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Research Article

Fear of Disease Progression in Patients with Multiple Sclerosis: Associations of Anxiety, Depression, Quality of Life, Social Support, MS Knowledge

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Abstract

Purpose: Fear of progression of multiple sclerosis (MS) can exert deleterious effects upon MS patients. A host of causes may give rise to fear of progression of multiple sclerosis. Hence, the present study set out to assess the role of psychological aspects family support, quality of life and multiple sclerosis knowledge in fear of progression of MS.

Methods: Sixty five MS patients were recruited for this study. Data were obtained by using multiple questionnaires including Multiple Sclerosis Knowledge Questionnaire (MSKQ), Fear of progression questionnaire - Short form (FoPQ-SF), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), World health organization's quality of life- brief (WHQOL-BRIEF).

Results: age and level of education were not associated with score of other questionnaires. Depression, anxiety, MS knowledge and three subcategories of WHOQOL-BREF (Environment, Social relationship and Psychological health) were correlated to fear of progression of MS ($P < 0.001$). Anxiety was positively predictive of fear of progression of MS; nonetheless, MS knowledge and QOL-Psychological health were inversely associated with fear of progression of MS ($P < 0.05$).

Conclusion: The present study suggests that anxiety, MS knowledge and QOL-Psychological health are associated with fear of progression of MS. Thus, these parameters can be utilized for management and health-care policies of MS.

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Introduction

Chronic diseases are one of the main health-care issues in current societies [1]. Multiple Sclerosis (MS) is one of the most crucial and prevalent disorders of the central nervous system, and a common cause of debility in young people [2-4]. Two million people suffer from MS worldwide [5]. Five hundred thousand people are afflicted with MS in USA; this constitutes

the third paramount cause of debility in the USA [3, 6]. In addition to progressing debility in patients with MS [7- 9], no definite treatment exists for MS [10]. This may bring about several problems such as unemployment [7], low quality life [11], cognitive impairment [12, 13] and mental problems [9]. What is important in talking such problems is mental relaxation and handling fear of progression in MS patients [14]. Thus,

identification of mental key elements of fear of progression of MS can be of great value for psychiatric interventions and developing mental capabilities in MS patients. Depression and anxiety are the most studied MS psychiatric symptoms. Siegert et al. estimated that the lifetime prevalence of major depression in MS was as high as 50 percent [15]. By way of illustration, Korostil et al. reported that the lifetime prevalence of depression in MS patients was 35.7%; even so, the patients conspicuously suffered from an anxiety failure during the study [16]. Elsewhere, overtime prevalence of anxiety, depression and fatigue were reported 44%, 18.5%, and 53.7%, respectively [17]. It was demonstrated that having knowledge pertaining to MS and its treatments may facilitate MS handling [18]. Moreover, MS knowledge may lead to better MS treatment [19]. Chen et al. also showed that MS knowledge can help patients to achieve therapeutic targets [20]. Thus, heightening the knowledge regarding MS and its treatments may lead to decreased fear of progression of MS, and therefore adaptability to MS. Health and quality of life in MS patients are affected by prognosis and unpredictable stages of MS [21, 22]. Low quality of life in MS patients, as an effective individual health factor, can bring about fear of progression [23].

Patients afflicted with MS encounter physical and psychological problems [24]. Social support serves a crucial role in controlling MS and can lead to logical obviation of MS such as fear of progression. Not only may social support enhance life quality in MS patients, but also it can decrease depression [25] and anxiety [24]. Such support may also pave the way to heighten MS knowledge. Knowledge of the disease in patients with cardiac diseases was demonstrated to decrease emotional problems and increase quality of life [26]. In spite of the fact that MS knowledge leads to a better programming and service provision; little is known concerning psychological consequences of MS. Therefore, the present study was designed to identify the association of fear of progression of MS with variables involving anxiety, depression, quality of life, social support and MS knowledge. The results may be used in order to adopt better programs, policies and services in MS associations and therapeutic centers.

Methods

An analytical cross-sectional design was used for the present study carried out in a center, that is to say, Tabriz University of Medical Sciences, in 2012. Patients with MS, who have medical documents confirming MS, were referred from Eastren Azarbajejen MS association, Tabriz; even so, MS diagnosis was reconfirmed by a neurologist at Tabriz University of Medical Sciences. Sixty five patients with a definite diagnosis of MS, a minimum of 18 years old and a minimum MS history of 6 months were recruited for the study; howbeit, subjects with a history of chronic diseases, namely, cerebrovascular diseases and other neurological disorders were excluded from the study.

Fear of Progression Questionnaire - Short Form (Fopq-SF)

Fear of progression was measured by means of the Persian translation of fear of progression questionnaire-short form (FoPQ-SF). The FoPQ-SF incorporated 12 items scored from 1 (never) to 5 (very often) wherein higher scores indicated higher fear of progression. The construct validity of FoPQ-SF was confirmed and reliability of FoPQ-SF was reported (Cronbachs α =0.86) and a test–retest reliability over one week of 0.75 was shown [14]. The reliability of Persian translation of FoPQ-SF was also reported (r =0.87) [14]. The FoPQ-SF was translated from English into Persian by a bilingual translator. In the present study, the results of confirmatory factorial analysis confirmed the validity of single-factor structure of the Persian version of FoPQ-SF. Additionally, the internal consistency of the Persian version of FoPQ-SF was demonstrated (Cronbachs α =0.87).

Beck Anxiety Inventory (BAI)

BAI was a short list including 21 anxiety symptoms viz

“wobbling in legs”, “scares” and “fear of losing control”. The subjects were asked for rating them on the past week, on a scale ranging from 0 (not at all) to 3 (severely, I could barely stand it). The total score had a minimum of 0 and maximum of 63. The BAI reliability was reported (Cronbachs α =0.92) and a test-retest reliability of 0.75 was shown over one week [27]. Internal consistency of the Persian version of BAI was also demonstrated (Cronbachs α =0.89).

Beck Depression Inventory (BDI)

It encompassed a 21 item, self-rated inventory in that each item rated with a set of 4 possible answer choices indicating an increase in intensity. Once the test was scored, a value of 0 to 3 was assigned for each answer and thereafter the total score was compared to a key to assess the severity of depressions [28]. The BDI reliability was reported (Cronbachs α = 0.96) and a test-retest reliability of 0.82 of was shown over four weeks [29]. Internal consistency of the Persian version of BDI was also demonstrated (Cronbachs α =0.84).

World Health Organizations quality of life-brief (WHOQOL-BREF)

The WHOQOL-BREF refers to an abbreviated 26-item version of the WHOQOL-100 involving items extracted from the WHOQOL-100. It includes a 26-item instrument involving 4 domains: 1. Physical health (7 items), 2. Psychological health (6 items), 3. Social relationships (3 items), 4. Environmental (8 items); and two overall QOL and general health items that were not included in the scoring. Scoring was carried out on a 5-point likert scale (1=Not at all to 5=Completely) [30]. It was reported that the Persian translation of WHOQOL-BREF reliability showed values equal to or greater than Cronbachs α of 0.70 and met a test-retest intra class correlation for each WHOQOL-BREF domain; the overall QOL and the general health item exceeded 0.7 [31].

Table 1. Characteristics of the sample under study.

Variables	Groups	Number	Percentage
Gender	Female	39	60.0
	Male	26	40.0
Age	<30 year old	19	29.2
	31 to 40 years old	25	38.5
	More than 40 years old	21	32.3
	6 to 24 month	18	27.7
Duration of disease	25 to 44 month	18	27.7
	45 to 120 month	14	21.5
	More than 121 month	15	23.1
Marital Status	Single	18	27.7
	Married	47	72.3
Area of residence	Urban	60	92.3
	Rural	5	07.7
Occupation	Unemployed	20	30.8
	Employed	22	33.8
	Household	23	35.4
Income	Income more than expenditure	11	16.9
	Income equal to expenditure	19	29.2

Level of education	Income less than expenditure	35	53.8
	Under diploma	21	32.3
	Diploma	27	41.5
	Higher education	17	26.2

Multiple Sclerosis Knowledge Questionnaire (MSKQ)

MSKQ was a 25-item self-report instrument, which was designed by Giordano et al. in order to assess MS Knowledge [32]. Scoring was done predicated upon 3 or 4 choice options (a, b, c and d) in which there was exclusively one true option for each question. One point was given to each true answer. Thus, score of each participant was between 0 and 25. The validity of MSKQ was confirmed and its reliability was 0.76 by means of Kuder–Richardson method. In the present study, a reliability of 0.76 was reported using Cronbachs α method. Two trained questioners filled out all the questionnaires by an interview with each patient.

Norbeck Social Support Questionnaire (NSSQ)

It encompassed 9 items [33] asking information with respect to supportive behaviors of spouses or friends presented in the questionnaire. The first 8 items were scored by means of Five-Choice Likert Scale (1=very little to 5=very much) and the last item was considered as a yes/no question. Gigliotti' study confirmed validity of NSSQ [34]. A reliability of 0.87 of the Persian NSSQ was reported using Cronbachs α method [35].

Data analysis

Data were analyzed using the SPSS statistical package, version 17. For descriptive purposes, the T-test, one way ANOVA test, Spearman correlation coefficient and linear regression model were utilized. All ethical issues including confidentiality of participants' data were observed.

Results

Sixty five patients with the mean age of 34.69±4.51 years

participated in the present study. Most patients were females, employed, married, residents of urban areas and with a diploma level of education. Most patients claimed that their incomes were less than their expenditures. Table 1 illustrates characteristics of the sample under study.

Psychological health was the only variable significantly associated with age. Interestingly, patients with an age of less than 30 enjoyed better psychological health (quality of life) (Mean=25.11, SD=4.97) than those with an age of more than 40 (Mean=21.67, SD=4.21) ($P<0.05$). Duration of disease, treatment status and level of education were not associated with any studied variable. Compared to employed MS patients, unemployed ones experienced a high anxiety scoring ($P<0.05$).

In order to assess whether fear of progression of MS was correlated to MS knowledge, social support, anxiety, depression and quality of life (psychological health, physical health, social relationships and environment), Pearson correlation coefficient was used (Table 2). The results showed that there were positive correlations between fear of progression and anxiety (0.53) and depression (0.51) ($p<0.01$). Furthermore, MS knowledge, social support, quality of life (psychological health, physical health, social relationships and environment) were negatively correlated to fear of progression (0.36 to 0.48) ($p<0.01$).

In order to identify effective factors in fear of progression, stepwise multiple regression analysis was applied (Table 3). On this account, predictive factors for fear of progression including anxiety, depression, MS knowledge, quality of life psychological health, physical health, social relationships and environment) were assessed by stepwise regression analysis. The results indicated that anxiety at the first step ($F=25.20, p<0.001$), at the second step anxiety and MS knowledge ($F=18.04, p<0.001$) and at the third step anxiety, MS knowledge and Psychological health-QOL entered the regression equation ($F=15.30, p<0.001$). About 40% of variation in fear of progression could be explained by anxiety, MS knowledge and psychological; health-QOL variables. According to Beta coefficient, anxiety was positively a predicative factor for fear of progression of MS. By contrast, MS knowledge and Psychological health-QOL were negatively predicative factors for fear of progression of MS.

Table 2. Pearson correlation matrix; association between socio-psychological factors and fear of MS progression.

	Fear of progression	Social support	Anxiety	Depression	MS-knowledge	Psychological health	Physical health	Social relationship	Environment
Fear progression	1	-.281*	.535**	.512**	-.367**	-.484**	-.455**	-.394**	-.386**
Social support	-.281*	1	-.206	-.381**	.282*	.229	.601**	.464**	.504**
anxiety	.535**	-.206	1	.719**	-.157	-.426**	-.419**	-.317*	-.342**
depression	.512**	-.381**	.719**	1	-.230	-.463**	-.529**	-.427**	-.484**
MS-knowledge	-.367**	.282*	-.157	-.230	1	.182	.286*	.230	.232
Psychological health	-.484**	.229	-.426**	-.463**	.182	1	.642**	.465**	.564**
Physical health	-.455**	.601**	-.419**	-.529**	.286*	.642**	1	.687**	.689**
Social relationship	-.394**	.464**	-.317*	-.427**	.230	.465**	.687**	1	.640**
Environment	-.386**	.504**	-.342**	-.484**	.232	.564**	.689**	.640**	1
QOL	-.509**	.531**	-.450**	-.568**	.274*	.811**	.896**	.767**	.879**

Note: * $P<0.05$, ** $P<0.01$

Discussion

The present study demonstrated an association between anxiety and fear of progression in MS patients. Such association may due to the fact that anxiety is a part of structure of fear. This finding was consistent with the results of investigation of Herschbach et al. indicating the relationship between anxiety and fear of disease progression [36]. Moreover, preliminary studies showed that patients afflicted with MS experienced higher level of anxiety [16, 17] and fear of disease progression [14]. In spite of the fact that MS knowledge was shown to not to be of great importance in development of

MS [37], our findings indicated that MS knowledge was associated with fear of progression of MS. This was in agreement with the results that heightening the knowledge or psychological interventions can decrease fear of disease [38, 39]. In line with the findings of the present study, it can be inferred that MS knowledge may help patients in adoption of more effective approaches to new circumstances and controlling the MS sufferer emotions. These may be due to accurate knowledge pertaining to factors serving an impact upon controlling and deterioration of MS. That MS knowledge is of value reflects its managing role against fear of progression of disease. It was reported that a decrease in fear of progression

of disease could bring about patients' psychological health and more help to families [40]. In addition, we observed that quality of life with regard to psychological health can be a predictive factor for fear of progression of MS. This corroborated the findings of Tanriverdi et al. indicating problems in the life of MS patients [41]. Higher quality of life was shown to coincide with a decrease in fear of progression of MS [14]. It appears that a high quality of life pertaining to psychological health serves a crucial role in controlling the fear of progression of MS. Thus, devoting attention to the quality of life in MS patients is of crucial importance [42]. Despite the fact that depression and social support were inversely correlated to fear of progression of MS, their marginal importance can be illustrated compared to anxiety, MS knowledge and psychological health. This is due to omission of these variable in overlapping variables regression. It should also be mentioned that depression decrease and social support are prerequisites of mental relaxation and life expectancy. Therefore, depression and lack of social support can result in anxiety in MS patients, which in turn leads to MS fear of progression.

With regard to the present study, a caveat needs to be noted. To clarify, one of the limitations of this study was the relatively small sample size. Taking into account of obtaining informed constants and inclusion and exclusion criteria, 65 out of 104 volunteers were finally recruited in the present study.

A study in systematic sclerosis showed that there was an association between satisfaction from social support and

depression symptoms; and the high rate of disease progression was associated with depression symptoms[25]. Depression was demonstrated to be a primary symptom subsequent to MS diagnosis, elsewhere [9]. The authors also reported a lifetime depression prevalence of 59%, even so, 14% and 10% of the patients were found to be reported MDD as a prodrome to MS and resulting delay in MS diagnosis, respectively [9].

Conclusion

The present study suggests that variables of anxiety, depression, MS knowledge and quality of life (psychological health, physical health, social relationship and environment) were correlated to fear of MS progression. In addition, anxiety was positively correlated to fear of progression; albeit, MS knowledge and QOL-Psychological health were inversely predictive factors for fear of progression of MS. More to the point, further investigation in psychological intervention programs based upon anxiety decrease and heightening MS knowledge and psychological health could be of value to decrease of fear of progression of MS.

Conflict of interests: The authors declare no conflict of interest.

Table 3. Stepwise regression results for predicting fear of progressing disease.

Step	Variables	R ²	Adjusted R ²	F	P-Value	B	t	P-Value
1	Anxiety	0.28	0.27	25.20	<0.001	0.53	5.02	<0.001
2	Anxiety	0.36	0.34	18.04	<0.001	0.48	4.78	<0.001
	MS knowledge					-0.29	-2.83	<0.01
3	Anxiety	0.42	0.40	15.30	<0.001	0.37	3.50	<0.01
	MS knowledge					-0.25	-2.60	0.01
	Psychological health-					-0.27	-2.56	0.01

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