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The contribution of self-disclosure to the prediction of mood symptoms in patients with multiple sclerosis

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Abstract

Background: Depression and anxiety are the most prevalent psychological symptoms in patients with multiple sclerosis (MS) and have a significant impact on quality of life (QOL) and disability progression in the patients. Therefore, it is very important to find ways to reduce the impact of these disorders on patients with MS. The data suggest that self-disclosure may be beneficial in improving symptoms of depression and anxiety in many chronic diseases. Due to the scarcity of related studies, this cross-sectional research aimed to evaluate the relations between self-disclosure, anxiety, and depression in patients with MS.

Methods: 112 patients with MS from several referral outpatient MS clinics participated in the study. Data were extracted using socio-demographic questionnaire to determine clinical variables and patient characteristics, Distress Disclosure Index (DDI) to assess self-disclosure, Hospital Anxiety and Depression Scale (HADS) to evaluate mood states, and Kurtzke Expanded Disability Status Scale (EDSS) recorded by an experienced neurologist.

Results: Multiple linear regression analysis with controlling disease variables demonstrated distress disclosure as an independent factor to predict anxiety and depression in the patients (P < 0.05). Results also presented a significant, positive relationship between hospitalization history and disability levels with anxiety and depression. These findings clearly state that these two variables can accurately predict a heightened state of anxiety and depression in patients with MS.

Conclusion: This study provides empirical support for the positive role of disclosure in decreasing the

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negative emotions in MS. Further studies are needed to clarify the effects of disclosing MS in different cultural and situational contexts.

Introduction

Along with the recent changes in lifestyle, the pattern of encountering diseases has changed as well. Out of the wide variety of diseases, chronic illnesses are among society's most pressing issues, and often cause damage and cost in the healthcare system. Multiple sclerosis (MS) is the most common demyelinating disease which affects the central nervous system (CNS).[1]

Mind and body are two main aspects of the human existence, that are constantly influencing each other in different ways. MS can have various physical symptoms that may be unique to the person with the disease and may even appear in each patient at different stages of the disease, accompanied by psychological symptoms which lead to a decrease in the patient's quality of life (QOL). Mood symptoms have been reported to be more frequent in patients with MS, compared with patients suffering from other chronic diseases. Depression and anxiety come side by side as the most commonly reported psychological symptoms in MS.[2] The definite cause of this correlation has not yet been clearly identified. A number of psychological, social, and neurological factors can play a role here.[3] However, the majority of patients with MS have a complete history of physical wellbeing. They have all experienced healthy lives but have suddenly become disabled. This issue could lead to some level of psychological distress and leaves patients with MS vulnerable to anxiety and depression.[4] The prevalence of anxiety and depression in patients with MS has been assessed in many different studies. In a systematic review conducted by Boeschoten et al., 58 studies with a sample size of 87756 patients were selected and analyzed. The average prevalence of depression was concluded to be 30.5% and that of anxiety was reported to be 22.1%. The results also demonstrated an increase in the prevalence of depression and anxiety in patients with MS over time.[5] Another study was conducted in Southern Alberta on 192 persons, trying to identify the factors that contribute to the occurrence of depression in people with MS. The results listed exhaustion, disability, self-esteem issues, and a loss of self-efficacy as components most strongly contributing to this phenomenon. Depression also seems to be more common in men.[6] The evaluation

of almost all studies carried out in this area suggests that depression is a mental disorder that contaminates the personal and social life of the individual in more remarkable ways and affects the QOL of the patient.[6-9] Anxiety and its related psychological syndromes come second to depression, with the prevalence rate being lower in patients with MS.[10]

One of the most significant elements affecting the occurrence of mood disorders in patients with MS is the patient's chosen way of dealing with stress and the disease itself. Stress can intensify the patient's mood disorders and consequently, aggravate MS symptoms. There is a complex relationship between stress, anxiety, and disorders which causes the trio to escalate each other in different ways.[11]

Using techniques that are capable of converting the individual's negative emotions into positive emotions in a relatively short period of time is among the goals of treating mood disorder. A beneficial method in the management of circumstances caused by chronic illness is self-disclosure. Self-disclosure is a gradual communication process during which, the individual reveals him/herself to another. This includes everything the individuals have to say about themselves which can aid in their mental growth and during psychotherapy process, such as thoughts, emotions, dreams, goals, fears, and failures.[12]

Receiving social support is an important factor in the psychological adjustment of the patient suffering from a chronic illness. Since MS is often not immediately apparent to others, the patient needs to disclose his disease and conditions to others and get help and care in social settings to relieve stress. This puts self-disclosure in a critical position when it comes to gaining the social support which the patient with MS requires in the fight against mental stress, anxiety, and depression.[13]

Currently, MS is very common in Iran.[14,15] In a systematic review by Azami et al., the prevalence of MS was known to be 29.3 among 100000 people. MS is prevalent in 16.5% of men and 44.8% of women in every 100000 people.[14] As previously stated, MS has a serious impact on a person's social life and the resulting anxiety and depression bring about a lot of issues for the individual. On the other hand, data suggest that self-disclosure has a direct positive effect on improving symptoms of depression and anxiety. Considering these facts, a study to clarify the relationship between self-disclosure and anxiety and depression could be of substantial clinical significance. Thus, noting the limitations of similar

researches, the current study was conducted to investigate precisely this problem.

Materials and Methods

The current study was a cross-sectional study and data were collected from random patients who were visited in MS Research Center of Sina Hospital as a referral outpatient clinic in Tehran, Iran, from January to June 2015.

The study protocol was reviewed and approved by the Ethics Committee of Islamic Azad University Review Board, Karaj Branch, Karaj, Iran, as the research thesis of an MSc psychology student (N15233211/94). Informed consent was obtained from all patients and the patient's privacy was protected by the research team. The cross-sectional sample size was calculated as 74 persons, but due to the possibility of loss during follow-up, the number of samples in this study was considered to be at least 100 people. The participants were selected through accessible sampling and personal reference to the referral centers.

In the first, primary and initial patient's information was collected from medical records, including data regarding demographical characteristics. Additional information was then collected by completing a questionnaire. Before the distribution of the questionnaire, the goals of the study were explained to the participants and the participants were assured that their personal information would remain private, all questionnaires were confidential, and the unit staff could not access to them. They were also told that they could leave the study whenever they pleased. The inclusion criteria included having been diagnosed with MS according to the McDonald's criteria for two years or more and being literate and consent. Patients who were diagnosed with MS less than two years prior to the study were removed.

After the participants granted their consent and the conditions of recruitment were assessed, necessary explanations were given to the participants by one of the research members, then the questionnaires were distributed. Demographic information was included, including age, gender, education, marital status, hospitalization history, and history of other medical diseases. Expanded Disability Status Scale (EDSS) was estimated for each participant by an expert neurologist and stated in the patient's demographic questionnaire; and to achieve the greatest uniformity, the neurologist was initially trained.

Measures

The Distress Disclosure Index (DDI): The DDI is a short and practical questionnaire developed by Kahn and Hessling in 2001 to measure a person's tendency to disclose personally distressing information.[16] It has since been used for research purposes in various countries. This questionnaire consists of 12 questions and asks the participant to choose from a five-point Likert scale ranging from "completely agree" to "completely disagree".[16] Kahn and Hessling confirmed this questionnaire's validity, reliability, and credibility in different ways and reported on their findings. Using the test-retest method, the reliability of the questionnaire was given a score of 0.80 and its internal consistency was reported to be between 0.90 to 0.95. Cronbach's alpha was found to be 0.93 in 249 subjects.[16] In 2012, this questionnaire's credibility and practicality was tested after ten years and confirmed again.[17] As we did not find an example of the application of this questionnaire in Iran, the present study measured and confirmed the questionnaire's reliability among 40 patients with MS, with a Cronbach's alpha of 0.81. This is an adequate reliability score for the purposes of this study.

The Hospital Anxiety and Depression Scale (HADS): The HADS is a valid and widely-used tool, with which physicians, psychiatrists, and psychologists can easily but reliably determine the extent of anxiety and depression in patients. This 14-item questionnaire was designed by Zigmond and Snaith in 1983. 7 of these 14 questions concern anxiety levels and the remaining seven appraise depression levels.[18] The questionnaire's reliability and validity were confirmed in a number of researches.[19-23]

Kolmogorov-Smirnov test was used to determine normal distribution prior to performing data analysis. Continuous and qualitative variables were reported as mean ± standard deviation (SD) and frequency (percentage), respectively. Student's independent t-test was used to compare two continuous variables and the differences in categorical variables were examined using a chi-square test. Pearson correlation coefficient was used to measure the strength of the relationship between two variables.

The multinomial logistic regression was used to determine the relationship between anxiety, depression (as outcomes), and other measured variables. All data analyses were performed with SPSS software (version 20, IBM Corporation, Armonk, NY, USA), and a P-value of less than 0.05

was considered significant.

Results

112 patients with MS participated in this study; of these, 89 (79.5%) were women and the remaining 23 (20.5%) were men with a mean ± SD of age of 31.84 ± 8.50. Table 1 shows the participants' demographic information, divided by sex. 53% of the participants were married, and around 45% had post-secondary education and bachelor's degrees. About 12% said that they had an illness other than MS.

Table 2 presents the correlation coefficients between the research variables which include hospital records, disability levels, anxiety, depression, and self-disclosure. As expected, a direct and significant association was observed between degree of disability, medical history, depression, and anxiety. Self-disclosure also correlated with depression and anxiety.

Before carrying out a multiple regression, its assumptions such as the normality of univariate distribution, testing for independence of errors among the predictor variables, linearity, additivity of the variables, and the normality of multivariate distribution were tested. In table 2, you may regard that the indices of skewness and elongation of none of the variables exceeded ±2. We may, thus, conclude that data distribution is normal for each variable. The Durbin-Watson Test was used to test for independence of errors among predictor

variables, coming back with a value of 1.488. This means that there was an independence of errors among the research data. A scatter plot matrix was used to analyze the linearity of the variables (Figure 1). This assumption was confirmed, as detected in figure 1. Figure 1 also presents no obvious deviation from linearity in the variables, noting a linear relationship between the variables. The normality of multivariate distribution, another assumption of multiple regression, was examined by the calculation of the Mahalanobis distance. By drawing the distribution curve, we found that the datum of two of the participants formed multivariate ports. We then removed their data from the study and continued assessment disregarding them.

In order to test the research assumptions concerning the impact of variables such as hospitalization history, levels of disability, and self-disclosure on depression and anxiety of patients with MS, multivariate multiple regression was applied.

As the present research contained two dependent variables (disease-related variables and self-disclosure), analysis was depleted in two stages. In the first stage, the effects of two dependent variables on depression were discussed. In the second stage, their effects on anxiety were measured. Table 3 discloses the regression results in the prediction of depression in patients with MS.

Table 1. The participants' demographic information divided by sex

Variable	Men [n (%)]	Women [n (%)]	Total [n (%)]
Marital status			
Single	13 (61.9)	29 (35.4)	42 (37.5)
Married	8 (38.1)	51 (62.3)	59 (57.3)
Divorced	0 (0)	2 (3.4)	2 (1.9)
Education			
Not graduated from high school	1 (0.8)	6 (5.35)	7 (6.25)
High school	4 (3.6)	17 (15.2)	21 (18.8)
Associate degree	4 (3.6)	14 (12.5)	18 (16.0)
Bachelor's degree	10 (8.9)	40 (35.7)	50 (44.6)
Master's and higher	4 (3.5)	12 (10.7)	16 (14.3)
Occupation			
Government employee	12 (66.7)	9 (11.7)	21 (22.1)
Self-employed	2 (11.1)	14 (18.2)	16 (16.9)
Student	0 (0)	25 (32.5)	25 (26.3)
Housekeeper	0 (0)	6 (7.7)	6 (6.3)
Unemployed	2 (8.7)	0 (0)	2 (1.8)
History of addiction			
Yes	21 (91.3)	81 (91.0)	102 (91.1)
No	0 (0)	8 (9.0)	8 (7.1)
Comorbid diseases			
Yes	21 (100)	65 (83.3)	86 (86.9)
No	0 (0)	12 (15.4)	12 (12.1)

Table 2. The correlation matrix, mean, standard deviation (SD), skewness, and elongation of each of the research variables

Variables	1	2	3	4	5
Disease-related variables					
Hospitalization records	-				
Disability levels by EDSS	0.392**	-			
Psychological variables					
Self-disclosure	-0.224*	-0.188*			
Anxiety	0.373**	0.347**	0.370**		
Depression	0.452**	0.519**	0.441**	0.638**	
Skewness	0.747	0.697	-0.307	0.304	0.671
Elongation	0.441	-0.248	-0.249	-0.495	0.412

$^*P < 0.05$, $^{**}P < 0.01$
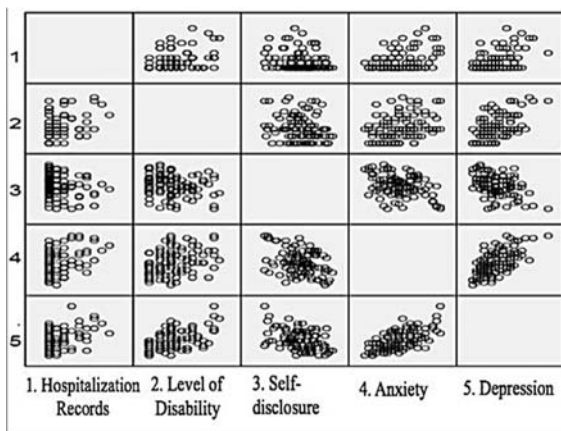EDSS: Expanded Disability Status Scale

Figure 1. The scatter plot matrix for the study variables

As shown in table 3, disease-related variables including hospital records and disability levels were included in the study at the first stage and predicted depression in patients with MS at a significant level of 0.01. Upon an inquiry regarding squared multiple correlation, we found that the value of the multiple correlation coefficient (R^2) was 0.341. This means that disease-related variables configure 34.1% of the depression variance in patients with MS. Assaying regression coefficients showed that hospitalization records ($P < 0.01$, $\beta = 0.367$) and disability level variable ($P < 0.01$, $\beta = 0.234$) both positively predicted depression in patients with MS. We may also

detect that upon the entry of self-disclosure in the depression prediction equation in the second stage, R^2 reaches 0.437; this means that 43.7% of depression variance in patients with MS is explained via the entry of self-disclosure. The value of ΔR^2 was 0.096; this means that adding self-disclosure in the prediction equation and controlling the impacts of disease-related symptoms caused a 9.6% increase in the explained depression variance. This is statistically significant at 0.01 level. The same applies to the regression coefficient for self-disclosure and depression variables ($\beta = 0.320$).

As depicted in table 4, disease-related variables (hospitalization records and disability level) entered the equation in the first stage and were statistically significant at 0.01 level in anxiety in patients with MS. Squared multiple coefficient presented R^2 to be 0.184. Disease-related symptoms configured 18.4% of the anxiety variance in patients with MS.

An appraisal of regression coefficients suggests that the hospitalization records variable and the disability level variable both positively predicted anxiety in patients with MS ($P < 0.05$, $\beta = 0.227$ and $P < 0.05$, $\beta = 0.205$, respectively). Self-disclosure entered the equation in the second stage and thus, R^2 reached 0.259. We may, thus, conclude that 25.9% of the anxiety variance is explained upon the entry of self-disclosure in the equation.

Table 3. Multivariate multiple regression in the prediction of depression in patients with multiple sclerosis (MS)

Dependent variables	b	SE	β	R²	ΔR²
Disease-related variables					
Hospitalization records	0.495	0.169	0.367**		
Disability level	0.819	0.177	0.234**	-0.341**	
Self-disclosure					
Self-disclosure	-0.118	0.028	-0.320	0.437**	0.069**

$^{**}P < 0.01$
SE: Standard error

Table 4. Multivariate multiple regression in the prediction of anxiety in patients with multiple sclerosis (MS)

Dependent variables	b	SE	β	R^2	ΔR^2
Disease-related variables					
Hospitalization records	0.586	0.238	0.227*		
Disability level	0.564	0.250	0.205**	-0.184**	
Self-disclosure					
Self-disclosure	-0.129	0.039	-0.283**	0.259**	0.075**

*P < 0.05; **P < 0.01
SE: Standard error

ΔR^2 was also 0.75, explaining a 7.5% increase in the explained anxiety variance upon self-disclosure's entry ad controlling the impacts of disease-related symptoms. The regression coefficient for the self-disclosure variable and anxiety showed that this relationship was negative and significant at 0.01 level.

Discussion

The results we obtained from analyzing the correlation between self-disclosure, anxiety, and depression presented us with a significant inverse relationship. In other words, there is a negative relationship between the self-disclosure of patients with MS and their level of anxiety and depression. This relationship is statistically significant, advocating the use of self-disclosure to reduce the severity of anxiety and depression symptoms.

These findings run parallel to other studies investigating the relationship between self-disclosure and the mental well-being of patients suffering from chronic illnesses. Most of these studies point out that since chronic illnesses often have aspects that are unfathomable and concealed to others, patients have no choice but to disclose information regarding their disease and general conditions to receive attention and support. This makes self-disclosure one of the most important factors when it comes to ensuring that the patient receives social support. In a certain way, the patients have the opportunity to strengthen themselves against mental distress, anxiety, and depression via the use of self-disclosure, making it easier to live with the pressures of a chronic illness and improve their QOL.[24] These endorse the findings of Jourard and Richman, a pioneer in self-disclosure research, who believed that self-disclosure in at least one of the person's significant personal relationships was a necessity in maintaining a healthy personality. Jourard and Richman had molded his personal therapy approach in accordance with this, encouraging the patient's ability to self-disclose.

These findings are also consistent with the Johari window theory. This practice states that the more the individual reveals oneself mentally, the more he is able to communicate in a healthy way. He becomes more flexible, develops leadership skills, and feels safer in his ways.[25] Expressly, the individual must broaden his area of exposure to increase his/her communication skills. Self-disclosure is the only means to this goal. In the process of self-disclosure, the individual unmasks his/her thoughts, beliefs, and emotions. Self-disclosure broadens the area of exposure and consequently, diminishes concealed parts of the personality.[26]

The results present a significant and positive relationship between hospitalization history and disability levels with anxiety and depression to us. These results clearly state that these two variables can accurately predict the elevated status of higher levels of these two mood states. The complications of MS are not hidden from anyone. The onset of the disease disrupts physical, social, and cognitive functions in the patient and negatively impacts the lives of the patient and his family. Severe psychological side effects occur when they face unexpected symptoms, problematic treatment procedures, medication side effects, and physical disability. It is expectable that these issues lead to various mental disorders. Depression is reported in 50% of patients with MS;[27] although symptoms such as fatigue and sleep disorders impede its diagnosis.[28] Solaro et al. conducted a research among 1011 samples in Italy, assessing the correlation between depression and disability,[29] the results of which is aligned with the present study. Another study carried out in the United Kingdom (UK) on 4516 patients showed that the more disabled a patient becomes, the more susceptible he/she is to increased depression and anxiety. 33.3% with low levels of disability and 66.7% with high levels of disability at least experienced mild anxiety states. 17% with low levels of disability and 72% with high levels of

disability at least experienced mild depression.[30]

Any research with a nature exploring relationships between factors and their effects faces certain limitations at its core. The current study comes as no exception to this phenomenon. Mainly, the data collected by this study were in the form of patients' answers to questionnaires. Answers may be biased in many ways and understood in different manners by the patients. There is also a possibility to miss some data in the case of lack of answers. Some patients experiencing high levels of disability may not have been able to fill the questionnaire and participate in the study. We also faced limitations in the number of samples and sampling sites, which makes it difficult to meticulously generalize the results. Despite these limitations, this study gave us convincing and adequate results which could lead to improved treatment methods and thus, make the conditions more suitable for patients with MS and improve their QOL. In order to connect future studies with the present research, we advise that the effects of self-disclosure be assessed in different control groups such as students, women, or even people suffering from infectious studies such as human immunodeficiency virus (HIV). We also urge researchers to explore reciprocal relationships between self-disclosure and related subjects such as internalized shame, social support, intimacy, marital satisfaction, etc. Designing a prospective study can provide more accurate information about the outcomes of self-disclosure about having MS in different cultures, including the Iranian community.

Conclusion

MS is a chronic disease with many disabling, physical symptoms, considerably able to sabotage the patient's QOL even in early stages. This illness may be accompanied with different psychological disorders, impacting different emotional and personal aspects of the individual. We delved into the relationship between self-disclosure and depression and anxiety in the present study. It seems that self-disclosure can be positively employed in therapeutic intervention for anxiety and depression in an attempt to improve the psychological well-being of patients and the quality of intimacy, especially in their families.

Conflict of Interests

The authors declare no conflict of interest in this study.

Acknowledgments

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