

The Role of Psychological Factors (Anxiety, Depression, Social Support, and Coping Skills) on Predicting Suicide Ideation in Patients with Multiple Sclerosis.

Abstract

Multiple sclerosis (MS) is a widespread autoimmune disease, and more than two million people in the world are affected. Compared to healthy individuals, these patients seem to have a higher universality of suicide. We aimed to assess the universality of suicide ideation in patients diagnosed with MS and find out the role of psychological factors which include anxiety, depression, social support, and coping on suicide ideation in MS patients in this study. 167 patients with a diagnosis of multiple sclerosis from Khatam hospital in Zahedan southeast Iran participated in this cross-sectional study.

The self-reports scales are fulfilled by patients including the beck anxiety inventory, beck depression inventory, The Multidimensional Scale of Perceived Social Support and coping response inventory, and the beck scale for suicide ideation. Pearson correlation coefficients and the Linear Regression model were included in the statistical analysis. Between suicide ideation with depression, anxiety, social support, and several attacks, significant correlations were identified. Social support, depression, anxiety, and coping can predict 35% of the variation in suicide ideation as the regression analysis has shown. Depression has a higher effect on suicide ideation ($R^2=0.34$) based on these predictors. Multiple sclerosis patients have high suicidal ideation. The identified risk factors aid in helping personnel to recognize endangered patients and avert suicide. Comprehensive suicide prevention efforts might consist of more research on protective and risk factors.

Keywords: Multiple sclerosis, Suicide Ideation, Anxiety, Depression, Social Support, Coping Skills

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1. Introduction

Multiple sclerosis (MS) can be referred to as a widespread inflammatory demyelinating disease of the central nervous system with a lot of different clinical presentations because of differential involvement of motor, sensory, autonomic, and visual systems. There is no effective treatment to promote remyelination or even stop the neuro-axonal damage concerning MS and its pathogenesis is questionable (1-3). MS affects more than two million people in the world as a leading cause of disability, and it's increasing in epidemic proportions in both developing countries and developed countries (4, 5).

Patients with MS seem to have a higher prevalence of several Psychological issues. Decreased adherence to curbing suicide has been correlated with depression, anxiety, and substance abuse. Suicide may be the cause of 15% of all death for MS clinic patients, as some reviews have shown (6-8). Hence, for dealing with suicide in MS patients, clinicians must be fully equipped with useful recommendations (9).

The prevention of suicide among neurological patients best begins with the screening of suicidal ideation which is a preliminary assessment that should be conducted by the relevant health staff (10). Suicide ideation predicts suicide however in MS patients may be challenging to identify suicide ideation because patients tend to minimize these thoughts to reassure their clinicians (11). Studies show depression has been the most important risk factor for complete suicide which

is followed by anxiety disorders. Social isolation appears to be an important determinant of suicidal intent too, but the level of neurological disability does not appear to be a risk factor for suicide. Epidemiological research led to conclude that the most useful step is the identification and treatment of depressive disorders (12-15). The 12 month prevalence of major depressive disorder among these patients is 15.7%, but the prevalence of clinically significant depressive symptoms is more than 50% which is notably higher than the prevalence of major depressive disorder (16, 17). Unlike the clear female dominance in the general population, depression is more common in women than men with MS being equivocal (18). Furthermore, depression in these patients may be linked to the emotional reactions and distress caused by the diagnosis and disability or be secondary to the brain alterations linked to neurodegeneration. Compared to healthy individuals Functional MRI has shown abnormal prefrontal-subcortical network connectivity in MS patients when asked to process emotion-laden stimuli. MRI metrics can account for 40% of the variance in the presence of depression (19, 20). Different risk factors contributing to depression in MS patients include social isolation, loss of leisure, stress, and fatigue (21). Social support is a well-known protective against suicide. Previous studies have shown that social support can protect individuals from suicide ideation. Some studies have shown social support is directly linked with lower suicide ideation, and even a protective factor in the presence of suicide risk factors (22, 23).

Another important factor for suicide is coping strategy. Abnormal coping strategies have been observed as predicting factors in suicidal behavior. Avoidance methods of coping like isolation are more likely in suicide attempters (24).

In works of literature that are in contrast to the depression in patients with MS, less study has been worked on anxiety disorders. Several studies reported significant anxiety symptoms ranging from 25 to 41% (25). Generalized anxiety disorder with a prevalence of 18.6% in MS patients seems to be more common than other anxiety disorders. These patients are more likely to have a lifetime diagnosis of major depressive disorder and they reported less social support and suicide ideation (26).

2. Objectives

In this study, we aimed to determine the prevalence of suicide ideation in patients with MS and determined the role of psychological factors including anxiety, depression, social support, and coping on suicide ideation in MS patients.

3. Method

3.1. Participants and procedure

The current study included all MS patients that were referred to Khatam hospital in Zahedan southeast Iran based on inclusion criteria by convenience sampling method. All research procedures were approved by the ethics committee of Zahedan University of Medical Science (ZAUMS). Demographic data and disease status including age, marital status, income, educational status, job status, duration of disease, stage of disease, and medications were taken from all participants. Suicide ideation, depression, anxiety, social support, and coping were measured by Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Beck Scale for Suicidal Ideation (BSSI), The Multidimensional Scale of Perceived Social Support (MSPSS), and Coping Response Inventory (CRI) in this study. Informed consent was taken from all participants.

The inclusion criteria included the following: age of 18 to 55, diagnosis of MS by a neurologist, and not having other neurological diseases.

Table 1. Socio demographic data

| Variables | Mean ± SD |
|-----------|--------------|
| Age | 35.96 ± 8.73 |
| | N (%) |
| Gender | |
| Male | 50(29.9) |
| Female | 117(70.1) |

The exclusion criteria included the following: not completing the questionnaire and psychiatric disorders.

3.2. Measurements

BDI-II has 21 Likert items, which evaluate the symptoms of depression. Scores range from 0 to 63, and scores higher than 31 show severe depression. The examiner can provide the test instruction in writing or verbally to the patient. The validity and reliability of the Persian version are 0.73 and 0.91 (27, 28). BAI has 21 Likert items, which assess the symptoms of anxiety. Scores between 0 to 21 show low anxiety, from 22 to 35 indicates moderate anxiety, and higher than 36 is clinical anxiety. The validity and reliability of the Persian version are 0.72 and 0.83 (29, 30).

BSSI is a 19-item inventory that identifies the severity of suicidal ideation. The scale is based on a Likert and scores higher than 6 show high risk. The validity and reliability of the Persian version are 0.76 and 0.95 (31, 32).

The MSPSS is a 12-item scale with a 5-point Likert scale from 'Completely disagree' to 'Strongly agree' developed to assess perceived social support from three sources: Friends, Family, and a Significant Other (33).

CRI has 32 Likert items, which evaluate the particular approaches and avoidance responses that are used to confront stress in stressful situations. Scores range from 0 to 96 (34).

3.3. Statistical analysis

The IBM SPSS (v24) software was used to analyze the data. The quality of data was carefully evaluated, and the statistical analysis included Pearson correlation coefficients. Linear Regression models were used to determine the specific and common role of depression, anxiety, social support, and coping with suicide ideation.

4. Results

A total of 167 participants entered the analysis. The mean (S.D) age of participants was 35.96 (8.73). 117 patients were female and most of them were married and jobless with low income and diplomas. 127 (76%) patients had a low risk of suicide, 20 (12%) had high-risk suicide, and 20 (12%) very high risk of suicide. The complete socio-demographic data are summarized in Table 1.

| | |
|----------------------------|-----------|
| Single | |
| Single | 30(18) |
| Married | 127(76) |
| Divorce | 10(6) |
| Education | |
| Elementary | 30(18) |
| Diploma and under diploma | 75(44.9) |
| Post-secondary | 62(37.1) |
| Occupational Status | |
| Jobless | 108(64.6) |
| On job | 59(35.4) |
| Income* | |
| <1 | 96(57.5) |
| 1-2 | 20(12) |
| 2-3 | 24(14.4) |
| >3 | 27(16.2) |
| Living area | |
| Urban | 155(92.8) |
| Rural | 12(7.2) |
| Suicide Ideation | |
| Low risk | 127 (76%) |
| High risk | 20 (12%) |
| Very high risk | 20 (12%) |

*Income in million Tomans

The mean (S.D) Duration of illness was 7.87 (5.51) years and the mean number of attacks was 1.79 (2.1). Most of the patients were in step relapsing-remitting. The most frequent medication

was Rituximab and most of the patients do not have walking, cognitive, or Sphincter dysfunction. The disease status of participants is summarized in Table 2.

Table 2. Disease status of participants

| Variables | Mean ± SD |
|------------------------------|--------------|
| Duration of disease | 7.87 ± 5.51 |
| Number of attacks | 1.79 ± 2.10 |
| | N (%) |
| Disease course | |
| Relapsing-remitting | 139(83.2) |
| Clinically isolated syndrome | 15(9) |
| Primary progressive | 2(1.2) |
| Secondary progressive | 5(3) |
| Neuromyelitis Optica | 6(3.6) |
| Medications | |
| Dimethyl fumarate | 32(19.2) |
| Rituximab | 63(37.7) |
| Fingolimod | 15(9) |
| Glatiramer acetate | 21(12.6) |
| Tabazio | 8(4.8) |
| Interferon beta | 12(7.2) |
| Dalfira | 1(6) |
| Baclofen | 2(1.2) |
| None | 13(7.8) |

| | |
|------------------------------|-----------|
| Medication type | |
| Oral | 56(33.5) |
| Injection | 98(58.7) |
| None | 13(7.8) |
| Walking ability | |
| Yes | 133(79.6) |
| No | 34(20.4) |
| Cognitive dysfunction | |
| Yes | 62(37.1) |
| No | 105(62.9) |
| Sphincter dysfunction | |
| Yes | 50(29.9) |
| No | 117(70.1) |

The results of the correlation between variables with suicide ideation are shown in Table 3. There was a significant positive correlation between suicide ideation with depression and

anxiety. Furthermore, there is a significant negative correlation between suicide ideation and social support.

Table 3. Results of Bivariate Correlation Analysis for Suicide Ideation

| Variables | Depression | Anxiety | Coping Strategy | Social Support | Suicide Ideation |
|-------------------------|------------|---------|-----------------|----------------|------------------|
| Depression | 1 | 0.65* | 0.39* | -0.23* | 0.58 |
| Anxiety | 0.65* | 1 | 0.55 | -0.39 | 0.41* |
| Coping Strategy | 0.39* | 0.55* | 1 | 0.20 | 0.17* |
| Social Support | -0.23* | -0.39 | 0.20 | 1 | -0.20 |
| Suicide Ideation | 0.58 | 0.41* | 0.17* | -0.20 | 1 |

The Stepwise regression model was used to predict suicidal ideation in MS patients. Depression, anxiety, social support, and coping skills were independent variables. Depression was found to be a predictor of suicidal ideation, accounting for 34%

of the variance in suicidal ideation (Beta = 0.58, F = 84.97, p < .001. R² = 0.34, P<0.01). The results are summarized in Table 4.

Table 4. Results of Liner Regression Model of Predictors on Suicide Ideation

| Variables | B | SE | Beta | P |
|-------------------|-------|-----------------------|---------|--------|
| Constant | -2.45 | 0.75 | - | 0.01 |
| Depression | 0.26 | 0.28 | 0.58 | 0.00 |
| | | R ² = 0.34 | F=84.97 | P<0.01 |

5. Discussion

This study aimed at determining the prevalence of suicidal thoughts and the role of anxiety, depression, social support, and coping strategy on that. For this purpose, 167 patients with

MS were recruited for this study in 2020. As the results showed 24% of patients have a high and very high risk of suicide. The analysis shows there is a significant correlation between suicide ideation and depression, anxiety, number of attacks,

and social support. Four psychological factors can predict 35% of the variance of suicide ideation.

The prevalence of high suicide risk of MS patients in this study is lower than the results of the study by Turner et.al. In that cohort study which used the different measures (Patients Health Questionnaire) 29.4% of MS patients had suicide ideation and 35 had persistent suicide ideations. Furthermore, that study shows depression and social support are risk factors for suicide ideation which is similar to the results of this study (35). Mikula et.al finds social support can be a protective factor against suicide ideation among patients with MS (36). Informal social support provided by friends, family members, and others to cope with the disease burden can mitigate the poor mental health services. Social support seems to decrease the negative effects of chronic conditions. Studies confirmed a positive effect of social support on the mental health of MS patients, in contrast, increased social isolation and family tension were significantly linked with suicide ideation in these patients (37, 38).

Another study by Feinstein et.al on 140 patients with MS shows the lifetime of suicide intent was 28.6% which is higher than our results, suicidal patients in that study were more likely to have depression and anxiety disorder. Data from earlier studies suggested comorbidity between depression and anxiety, enhanced the likelihood of suicidal ideation (14, 39). A study by Viner et.al at the University of Calgary MS clinic in 2011 by using a different measure for suicide ideation shows 22.1% of MS patients had suicide ideation. Similar to this study coping style was a predictor of suicide ideation (40). Adaptation to MS is dependent on, the effectiveness of social support and coping. These patients must try to deal with their new life and regain control of their career, social life, and family but personal and environmental limitations can restrict coping capacities. Inappropriate coping strategies could lead to a struggle with their new life. It is essential to support patients to adapt to their illnesses (41).

The higher prevalence of anxiety and depression and its correlation with suicidal thoughts in patients with MS shows that depression is a key risk factor for suicide in these patients. Depression symptoms usually remain undetected and therefore untreated due to the difficulties in identifying depression symptoms from some MS symptoms like fatigue. Another reason why suicide thoughts are not reported may be due to the patients trying to hide these symptoms to convince clinicians that they will not harm themselves or feel another reason can be the more focused on treating physical symptoms than mental status (25, 42).

As our results show, the prevalence of suicide ideation in MS patients is high but lower than most of the studies in western countries. A lower prevalence in developing countries can be due to lower reports of such thoughts or strong social and

family support in those societies or may be due to different measuring outcomes in the studies (43).

There are some limitations to this study. First and foremost, there must be caution in the generalization of the results because patients of only one region are included and studies in different regions showed the different rates of suicide ideation. Secondly, the current study is a cross-sectional design so we cannot be known whether these suicide thoughts are permanent or not. Thirdly, since most of our patients were in the relapsing-remitting course, it is not possible to evaluate the prevalence of suicide ideation in different courses of MS. Fourthly, self-harm behaviors and suicide attempts were not measured in this study, and last but not least, only a few variables were measured as suicide ideation predictors.

In conclusion, suicidal thoughts in MS patients are representative of a notable burden of the disease, the identified risk factors can help the health staff to take actions for preventing suicide and it is crucial to develop and deliver effective suicide prevention in the treatment protocols. Comprehensive suicide prevention efforts might consist of more research on protective and risk factors and developing appropriate prevention strategies that increase the mental health of MS patients.

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Footnotes

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Authors' Contribution: Study concept and design: Nour-Mohammad Bakhshani, Mohammad Javad Lavvaf Arani, and Zabihollah Hashemzahi Gonaki; data gathering: Mohammad Javad Lavvaf Arani and Zeinab Karimi; data analysis: Nour-Mohammad Bakhshani, Mohammad Javad Lavvaf Arani, and Zeinab Karimi; manuscript drafting: Mohammad Javad Lavvaf Arani and Zeinab Karimi; critical revision of the manuscript: Nour-Mohammad Bakhshani, Mohammad Javad Lavvaf Arani, Zabihollah Hashemzahi Gonaki, and Zeinab Karimi.

Compliance with Ethical Standards

Conflict of Interests The authors declare that they have no conflict of interests.

Ethics Approval and Consent to Participate The Ethical Committee of ZAUMS reviewed and approved the study design and all procedures (IR.ZAUMS.REC.1399.204).

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