = 0.287), between harm avoidance (HA) and reward dependence (RD) (P = 0.009) (r = 0.259), between cooperation (CO) and reward dependence (RD) (P = 0.000) (r = 0.375) based on the Pearson correlation test were positive and significant, while the correlation between self-directedness (SD) and harm avoidance (HA) (P = 0.018) (r = -0.236) was reported significant and negative.

Table 5. Correlation among diversity, self-directedness, harm avoidance, cooperation, reward dependence, self-transcendence and perseverance in case group

Control		Age	Novelty-seeking (NS)	Self-directedness (SD)	Harm avoidance (HA)	Cooperation (CO)	Reward-Dependence (RD)	Self-transcendence (ST)	Perseverance (P)
Novelty-seeking(NS)	Pearson correlation	008.0							
	P value	935.0							
	n	100							
Self-directedness(D)	Pearson correlation	095.0	182.-0						
	P value	348.0	069.0						
	n	100	100						
Harm avoidance (HA)	Pearson correlation	107.0	287.0	236.-0					
	P value	288.0	004.0	018.0					
	n	100	100	100					
Cooperation (CO)	Pearson correlation	017.-0	025.0	133.0	172.0				
	P value	871.0	808.0	188.0	088.0				
	n	100	100	100	100				
Reward-dependence (RD)	Pearson correlation	158.-0	034.-0	096.-0	259.0	375.0			
	P value	116.0	737.0	341.0	009.0	000.0			
	n	100	100	100	100	100			
Self-transcendence(ST)	Pearson correlation	112.0	130.0	093.-0	190.0	079.-0	010.0		
	P value	269.0	198.0	357.0	058.0	432.0	918.0		
	n	100	100	100	100	100	100		
Perseverance (P)	Pearson correlation	134.0	011.0	005.0	003.-0	045.0	125.0	128.-0	
	P value	184.0	913.0	964.0	973.0	.0	215.0	205.0	
	n	100	100	100	100	100	100	100	
total	Pearson correlation	084.0	446.0	253.0	580.0	642.0	489.0	305.0	177.0
	P value	403.0	000.0	011.0	000.0	000.0	000.0	002.0	0.079
	n	100	100	100	100	100	100	100	100

Discussion and conclusion

The effect of psychological factors on the function of the immune system and autoimmune diseases has been studied in various studies over the last decades. In these studies, especially in patients with multiple sclerosis, remitting personality and negative emotions, hysteria and hypochondriasis were seen, confirming the results of various studies on the association of thoughts, emotions and behaviors as the elements of the personality with immune-cognitive and physiological responses [9, 19]. Based on the results of the present study, 28% of the subjects were male and 72% were female in case and control groups. Mean and standard deviation of the subjects were 38.1 ± 9.2 years in the case group and 30.4 ± 10.5 years in the

control group. In the study conducted by Mohammad Pour et al [19], the frequency of women as case samples was 63.8% and the frequency of women in control group was 58.8%.

In this study, the mean age of the case group was 30.09 ± 6.5 years and the mean age of control group was 28.3 ± 6.3 years. In the study conducted by MehriNejad et al. [9], the mean age of women in case and control was reported 31.08%.In the study conducted by Moradi et al [15], the prevalence of women in the study was reported 86.7%, while the prevalence of men was 13.3%. The age of case group was 32.2 years and that of control group was 29.8 years. The result of mentioned study showed a similarity with that of present study in terms of higher prevalence of females in the study and the higher age of case group.The results of the present study suggest that 32.3% of the case group subjects and 14.3% of the control group subjects were housewife, 14.6% of the case group subjects and 31.6% of the control group subjects were worker, 18.8% of the case group subjects and 5.1% of the control group subjects were self-employed, 5.2% of subjects in case group and 41.8% of the subjects in control group were students. In the research conducted by Mohammad Pour et al [19], it was reported that 40% of the case group subjects and 10% of the control group subjects were housewife, 3.8% in the case group subjects and 8.8% of control group subjects were worker, and 2.5% of case group subjects and 32.5% of control group subjects were students.

In the study conducted by MehriNejad et al [9], it was also reported that 34 cases were housewife, 6 case group subjects and 6 control group subjects were self-employed and 9 subjects in case group and 9 subjects in control group were university students, which is consistent with the results of the present study.Based on the results of the present study, the mean and standard deviation of self-directedness (SD) in case and control groups were 11.8 ± 3, the mean and standard deviation of harm avoidance (HA) in the case group were 12.6 ± 2.5, the mean and standard deviation of self-transcendence (ST) were 9.7 ± 2 in the case group, and the mean and standard deviation of perseverance (P) were 2.8 ± 0.9. Significant differences were seen between case and control groups in terms of self-directedness, harm avoidance and perseverance. In addition, based on the results of this study, in case group with multiple sclerosis, the significant and positive correlation was found between harm avoidance (HA), between cooperation (CO) and rewards dependence (RD), between rewards dependence (RDs) and self-transcendence (ST) and perseverance (P), while significant and negative correlation was found self-directedness (SD) and harm avoidance (HA).

In the research conducted by Mohammad Pour et al [19], it was reported that the mean of three personality traits of novelty-seeking (27.6 ± 8.2), pleasantness (30.5 ± 6.03), and conscientiousness (35.6 ± 6.8) was more in patients with multiple Sclerosis than in the control group. Comparing the standard deviation of the two patient and healthy groups showed that all scores obtained from the assessment of personality traits in the male patients had more dispersion than those in healthy group. In this study, Bruce et al [20] reported a lower openness in patients with multiple sclerosis than that in the control group. However, no significant difference was found between the two case and control groups in terms of novelty-seeking, extroversion, pleasantness, and consciousness. However, the research conducted by Ahmadi et al [21] showed a significant difference between the case and control groups in terms of novelty-seeking, extroversion, pleasantness, but there was no significant difference between these groups in terms of components of openness and consciousness.

In the study conducted by MehriNejad et al [9], a significant difference was found between case and control groups in terms of neuroticism and agreeableness, so that case group subjects obtained higher score than control group in neuroticism and lower score compared to control group in agreeableness dimension. In the study conducted by Benedict et al [22], it was also reported that patients with multiple sclerosis had higher scores in terms of empathy, agreeableness, and conscientiousness compared to the control group. Their results were in line with those of present study. However, in the study conducted by Moradi et al [15], it was also reported that people with multiple sclerosis obtained significantly lower scores compared to control group in the behavioral activation subscale. The mean and standard deviation of behavioral activation were 42.2 ± 6.3 in the case group and 44.6 ± 4.7 in the control group, the mean and standard deviation of behavioral inhibition were 37.7 ± 9.5 in case group and 39.8 ± 11.2 in the control group, and the mean and standard deviation of active avoidance component were 25.3 ± 4.9 in the case group and 27.7 ± 2.5 in the control group. It indicates that mean scores of the components studied in control group were higher than those in case group and these results are inconsistent with those of present study.

The results of the study conducted by MehriNejad et al [9] also reported that patients with multiple sclerosis have personality traits such as self-centered, suspected of others' intention, competition, weakness in honesty, altruism, humility, weakness in controlling anger, generalized anxiety, stress, and negative emotions making to incapable to adapt to the environment, leading to irrational beliefs, low power in controlling impulses, and poor adaptation to others. It seems that people with MS commit a chain of monitoring behaviors continuously due to reasons such as fear of new consequence of disease, such as relapse, avoidance of psychological symptoms caused by MS such as depression or anger and concern about people's opinion about them.

Thus, enhancing and promoting their conscientious is justifiable in them. In addition, symptoms such as fatigue or lack of energy, feelings of worthlessness or guilty, symptoms of discomfort and degradation in the social and occupational functioning in these patients, caused by malignant myelin and excessive weakness, lead to limited social activities in person and low extroversion in these people [23, 24]. Based on what was stated, it can be reported that behavioral and personality systems in MS patients cause them to experience many positive and negative events in life, and consequently, high level of stress can trigger the secretion of hormones weakening or

strengthening the immune system function [25-27]. Hence, given the importance of personality factors in MS patients, paying attention to personality type and controlling the stressors should be considered seriously.

According to the results of this study, in patients with multiple sclerosis, there is significant and positive relationship between age and harm avoidance (HA), between cooperation (CO) and rewards dependence (RD), between rewards dependence (RD) with self-transcendence (ST) and perseverance (P), indicating that harm avoidance increases with increasing age, rewards dependence increases with increasing cooperation and self-transcendence and perseverance increase with increasing rewards dependency. Moreover, a negative and significant correlation was found between self-directedness (SD) and harm avoidance (HA), indicating that the level of harm avoidance in patients with MS increases with reducing self-directedness. The expression of these characteristics in MS patients can be a great contribution for medical community in self-monitoring issue to reduce the cost of treatment and the suffering of the disease in the affected patients.

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