

Original Article

The Relationship between Stress Coping Styles and Pain Perception in MS Patients during the Coronavirus Outbreak: The Mediation Role of Resilience

Zahra Afshari¹, Mahnaz Aliakbari^{2*}, Abolreza Naser Moghadasi³, Ezatallah Kordmirza Nikoozadeh²

¹Department of Health Psychology, Payame Noor University, Tehran, Iran

²Department of Psychology, Payame Noor University, Tehran, Iran

³Multiple Sclerosis Research Centre, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran

Received: 17 October2022; Revised: 20 November2022; Accepted: 30 Novemembr2022

Abstract

Background and Aim:The present study aimed to investigate the relationship between stress coping styles and pain perception of MS patients during the coronavirus outbreak with the mediating role of resilience. The coronavirus outbreak and its rapid global spread have created unprecedented challenges for health care systems, and patients with MS were no exception to these problems.

Materials and Methods:The research method was correlational using the path analysis method. The statistical population included all patients with relapsing-remitting multiple sclerosis (MS) referred to the MS Research Center of SINA Hospital in Tehran in 2020-2021. A total of 300 people were selected as the research sample through the purposive sampling method. The results were analyzed using path analysis with Amos software.

Results:The results showed a negative and significant relationship between stress coping styles and pain perception of MS patients during the coronavirus outbreak. The results showed that resilience had a moderating role in the relationship between stress coping styles and pain perception of patients with MS during the coronavirus outbreak ($P < 0.01$).

Conclusion:Resilience regulates pain management and perception in MS patients by moderating and reducing tension. Therefore, it seems that it can reduce the pain perception during the coronavirus outbreak by reducing and adjusting coping styles against stress related to COVID-19. Instead of directly confronting the source of stress and dealing with its various aspects by ignoring and considering the issue unimportant, patients can significantly reduce their anxiety.

Keywords:Stress coping styles, Pain perception, Multiple Sclerosis, Coronavirus, Resilience

***Corresponding Author:**MahnazAliakbari, Department of Psychology, Payame Noor University, Tehran, Iran. Email: aliakbaridehkordi@gmail.com

ORCID: 0000-0002-8918-3346

Please cite this article as:Afshari Z, Aliakbari M, NaserMoghadasi A, Kordmirza Nikoozadeh E. The Relationship between Stress Coping Styles and Pain Perception in MS Patients during the Coronavirus Outbreak: The Mediation Role of Resilience. Int. J. Appl. Behav. Sci. 2022;9(4):17-25.

Introduction

The coronavirus outbreak and its rapid global spread have created unprecedented challenges for health care systems (1). The World Health Organization (2) announced coronavirus as an emergency public health event on January 20, 2020. Meanwhile, studies indicate that patients with multiple sclerosis (MS) are at higher risk of catching COVID-19 because most of them are treated with immunosuppressive drugs (3). The COVID-19 pandemic has had high psychological effects on the general population (4). MS is a chronic progressive inflammatory disease of the central nervous system and is a major cause of non-traumatic disability in young adults (5). Also, MS patients showed changes in depression, anxiety, and quality of life during the epidemic period compared to pre-epidemic COVID-19 (6). Also, researchers demonstrate that anxiety and depression could be associated with pain (7).

In MS patients, pain appears to be a part of the complicated interaction between other symptoms or co-diseases such as fatigue, anxiety, and depression (8, 9). Pains, such as headache, back pain, and painful spasms, are common symptoms in patients with MS, with a wide range of prevalence between 30% and 85% (10, 11, 12, 13). Pain perception is associated with the patient's attitudes, beliefs, and expectations of pain. Also, cognitive distortions, such as catastrophe, the feeling of helplessness, the patient's assessment of pain, the extent of pain control and management, their interpretation of pain and its consequences, and, generally, cognitive system and pain-related beliefs are related to pain perception (14).

Furthermore, patients with MS have considerable experience in dealing with the uncertainty of a highly variable progressive disease. In addition, the COVID-19 pandemic also creates new uncertainties, probably challenges the resources of people with MS, and disrupts lifestyle habits and choices that affect health. Anxiety, depression, loneliness, and sedentary behavior are common in MS and may be exacerbated by quarantine and physical distancing during the epidemic (15). It is worth mentioning that psychological consequences such as anger, anxiety, fear, and depression in disorders such as MS are

inevitable, which consequently weakens the immune system and resistance (16). On the other hand, MS causes several stressors, all of which require different coping styles (17).

Coping styles refer to the individuals' efforts to control stressful or harmful situations (18). Patients with MS use different coping styles to increase their physical and mental changes. Emotion-focused coping styles can help patients suppress their fears (19). Several measures can be adopted during the coronavirus epidemic to protect and reduce stress, such as avoiding to follow exaggerating news about coronavirus via social media. Frequent hearing of news about the spread of this disease in Iran and the world is stressful and causes more fear and anxiety (20).

According to Wilski et al. (21), patients with MS use various coping styles; for example, "Emotional," "Temperate," "Active," "Passive," and "Problem copers, which allow distinguishing coping profiles. The study on patients with rheumatoid arthritis showed a correlation between satisfaction with support and the use of cognitive regeneration to cope with pain (22). Several studies indicate that people with MS who use avoidance or emotion-focused coping styles (23, 24, 25) demonstrate poorer psychosocial adjustment such as emotional distress, lower general health (26), more depressive symptoms (27, 28), and disease-related factors such as higher disability and with coronavirus stress on the pain perception progressive secondary forms of MS (28, 29, 30). Tan-Kristanto and Kiropoulos (31) found that effective coping styles could affect resilience, depressive symptoms, and anxiety in people with multiple sclerosis. Safavi (32) has shown that the emotion regulation intervention could increase the problem-focused coping style in the experimental group.

In Iran, Babamiri et al. (33) showed a negative and significant relationship between problem-focused coping style and negative spontaneous thoughts and a belief in negative spontaneous thoughts. Also, there is a negative and significant relationship between emotion-focused style and belief in negative spontaneous thoughts and a positive and significant relationship between avoidance style and negative spontaneous thoughts and belief in negative spontaneous thoughts. Meanwhile, resilience as a

protective factor prevents increased stress symptoms under challenging situations. Emotion-focused and avoidance coping styles may become vulnerable quickly; however, when people use a problem-solving coping style, resilience allows them to achieve more successful outcomes by putting pressure on stressors or directing them (34). Indeed, resilience is defined as the ability to recover from disaster, frustration, failure, or even positive events (35). Patients with high resilience usually have self-esteem, self-efficacy, and practical problem-solving skills for coping with stress (36, 37).

As a mediator, resilience, can maintain the effects of prior indicators on the patient's physical and mental health. For example, Palm (38) reported that resilience could be the mediator in the relationship between chronic stress and physical health in young women. Kamalinejad (39) found resilience had a positive relationship with quality of life. Lifestyle also played a mediating role between resilience and quality of life.

Rainone (40) showed that resilience could mediate the relationship between emotional disorders and quality of life in patients with multiple sclerosis. The protective effect of resilience on stress symptoms in difficult situations has been demonstrated (34, 38, 40, 41); it seems that resilience and using individual resources can mediate the relationship between stress coping during coronavirus outbreak and pain perception in patients with MS. In other words, the effect of anxiety and coping and the degree of disability of patients with MS can be affected by the level of patients' resilience.

In sum, MS patients experience more pain and disability due to the physical and mental problems caused by the disease, especially during the COVID-19 pandemic. The present study, thus, investigated whether resilience is mediating in the relationship between coping styles with COVID-19 stress and pain perception of patients with MS during the coronavirus outbreak.

Methods

The research design was correlational using the path analysis method. The statistical population consisted

of all patients with relapsing-remitting MS referred to the MS Research Center of SINA Hospital in Tehran in 2020-2021. Klein (42) divided the types of analysis models into three types: simple, slightly complex, and complex models, and stated that the sample size in simple models should be less than 100, in slightly complex models between 100 to 200, and the complex models should have more than 200 people. Hence, according to the number of variables of the study, the present study is a complex model. Considering the probability of sample loss, the sample of this study was 300 people. The samples were selected through the purposive sampling method. The inclusion criteria included having an MS diagnosis by a neurologist and confirmed by the patient's MRI, and the ability to read, write, and walk at least 100 m independently. The exclusion criteria were any other neurological diseases, mental disorders, other chronic diseases, and the patient's unwillingness to participate in the study. After providing sufficient explanations and obtaining informed consent about the research, the questionnaires and tests were given to the respondents to start the study. To analyze the data through path analysis, Amos software version 20 was used.

Materials

Coping Styles Questionnaire with COVID-19 Epidemic

This questionnaire was developed by Dortaj et al. (43) and has 24 items. The response scale was based on a 6-point Likert scale from "strongly agree" to "strongly disagree." The questions were designed based on coping styles in Lazarus and Folkman's stress coping questionnaire. Exploratory factor analysis of this questionnaire based on the analysis results of the main components showed that the sampling adequacy measured by Kaiser-Meyer-Olkin was equal to 0.80, and Sphericity Bartlett's test was equal to 2428.714, which was significant at the level of 0.001. Therefore, the correlation matrix and sample size were valid for exploratory factor analysis due to the high value of these indicators. Also, the factor load calculated for all questions was above 0.4. The extracted factors could explain 66% of the variance of the total score of coping styles in the epidemic crisis. Accordingly, the

questionnaire was valid for identifying coping strategies. In the present study, the reliability of this questionnaire was 0.75 using Cronbach alpha.

Resilience Questionnaire

Connor and Davidson's (44) resilience scale is a 25-item instrument that measures resilience on a 5-point Likert scale from 0 to 4. The minimum resilience score of the subject on this scale is 0, and the maximum score is 100. The preliminary analysis of the psychometric properties of this scale has confirmed its reliability and validity (44). Internal consistency, reliability, retraining, convergent, and divergent scale validity have been reported sufficiently. However, the exploratory factor analysis confirmed five factors (competence/personal respect, trust in personal instincts/tolerance of negative emotions, and positive acceptance of emotions/safe relationships) for this scale. Since the reliability and validity of the subscales have not been conclusively confirmed, only the overall resilience score is valid for research purposes (44). Rahpeima and Shaykh Al-Islami (45) calculated the validity of the factor analysis results using the principal component method and indicated the existence of one general factor in the scale. The extraction criterion was the slope of the script diagram, and the eigenvalue was higher than 1. The Kaiser-Meyer-Olkin coefficient was 0.88, and the sphericity Bartlett's test was 2470.35 ($P < 0.0001$), which showed the adequacy of sampling and correlation matrix of items. The Cronbach alpha coefficient was 0.90 for the resilience scale.

McGill Pain Questionnaire

McGill pain questionnaire is one of the most widely used standard tools for measuring chronic pain and includes four main domains and 20 subgroups, and a total of 78 descriptive words. In each subgroup, the pain intensity increases from top to bottom;

therefore, the lowest word has the highest score. The subject can choose one word from each subgroup. McGill pain questionnaire consists of 4 sensory dimensions (subgroups 1-10), emotional (subgroups 11-15), cognitive assessment (subgroup 16), and others (subgroup (20-17). Khosravi, Sedighi, MoradiAlamdari, and Zandedel translated, customized, and evaluated the reliability of the McGill pain questionnaire in Persian in 2012. The Cronbach alpha coefficient was 0.85, and the reliability coefficient in all domains (sensory, emotional, cognitive, and others) was above 0.80 (46).

Results

In the present study, 250 people participated, and all participants had MS. According to the data analysis, 155 (62%) were women, and 95 (38%) were men. Demographic data analysis showed that 76 participants (30.4%) were between 40 and 50 years old, 13 (5.2%) were under 30 years old, 65 (26%) were between 30 and 40 years old, 59 (23.6%) were between 50 and 60 years old, and 37 (14.8%) were upper 60 years old. According to the data analysis, 59 respondents (23.6%) had MS for 10 to 15 years, 51 respondents (20.4%) had MS for % to 10 years, 57 respondents (22.8%) had MS for less than four years, 41 respondents (16.4%) had MS for 15 to 20 years, and 42 respondents (16.4%) had MS for more than 20 years.

Also, the results show that 117 respondents (46.8%) had the recurrent form of the disease, 77 (30.8%) had the secondary progressive MS, 20 (8%) had the recurrent- remitting form of the disease, 14 (5.6%) had the secondary MS, and 16 (6.4%) had the primary progressive MS.

Table 1: Fit Indices for the Model.

Index	df/χ^2	RMSEA	GFI	AGFI	CFI	NFI	NNF	IFI
Acceptable level	<5	<0.1	>0.90	>0.80	>0.90	>0.90	>0.90	>0.90
Result	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Table 2: Structural Pattern of Paths and their Standard Coefficients in the Final Model

Path	B	R ²	P
Coping styles with stress → pain perception	-0.16	0.026	0.013
Confrontive coping styles → pain perception	0.03	0.009	0.582
Avoidance coping styles → pain perception	0.15	0.022	0.005
Escape coping styles → pain perception	0.46	0.212	0.001
Self-controlling coping styles → pain perception	0.27	0.073	0.001
Seeking coping styles → pain perception	0.58	0.336	0.001
Accountability coping styles → pain perception	0.71	0.504	0.001
Problem-solving coping styles → pain perception	0.86	0.74	0.001
Reappraisal coping styles → pain perception	0.81	0.656	0.001
Resilience → pain perception	-0.41	0.168	0.001

According to the values of the pattern fit indices of the developed model (table 1) and the limit of acceptable values mentioned above, the model presented in this research is acceptable. Path coefficients between pattern variables and their significance level are reported in table 2.

Abbreviations: RMSEA, Root-Mean-Square Error of Approximation; GFI, the Goodness of Fit Index; AGGI, Adjusted Goodness of Fit Index; CFI, Comparative Fit Index; NFI, Normed Fit Index; NNFI, Non-Normed Fit Index; IFI, Incremental Fit Index as showed in figure 1.

The results from the model test show a negative and significant relationship between stress coping styles and pain perception of patients with MS during the coronavirus outbreak, in that, with every unit increase in coping style, pain perception decreased by 0.16 standard deviation. Also, there is a negative and significant relationship between resilience and pain perception of patients with MS during coronavirus outbreak, i.e., with every unit increase in resilience, pain perception decreased by 0.41 standard deviation. Consequently, resilience is mediating the relationship between coping styles with stress and pain perception in patients with MS during the coronavirus outbreak.

Discussion

This study investigated the mediating role of resilience in the relationship between stress coping styles and pain perception in patients with MS in the coronavirus outbreaks. Consistent with the current study, the results of Omidvari and Baghuli's (47) research indicated that the patient group gained a lower and significant average in problem-focused and avoidance stress coping styles and a higher score in emotion-focused coping styles, and the pain perception in the patient group is significantly higher than normal individuals. This finding is consistent with the results of Nematipour and Dostkam (48), who concluded that resilience has a mediating role in the relationship between beliefs related to pain and severity and perception of the disease in patients with MS. Also, Palm-Fishbacher and Ehlert (38) reported that resilience could mediate the relationship between chronic stress and physical health in young women. Rainone et al. (40) showed that resilience could mediate the

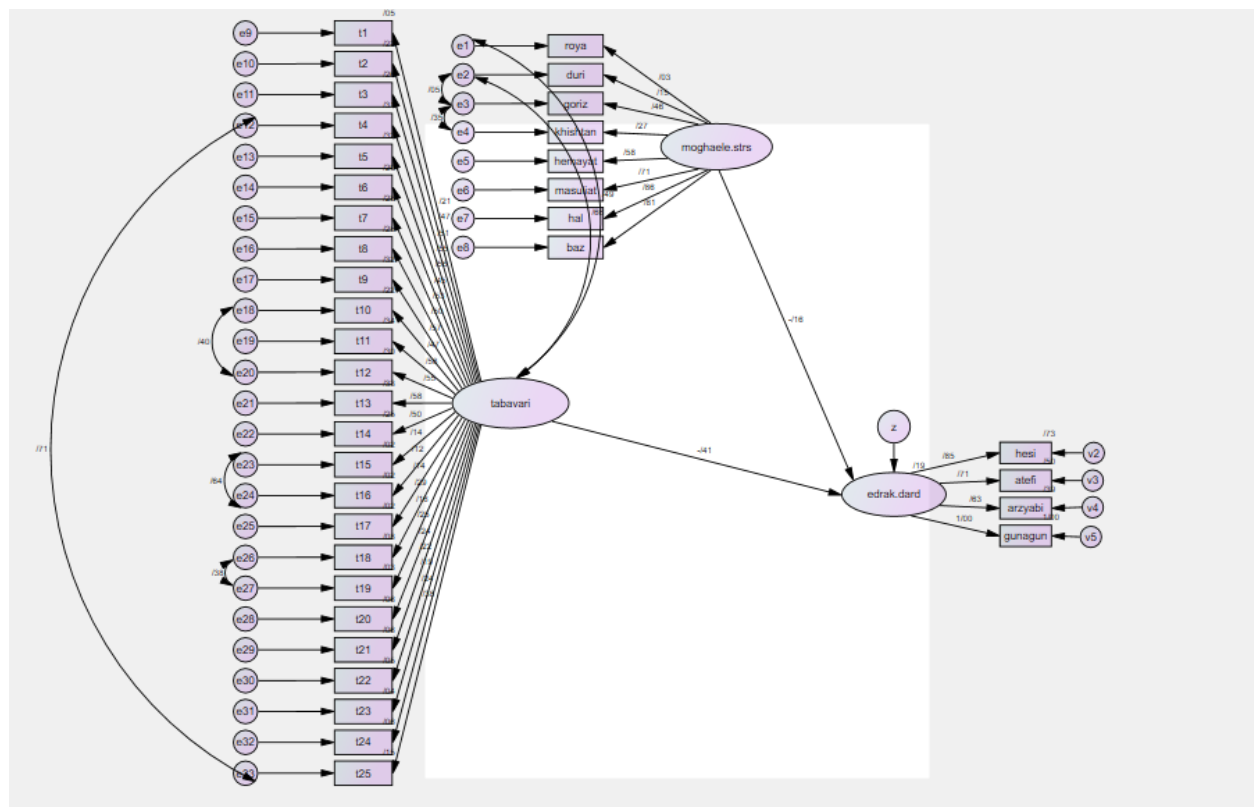


Figure 1. Modified Model of Resilience in the Relationship between Stress Coping Styles and Pain Perception in Patients with MS during the Coronavirus Outbreak.

relationship between emotional disorders and quality of life in patients with MS.

In explaining these results, it can be stated that practical coping styles, such as problem-focused coping styles, can effectively control the stresses caused by a disease (49). Therefore, by controlling the disease stresses, acceptance and pain management of these patients increase. Pain management is associated with cognitive and behavioral efforts to control external and internal chronic pain, and as a result, these people have less pain and a better perception of pain (50,51) People with a high level of resilience can usually cope with the pain caused by illness, and the symptoms of anxiety in these people are reduced due to effective coping. People with high resilience show a lower level of avoidance and coping with the pain caused by their illness and do not have a catastrophic attitude towards pain or are less prone to catastrophe (52). Patients with higher resilience usually have self-esteem, self-confidence, and effective problem-

solving skill for coping with stress (36, 37).

As mentioned earlier, resilience as a mediator can maintain the effects of prior indicators on patients' physical and mental health, and the protective effect of resilience on stress symptoms in difficult situations has been reported (34, 38, 40, 41). According to Connor and Davidson (44), resilience is the ability of a person to establish bio-psychological balance in risky situations, and people with high resilience look at events creatively and flexibly. They plan to solve the problems and use the help of others when needed. They have complete resources to deal with problems, which provides them with high self-management of their physical and mental conditions (44).

One of the limitations of the present study was conducting research among patients with MS, which limits the generalization of the results to other people with other diseases. Therefore, it is suggested that similar studies be conducted among individuals with other physical illnesses. Also, we recommend that educational programs be developed appropriate to the

level of change, the conventional and dominant coping styles, and the needs and coping problems of the subject. In these programs, the desired styles, and the changes in them must be considered as the fundamental goals. The importance of these preventive programs becomes prominent along with mental health, and the authorities must pay attention to the role and outcome of stress coping styles on the emergence of stress-based diseases and threats to public health.

Conclusion

In conclusion, resilience regulates pain management and perception in MS patients by moderating and reducing stress. Resilience seems to be able to reduce pain perception by reducing and mediating stress coping styles during the coronavirus outbreak. Patients reduce their anxiety by ignoring and trivializing the issue instead of dealing directly with the source of stress and investigating its various aspects. One may deny confronting the problem when it is too painful. People with an avoidant style and people suffering from deadly and chronic diseases usually benefit from stress issues in medical situations. It seems that by using negative emotion coping styles, these patients are less emotionally affected by the disease, which in a short period of time causes less stress, less anxiety, and increased recovery. People use more emotion-focused strategies when they feel they can do nothing to change the stressful situation or believe their resources are not enough to meet the needs of the stressful situation. As a result, these patients always suffer from chronic stress, and they cannot establish a good emotional relationship with others and their environment. Developing educational programs based on coping styles and resilience should be considered to reduce pain perception, especially during the stressful period of the coronavirus epidemic.

Acknowledgment

Special thanks go to those who have cooperated with us and devoted their time and energy to this research.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

1. Albott CS, Wozniak JR, Mc Glinch BP, Wall MH, Gold BS, Vinogradov S. Battle Buddies: Rapid Deployment of a Psychological Resilience Intervention for Health Care Workers During the Coronavirus Disease 2019 Pandemic. *Anesthesia and analgesia*.2020;131(1):1-12.
2. World Health Organization (WHO), Coronavirus Disease 2019 (COVID-19) Situation Report, World Health Organization; 2020. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200501-covid-19-sitrep.pdf?sfvrsn=742f4a18_2 (26 May, date last accessed)
3. Louapre C, Collongues N, Stankoff B, Giannesini C, Papeix C, Bensa C. Clinical Characteristics and Outcomes in Patients With Coronavirus Disease 2019 and Multiple Sclerosis. *JAMA Neurology*. doi:10.1001/jamaneurol.2020;2581.
4. Satici B, Saricali M, Satici S. A & Griffiths M. D. Intolerance of uncertainty and mental wellbeing: serial mediation by rumination and fear of COVID-19. *International Journal of Mental Health Addiction*.2020.
5. Compston A, Coles A. Multiple sclerosis. *Lancet*. 2008;372:1502–17.
6. Chiaravalloti ND, Amato MP, Brichtetto G, Chataway J, Dalgas U, Feinstein A. The emotional impact of the COVID-19 pandemic on individuals with progressive multiple sclerosis. *Journal of Neurology*. 2020.
7. Kalia LV, O'Connor PW. Severity of chronic pain and its relationship to quality of life in multiple sclerosis. *Mult Scler*.2005;11(3):322–7.
8. Amtmann D, Askew RL, Kim J, Chung H, Ehde DM, Bombardier CH, et al. Pain affects depression through anxiety, fatigue, and sleep in multiple sclerosis. *Rehabil Psychol*. 2015;60(1):81–90.
9. Alschuler KN, Ehde DM, Jensen MP. The co-occurrence of pain and depression in adults with multiple sclerosis. *Rehabil Psychol*. 2013;58(2):217–21.
10. Benson C, Kerr BJ. Pain and cognition in multiple sclerosis. *Curr Top Behav Neurosci*.2014; 20:201–15.
11. Drulovic J, Basic-Kes V, Grgic S, Vojinovic S, Dincic E, Toncev G, et al. The prevalence of pain in adults with multiple sclerosis: a multicenter cross-sectional survey. *Pain Med*.2015;16(8):1597–602.
12. Khan F, Pallant J. Chronic Pain in Multiple Sclerosis: Prevalence, Characteristics, and Impact on Quality of life in an Australian community cohort. *J Pain*. 2007;8(8):614–23.
13. Broła W, Mitosek-Szewczyk K, Opara J. Symptomatology and Pathogenesis of Different Types of Pain in Multiple Sclerosis. *Neurol Neurochir Pol*. 2014;48(4):272–9.
14. Turk DC, Gatchel RJ. Psychological approaches to pain management: a practitioner's handbook: Guilford Publications. 2013; 299-312.
15. Motl R, Ehde D, Shinto L, Fernhall B, LaRocca N, Zackowski K. Health Behaviors, Wellness, and Multiple Sclerosis Amid COVID-19. 2020;101(10):1839–41.
16. Sami P, Emamipour S, Rafiepour A. The Effectiveness of Acceptance and Commitment Therapy (ACT) on Disease Perception and Adherence to Treatment Among Patients With Multiple Sclerosis. *International Journal of Applied Behavior*

sciences.2021;8(3):13-24.

17. Rommer P. S, Sühnel A, König N & Zettl U.-K. Coping with multiple sclerosis-the role of social support. *Acta Neurologica Scandinavica*. 2016;136(1):11-6.

18. Lazarus R. S, Folkman S. Stress, Appraisal, and Coping. New York: Springer.1984.

19.Tan-Krstanto S, Kiropoulos LA. Resilience, self-efficacy, coping styles and depressive and anxiety symptoms in those newly diagnosed with multiple sclerosis. *Journal Psychology, Health & Medicine*.2015;20(6):635-45.

20.Allah Tavakoli, M. Coping with stress caused by the COVID-19 epidemic. *Journal of Jiroft University of Medical Sciences*.2020; 7(1):253-4.

21. Wilski M, Tomczak M, Ferlak J, Chmielewski B, Luniewska, Broła W. Coping profiles in multiple sclerosis: Comparison of personal resources. *Multiple Sclerosis and Related Disorders*. 2021;53:1-7.

22. Holtzman S, Newth S, DeLongis A. The role of social support in coping with daily pain among patients with rheumatoid arthritis. *J Health Psychol*. 2004;9:677-95.

23. Jean VM, Beatty WW, Paul RH, Mullins L. Coping with general and disease-related stressors by patients with multiple sclerosis: relationship to psychological distress. *Mult Scler*. 1997;3:191-6.

24. McCabe MP, McKern S, McDonald E. Coping and Psychological adjustment among people with multiple sclerosis. *J Psychosom Res*. 2004;56:355-61.

25. Grytten N, Skar ABR, Aarseth JH, Assmus J, Farbu E, Lode K, Nyland HI, Smedal T, Myhr KM. The influence of coping styles on long-term employment in multiple sclerosis: A prospective study. *Mult Scler*. 2017;1-10.

26. Pakenham KI, Stewart CA, Rogers A. The role of coping in adjustment to multiple sclerosis-related adaptive demands. *Psychol Health Med*. 1997;2(3):197-211.

27. Lode K, Bru E, Klevan G, Myhr KM, Nyland H, Larsen JP. Depressive symptoms and coping in newly diagnosed patients with multiple sclerosis. *Mult Scler*. 2009;15:638-43.

28. Milanlioglu A, Ozdemir PG, Cilingir V, Gulec TC, Aydin MN, Tombul T. Coping strategies and mood profiles in patients with multiple sclerosis. *Arq Neuropsiquiatr*. 2014;72(7):490-5.

29. Lode K, Bru E, Klevan G, Myhr KM, Nyland H, Larsen JP. Coping with multiple sclerosis: a 5-year follow-up study. *Acta Neurol Scand*. 2010;122:336-42.

30. Loreface L, Fenu G, Frau J, Coghe G, Marrosu MG, Cocco E. The burden of multiple sclerosis and patients' coping strategies. *BMJ Support Palliat Care*. 2017;8(1):38-40.

31. Tan-Krstanto S, Kiropoulos LA. Resilience, self-efficacy, coping styles and depressive and anxiety symptoms in those newly diagnosed with multiple sclerosis. *Psychol Health Med*. 2015;20:635-45.

32.Safavi S, Farmani F, Taghavi SH, Fatemi Sadr AR. The Efficacy of the Emotion Regulation Intervention on Coping Styles in Patient with Alexithymia. *International Journal of Applied Behavioral Science*. 2016;3(4):26-34.

33. Babamiri, M, Watankhah M, Masoumi Jahandizi H, Nemati M, Darvish M. Investigating the Relationship between Coping Styles with Stress, Negative Spontaneous Thoughts, and Hope with Happiness in Addicted People Referred to Addiction Treatment Clinics in Ahvaz in 2011. *Scientific Journal of Zanjan University of Medical Sciences*.2012;21:84:82-91.

34. Stratta P, Cappana C, Dell'Osso L, Carmassi C, Patriarca S, Emidio GD, et al. Resilience and coping in trauma spectrum symptoms prediction: A structural equation modeling approach. *Personality and Individual Differences*.2015;77:55-61.

35. Youssef-Morgan CM, & Luthans F. Psychological capital and well-being. *Stress Health*. 2015;31(3):180-8.

36. Martínezmartí ML, Ruch W. Character strengths predict

resilience over and above positive affect, self-efficacy, optimism, social support, self-esteem, and life satisfaction. *J Posit Psychol*. 2016;12(2):1-10.

37. Popa-Velea O, Diaconescu L, Jidveian PM, Truțescu C. Resilience and active coping style: effects on the self-reported quality of life in cancer patients. *Int J Psychiatry Med*. 2017;52(2):124-36.

38. Palm-fischbacher S, Ehler U. Dispositional resilience as a moderator of the relationship between chronic stress and irregular menstrual cycle. *J Psychosom Obstet Gynaecol*. 2014;35(2):42-50.

39. kamalinedjad F, Rafiepoor A, Sabet M. Relationship Between Resilience and Quality of Life in Cardiovascular Patients with the mediating Role of Lifestyle. *International Journal of Applied Behavioral Sciences*.2020;7(4):24-33.

40. Rainone N, Chiodi A, Lanzillo R, Magri V, Napolitano A, Morra VB, et al. Affective disorders and health-related quality of life (HRQoL) in adolescents and young adults with multiple sclerosis (MS): the moderating role of resilience. *Qual Life Res*. 2017;26(3):727-36.

41. Liu L, Xu X, Xu N, Wang L. Disease activity, resilience and health-related quality of life in Chinese patients with rheumatoid arthritis: a multi-center, cross-sectional study. *Health Qual Life Outcomes*. 2017;15(1):149.

42. Kline RB. Principles and Practice of Structural Equation Modeling (Second Edition). New York: Guilford Press. 2005.

43. Dortaj F, Danesh Payeh M, Hasanvand F, Mousavi S. Castration and validation of the Coping Styles Questionnaire facing with the Covid-19 epidemic. *Journal of Educational Psychology, Allameh Tabatabai University*.2020;56(16):133-55.

44. Connor KM., Davidson JRT. Development of a New Resilience Scale: The Connor- Davidson Resilience Scale (CD-RISC). *Journal of Depres Anxiety*.2003;18:76- 82.

45. Rahpeima S, Shaykh al eslami R. The Mediating Role of Spiritual Identity On The Relationship Between Parent And Peer Attachment With Resilience. *Contemporary Psychology*. 2016;11(21):47-62.

46. Salehi SH, Sajjadian I. The relation between self-compassion with intensity, catastrophizing, and self-efficacy of pain and affect in women with musculoskeletal pain. *Journa of Anesthesiology and Pain*. 2018;8(2):72-83.

47. Omidvari KH, Baquli H. Comparison of mindfulness, coping with stress and pain perception in cardiovascular patients and normal people, 7th Iranian Scientific Research Conference on Development and Promotion of Educational Sciences and Psychology, Tehran.2020.

48. Nematipour M, Dostkam M. Investigating the mediating role of resilience in relation to pain-related beliefs with disease severity and perception in patients with MS, 8th International Conference on Psychology and Social Sciences.2017.

49. Sanderson CA. Health psychology. Wiley Global Education.2012.

50. Habibian Z. Comparison of coping styles and cognitive beliefs in people with chronic pain and people without pain. Master Thesis. Faculty of Psychology and Educational Sciences, Shiraz University. 2012.

51. Bahrami Rad M, Rafezi Z. Predicting pain acceptance based on perceived stress and coping strategies in people with rheumatoid arthritis. *Journal of Health Psychology*.2018;7(28):151-66.

52. Toby R O, Newton-John C M, Mick H. The Role of Resilience in Adjustment and Coping with Chronic Pain Rehabilitation. *Psychology*. 2014;59(3):360-5.

© **Zahra Afshari, Mahnaz Aliakbari, Abdorreza Naser Moghadasi, Ezatollah Nikoozade Kord Mirza.** Originally published in the International Journal of Applied Behavioral Sciences (<https://journals.sbm.ac.ir/ijabs/index>), 02.05.2023. This article is an open-access article under the terms of Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>); the license permits unlimited use, distribution, and reproduction in any medium, provided the original work is properly cited in the International Journal of Applied Behavioral Sciences. The complete bibliographic information, a link to the original publication on <https://journals.sbm.ac.ir/ijabs/index>, as well as this copyright and license information must be included.