

## QUALITY OF LIFE IN PATIENTS WITH MULTIPLE SCLEROSIS

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**SUMMARY** – Multiple sclerosis is a chronic, immune-mediated disease of the central nervous system that typically strikes young adults. It is often associated with a wide range of functional deficits and progressive disability. Common symptoms of multiple sclerosis include vision problems, spasticity, weakness, ataxia, bladder and bowel dysfunctions, fatigue, pain syndromes, tremors, vertigo, cognitive impairment, and mood disorders. Multiple sclerosis has a major negative impact on patient health-related quality of life (HRQoL). Quality of life (QoL) is a multidimensional construct composed of functional, physical, emotional, social and spiritual well-being. Researches have reported that individuals with multiple sclerosis have lower QoL than non-diseased and diseased populations. The inclusion of HRQoL questionnaires in the patient follow-up is a relevant issue to optimize treatment, facilitate treatment decisions and improve adherence, as well as to reduce the inconveniences derived from medication such as side effects.

*Key words: Multiple sclerosis – quality of life; Multiple sclerosis – therapy*

Multiple sclerosis (MS) is a chronic, inflammatory, immune-mediated disease of the central nervous system that usually strikes young adults, with a higher incidence in women. The mean annual MS incidence rate in Europe is 4.3 cases *per* 100 000<sup>1,2</sup>. This chronic demyelinating disease involves unpredictable episodes of inflammatory demyelination and axonal transection that result in lesions along axons of nerve fibers in the brain and spinal cord<sup>3,4</sup>. The symptoms of MS, such as weakness, sensory loss, and ataxia, which are directly related to demyelination and axonal loss, along with other symptoms such as reactive depression or social isolation, can result in functional limitations, disability and reduced quality of life (QoL)<sup>5</sup>. Studies have reported that individuals with MS have

lower overall and specific QoL than non-diseased controls and populations with other chronic diseases like diabetes, epilepsy, rheumatoid arthritis, and others<sup>6,7</sup>. The treatment of MS is divided into treatment of MS relapses, prevention of new relapses and disease progression, and symptomatic treatment<sup>8</sup>. Symptom management includes medications, surgical procedures and nonpharmacological methods such as rehabilitation and psychosocial support<sup>9,10</sup>. Lots of journal articles describe the importance of different rehabilitation interventions that can be used throughout the course of the disease, from the initial symptoms to the advanced stages of MS<sup>11</sup>. Many patients with MS explore complementary and alternative medicine (CAM) treatments to help control their disease and treat MS symptoms<sup>12</sup>. Physicians and nurses usually direct the pharmacological management, while an integrated team of many healthcare professionals collaborate to minimize the functional impact and the effects of the disease on disability, handicaps, and QoL<sup>11</sup>. Since MS

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may result in a vast number of neurological problems, an interdisciplinary healthcare team is essential for maximizing the patient's ability to function. An integrated team may have many members, including physicians, nurses, physical therapists, psychotherapists, occupational therapists, speech and language pathologists, social workers, vocational rehabilitation therapists, patients, families, and other caregivers<sup>11,12</sup>. The inclusion of health-related quality of life (HRQoL) questionnaires in the patient follow-up is a relevant issue to optimize treatment, facilitate treatment decisions and improve adherence, as well as to reduce the inconveniences derived from medication such as side effects<sup>13</sup>.

Health-related quality of life is a multidimensional concept that includes self-reported measures of physical, mental, emotional and social functioning. These measures have become very important as clinical trial outcome measures in MS<sup>14,15</sup>. Multiple sclerosis has a major negative impact on patient HRQoL<sup>16</sup>. The first study of HRQoL in MS was published in 1990 and the first comparative study appeared two years later<sup>17,18</sup>. In chronic debilitating diseases such as MS, long-term preservation of HRQoL should be regarded as a critical marker of therapeutic success. HRQoL is distillation of almost every aspect of the patient's existence, including perception of treatment benefit and functional decrements of disease progression<sup>19,20</sup>. Clearly, then, the utility of HRQoL measurement tools depends on their ability to accurately and consistently quantify QoL during the course of the disease<sup>21</sup>.

QoL scales for patients with MS could be divided into universal or general and specific for the disease or disease-oriented<sup>20,22</sup>. The scales used to assess QoL in MS include either subjective or objective indicators, or both<sup>21</sup>. Subjective factors in QoL in MS patients include perception of symptoms, level of fitness, self-image, satisfaction with family life, work, economic situation, interaction with other people, social support, and life in general<sup>20-22</sup>. To the objective factors, we should include clinical picture of the disease, social status, social and living conditions, and the number and intensity of social contacts<sup>22</sup>. The questionnaire may be completed by the patient in person or by telephone interview, by family members or close persons, by professional caregivers and health professionals<sup>22,23</sup>. The most desirable and reli-

able is assessment by the patient himself, especially when the subjects of measurement are subjective aspects of QoL. Among the generic questionnaires used in other disease entities, the assessment of QoL in patients with MS mostly used are Medical Outcome Study 36-Item Short Form Health Survey (SF-36), EuroQol EQ-5D, Sickness Impact Profile (SIP), Life Satisfaction Questionnaire (LSQ), WHOQOL BREF and Quality of Well-Being Scale (QWBS)<sup>24-29</sup>. The above-mentioned questionnaires have been tested in many countries. In the literature, there are numerous and detailed data on their validity and reliability, also in relation to MS<sup>21,22</sup>. One of the most commonly used scales specific to MS is the Multiple Sclerosis Quality of Life Instrument (MSQoL-54) by Barbara Vickrey and colleagues from the University of California in Los Angeles<sup>22,30</sup>. This scale is a modification of the SF-36, to which 18 questions specific to MS have been added<sup>22</sup>. Another frequently used tool is the Functional Assessment of Multiple Sclerosis (FAMS), published in 1996 by David Cella and colleagues, from Chicago. Scoring QoL in patients with MS, especially when it is done for scientific purposes, requires measurement of the functional status and fatigue because in addition to depression and cognitive impairment they are the most important determinants of QoL in patients with MS<sup>22,31</sup>. Fatigue is one of the most common symptoms of MS and it is associated with a reduced QoL<sup>5</sup>. It has recently been reported in the literature that fatigue in MS has an increasing frequency<sup>22</sup>. This can be defined as uncontrollable apathy, lack of energy or feeling exhausted with no link to depression, or muscle weakness. In two-thirds of patients with MS, it appears as one of the three main symptoms and in patient opinion one of the most troublesome symptoms of the disease<sup>32</sup>. The fatigue syndrome in patients with MS cannot be evaluated objectively. That is why for the evaluation of fatigue more than 30 scales have been developed. The most frequently used are the Fatigue Severity Scale (FSS) by Krupp *et al.* and the Modified Fatigue Impact Scale (Modified Fatigue Impact Scale, MFIS)<sup>33</sup>. Depression is also commonly associated with MS and occurs in as many as 50% of patients<sup>34</sup>. For the evaluation of depression in MS, the most frequently applied methods are Beck's Inventory, Hamilton scale, Hospital

Anxiety and Depression Scale (HADS), Zung scale and Montgomery-Asberg scale (Montgomery-Asberg Depression Rating Scale, MADRS)<sup>9,35-38</sup>.

Recognition of MS-fatigue (MSF) and MS-depression (MSD) and understanding their relationship to QoL is important because both pharmacological and nonpharmacological treatments can be efficacious in treating MSF and MSD. Treatment of MSF and MSD could potentially help improve QoL of MS patients, regardless of neurological disability<sup>16</sup>.

## Conclusion

Chronic diseases like MS present unique challenges and opportunities for patients and the medical care system. Patients are challenged because they are under tremendous pressure to actively engage themselves in prevention, treatment, and health maintenance behaviors, often before they feel ready to do so. Health care providers are challenged because health-promotion activities require more time, counseling skills, and organizational resources than traditional, acute medical care<sup>39</sup>. The incomplete recovery after relapses, the accumulation of new deficits, and the progressive nature of the condition interfere with daily activities of individuals and have negative impact on their well-being. Indeed, studies show that QoL measurements are constantly lower in patients with MS. Estimation of HRQoL is being increasingly recognized as necessary when analyzing the effectiveness of treatment modalities and in follow up of patients with chronic diseases such as MS<sup>40</sup>. Previously performed clinical trials identified the main factors related to HRQoL: physical factors (sensitive/motor deficits, fatigue, pain, and sexual/bladder dysfunction), psychological factors (depression, anxiety, cognitive disturbances, and coping strategies) and social factors (family/social relationships and work activity). HRQoL indicators require completion of a well-validated questionnaire. The inclusion of HRQoL questionnaires in the patient follow up is a relevant issue to optimize treatment, facilitating treatment decisions and improving adherence, as well as to reduce the inconveniences derived from medication such as side effects<sup>6</sup>. HRQoL measurements have become an important outcome both for population health assessment and for evaluating treatments and care management<sup>41</sup>.

## References

1. PUGLIATTI M, ROSATI G, CARTON H, RIISE T, DRULOVIC J, VE'CEIE L, MILANOV I. The epidemiology of multiple sclerosis in Europe. *Eur J Neurol* 2006;13:700-22.
2. KOUTSOURAKI E, COSTA V, BALOYANNIS S. Epidemiology of multiple sclerosis in Europe: a review. *Int Rev Psychiatry* 2010;22:2-13.
3. TRAPP BD, PETERSON J, RANSOHOFF RM, *et al.* Axonal transection in the lesions of multiple sclerosis. *N Engl J Med* 1998;338:278-85.
4. COMPSTON A, COLES A. Multiple sclerosis. *Lancet* 2008;25;372(9648):1502-17.
5. MOTL RW, McAULEY E, SNOOK EM, GLIOTTONI RC. Physical activity and quality of life in multiple sclerosis: intermediary roles of disability, fatigue, mood, pain, self-efficacy and social support. *Psychol Health Med* 2009;14:111-24.
6. BENITO-LEON J, MORALES JM, RIVERA-NAVARRO J, MITCHELL AJ. A review about the impact of multiple sclerosis on health-related quality of life. *Disabil Rehabil* 2003;25:1291-303.
7. MITCHELL AJ, BENITO-LEON J, GONZALEZ JMM, RIVERA-NAVARRO J. Quality of life and its assessment in multiple sclerosis: integrating physical and psychological components of well-being. *Lancet Neurology* 2005;4:556-66.
8. BOŠNJAK-PAŠIĆ M, VIDRIH B, MIŠKOV S, DEMARIN V. Treatment of multiple sclerosis. *Acta Clin Croat* 2009;48:349-53.
9. GOLDMAN MD, COHEN JA, FOX RJ, BETHOUX FA. Multiple sclerosis: treating symptoms and other general medical issues. *Cleve Clin J Med* 2006;73:177-86.
10. BEN-ZACHARIA AB. Therapeutics for multiple sclerosis symptoms. *Mt Sinai J Med* 2011;78:176-91.
11. BURKS JS, BIGLEY GK, HILL HH. Rehabilitation challenges in multiple sclerosis. *Ann Indian Acad Neurol* 2009;12:296-306.
12. YADAV V, SHINTO L, BOURDETTE D. Complementary and alternative medicine for the treatment of multiple sclerosis. *Expert Rev Clin Immunol* 2010;6:381-95.
13. OLASCOAGA J. Quality of life and multiple sclerosis. *Rev Neurol* 2010;51:279-88.
14. The WHOQOL Group. Development of the WHOQoL – BREF quality of life assessment. *Psychol Med* 1998;28: 551-8.
15. BUSSING A, MATTHIESSEN PF, OSTERMANN T. Engagement of patients in religious and spiritual practices: confirmatory results with the SpREUK-P 1.1 questionnaire as a tool of quality of life research. *Health Qual Life Outcomes* 2005;3:53.

16. Al-TAHAN AM, Al-JUMAH MA, BOHLEGA SM, *et al.* The importance of quality-of-life assessment in the management of patients with multiple sclerosis. Recommendations from the Middle East MS Advisory Group. *Neurosciences (Riyadh)* 2011;16:109-13.
17. Centers for Disease Control and Prevention. Measuring healthy days: population assessment of health-related quality of life. Atlanta, Georgia: Centers for Disease Control and Prevention, 2000.
18. GANDEK B, SINCLAIR SJ, KOSINSKI M, WARE JE Jr. Psychometric evaluation of the SF-36 health survey in Medicare managed care. *Health Care Financ Rev* 2004;25:5-25.
19. BALCER LJ. Clinical outcome measures for research in multiple sclerosis. *J Neuroophthalmol* 2001;21:296-301.
20. OPARA J, JARACZ K, BROLA W. Current possibilities of assessment of quality of life in multiple sclerosis. *Neurol Neurochir Pol* 2006;4:336-41.
21. BANDARI DS, VOLLMER TL, KHATRI BO, TYRY T. Assessing quality of life in patients with multiple sclerosis. *Int J MS Care* 2010;12:34-41.
22. OPARA J, JARACZ K, BROLA W. Quality of life in stroke patients. *J Med Life* 2010;3:352-8.
23. FISCHER JS, LaROCCA NG, MILLER DM, *et al.* Recent development of quality of life in multiple sclerosis (MS). *Mult Scler* 1999;5:251-9.
24. EuroQoL Group. EuroQoL: a new facility for the measurement of health-related quality of life. *Health Policy* 1990;16:199-208.
25. McHORNEY AC, WARE JE, RACZEK AE. The MOS 36-item Short-Form Health Survey (SF-36): II Psychometric and clinical tests of validity in measuring physical and mental health constructs. *Med Care* 1993;31:247-63.
26. BERGNER M, BOBBITT RA, CARTER WB, GILSON BS. The Sickness Impact Profile: development and final revision of a health status measure. *Med Care* 1981;19:787-805.
27. CARLSSON M, HAMRIN E, LINDQVIST R. Psychometric assessment of the Life Satisfaction Questionnaire (LSQ) and a comparison of a randomised sample of Swedish women and those suffering from breast cancer. *Qual Life Res* 1999;3:245-53.
28. The WHOQoL Group. The World Health Organization Quality of Life assessment (WHOQoL): Position paper from the World Health Organization. *Soc Sci Med* 1995;41:1403.
29. KAPLAN RM, ATKINS CJ, TIMMS R. Validity of a quality of well-being scale as an outcome measure in chronic obstructive pulmonary disease. *J Chronic Dis* 1984;37:85-95.
30. VICKREY BG, HAYS RD, GENOVESE BJ, *et al.* Comparison of a generic to disease-targeted health-related quality-of-life measures for multiple sclerosis. *J Clin Epidemiol* 1997;50:557-69.
31. CELLA DF, DINEEN K, ARNASON B, *et al.* Validation of the functional assessment of multiple sclerosis quality of life instruments. *Neurology* 1996;47:129-39.
32. LOBENTANZ IS, ASENBAUM S, VASS K, *et al.* Factors influencing quality of life in multiple sclerosis patients: disability, depressive mood, fatigue and sleep quality. *Acta Neurol Scand* 2004;110:6-13.
33. KRUPP LB. Fatigue in multiple sclerosis: definition, pathophysiology and treatment. *CNS Drugs* 2003;17:225-34.
34. MINDEN SL, SCHIFFER RB. Affective disorders in multiple sclerosis. Review and recommendations for clinical research. *Arch Neurol* 1990;54:531-3.
35. BECK AT, WARD CH, MENDELSON M, MOCK J, ERBAUGH J. An inventory for measuring depression. *Arch Gen Psychiatry* 1961;4:561-71.
36. HEDLUND JL, VIEWIG BW. The Hamilton Rating Scale for Depression: a comprehensive review. *J Oper Psychiatry* 1979;10:149-65.
37. MORAN PJ, MOHR DC. The Validity of Beck Depression Inventory and Hamilton Rating Scale for Depression items in the assessment of depression among patients with multiple sclerosis. *J Behav Med* 2005;35-41, DOI:10.1007/s 100865-005-2561-0
38. ZIGMOND A, SNAITH RP. The hospital anxiety and depression scale. *Acta Psych Scand* 1983;67:361-70.
39. BOMBARDIER CH, WADHWANI R, LaROTONDAA C. Health promotion in people with multiple sclerosis. *Phys Med Rehabil Clin North Am* 2005;16:557-70.
40. KARGIOTIS O, PASCHALLI A, MESSINIS L, PAPA-THANASOPOULOS P. Quality of life in multiple sclerosis: effects of current treatment options. *Int Rev Psychiatry* 2010;22:67-82.
41. BAUMSTARCK-BARRAU K, PELLETIER J, SIMEONI MC, *et al.* French validation of the Multiple Sclerosis International Quality of Life Questionnaire. *Rev Neurol (Paris)* 2011;167(6-7):511-21.

## Sažetak

## KVALITETA ŽIVOTA U BOLESNIKA S MULTIPLOM SKLEROZOM

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Multipla skleroza je kronična, imuno posredovana bolest središnjega živčanog sustava, koja obično pogađa odrasle ljude mlađe životne dobi. Često je povezana sa širokim rasponom funkcionalnog deficita i progresivne nesposobnosti. Uobičajeni simptomi multiple skleroze su smetnje vida, spastičnost, slabost, ataksija, smetnje kontrole mokrenja i stolice, umor, bolni sindromi, tremor, vrtoglavica, pogoršanje kognitivnih funkcija i poremećaji raspoloženja. Multipla skleroza ima značajan negativan utjecaj na kvalitetu života oboljelih od ove bolesti. Kvaliteta života je multidimenzionalna formulacija sastavljena od funkcionalnih, fizičkih, emocionalnih, socijalnih i duhovnih čimbenika zdravlja. Istraživanja su pokazala da oboljeli od multiple skleroze imaju nižu kvalitetu života od zdrave populacije i oboljelih od nekih drugih kroničnih bolesti. Uključivanje upitnika o kvaliteti života u praćenju bolesnika je važno u optimiziranju liječenja, određivanju i odlučivanju o vrsti liječenja i poboljšanju suradljivosti, kao i u smanjenju neugodnosti koje proizlaze iz liječenja, kao što je primjerice pojava nuspojava primijenjenih lijekova.

Ključne riječi: *Multipla skleroza – kvaliteta života; Multipla skleroza – terapija*

