Wellness Journey with Multiple Sclerosis—Where to Start

Mary R Rensel, MD, FAAN

Mellen Center for Multiple Sclerosis Treatment and Research, Cleveland Clinic, Cleveland, OH, US

DOI: https://doi.org/10.17925/USN.2018.14.1.31

Lifestyle factors can increase one's wellness or overall health for patients with multiple sclerosis (MS). This independent editorial clarifies the supporting literature behind the topics of discussion in a series of accompanying Bayer-supported videos filmed in partnership with the Multiple Sclerosis Association of America (MSAA).

Keywords

Wellness, nutrition, multiple sclerosis, vitamin D, vascular risk factors, smoking, microbiome, Mediterranean diet

Disclosure: This article was independently commissioned to accompany the videos filmed in partnership with the Multiple Sclerosis Association of America (MSAA) during a face-to-face meeting in New York, NY, US, August 2017, with funding provided by Bayer. Mary R Rensel has nothing to declare in relation to this article, she does serve as a speaker and or consultant for Biogen, Teva, Genzyme, and Novartis and has grant funding from the National Multiple Sclerosis Society (NMSS).

Review Process: This article is a short opinion piece and has not been submitted to external peer reviewers. It was reviewed by a member of the editorial board and underwent a courtesy review by Bayer and the Multiple Sclerosis Association of America (MSAA).

Authorship: The named author meets the International Committee of Medical Journal Editors (ICMJE) criteria for authorship of this manuscript, takes responsibility for the integrity of the work as a whole, and has given final approval to the version to be published.

Received: March 9, 2018

Published Online: April 9, 2018

Citation: *US Neurology.* 2018;14(1):31–33

Correspondence: Mary R Rensel, Cleveland Clinic, U10-9500 Euclid Ave, Cleveland, OH 44195, US. E: RENSELM@ccf.org Twitter: @MRensel1 LinkedIn: linkedin.com/in/mary-rensel-94844b1a

Support: No funding was received in the publication of this article.

Multiple sclerosis (MS) is a demyelinating and neurodegenerative disorder of the central nervous system (CNS), for which disease-modifying therapy is a mainstay treatment approach. In addition to conventional therapy, there is growing evidence and interest in the effects of certain comorbidities and the role of lifestyle factors on MS, such as vitamin D deficiency, tobacco smoking, and obesity. While the current literature is not entirely conclusive, there is sufficient evidence to support a potential role for vitamin D deficiency, tobacco smoking, and vascular risk factors on the onset and worsening of MS disease.[1,2] In this context, preventing obesity and vascular comorbidities and maintaining sufficient vitamin D levels and physical activity have positive health benefits and may result in improved MS disease outcomes. Beyond conventional medicine, an increasing number of patients and healthcare providers are interested in treatment approaches that focus on health and lifestyle strategies within a supportive clinician-patient relationship that optimizes their overall well-being.

In the accompanying video interviews between Nicole Sconzo, MS Clinical Nutritionist, and Noel, a Multiple Sclerosis Association of America (MSAA) patient advocate, we hear about the importance of a "lifestyle support team". The first video discussion focuses on "getting busy" and "finding out" where lifestyle behaviors can influence how one can feel today and tomorrow when living with MS. We can refer to this as "optimal brain health". The discussion talks about looking at lifestyle behaviors as "opportunities" for enhancing or changing MS symptoms and long-term disability levels. There is now a growing interest in wellness practices that incorporate a comprehensive approach to health and well-being while living with MS. These practices augment rather than replace traditional MS management. Abiding by a healthy diet, exercising routinely, maintaining sufficient vitamin D levels, abstaining from tobacco use, incorporating stress management techniques, remaining active in the community, and engaging in health maintenance are all ways in which persons living with MS can help improve the way they live their everyday lives. Healthy lifestyle, where patients take control and learn how to advocate for optimal "brain health" includes learning to find reliable sources of information. Ms. Sconzo reminds patients to look at experts' credentials and ask about their level of knowledge to be assured the information is accurate and valid. MS has economic consequences due to its impact on work capacity, physical and psychosocial functioning, in addition to direct treatment costs.[3] Healthy lifestyle interventions are likely cost effective for MS patients and should be addressed at the onset of the disease;[4] this is also suggested by studies showing more vascular comorbidities are associated with higher level disability, assuming preventing these disabilities would increase one's ability to remain employed and active in the community.[1] It is important to note that quality of life goals may vary between patients and providers; communication needs to consider the patient's short- and long-term goals in order to issue personalized lifestyle recommendations.

Video 1: MS nutrition—getting reliable advice

Video 2: MS nutrition—vitamin D, supplements, and the inflammation cascade

Video 3: MS nutrition—the role of the microbiome

The second video focuses on the medical evidence with regards to vitamin D, supplements, oils and the inflammation cascade. Noel shared her experience and asked for clarification where there is medical support to use various supplements and nutritional products. Vitamin D is a group of related fat-soluble compounds that play a role in modulating the degree of disease activity.[5] There are many studies globally looking at optimal levels of vitamin D but at this time the recommendation is for patients with MS to take 2,000–5,000 IU of vitamin D3 daily and recheck the level in 3 months and annually, as MS patients tend to have a hard time reaching the proposed blood levels of 40–70 nmol/L as compared with those without MS.[6] Food products and the amount of fat in the meal that help the various forms of vitamin D to be absorbed are not known at this time.[7] Fish oils and plant-based oils like flax seed were discussed. The optimal dose and/or the frequency of the oils in ones' diet is not known, studies with reported intake of plant-based omega 3 oils, such as flax seed oil, show associations of lower disability with higher intake of plant-based omega 3 oils rather than fish oil intake.[8,9] Storage conditions, such as refrigeration, may affect the content of polyunsaturated fatty acids in fish oils, this may be one reason that the efficacy toward MS may have been less when taking fish oil capsules.[10] Medicinal plants are traditional remedies for treating various diseases, the video discussed curcumin as a possible therapy to help MS. Curcumin has been reported to possibly interact with cellular targets involved with MS but at this time has not been confirmed to help MS.[11] There is a small study looking at a nutritional intervention with a combination of calorie restriction, semi-vegetarian diet and vitamin D, fish oil, lipoic acid, omega 3 poly unsaturated fatty acids, reservatrol and multivitamin complex, and the results show that after 6 months there was no change in the examination, but the blood tests of inflammation decreased suggesting a combination of factors is involved and supplementation may assist in lessening systemic inflammation.[12] Selenium is also mentioned in the discussion. Selenium and other metal's serum levels were similar in MS and non-MS patients in one study and another showed lower selenium levels in MS patients. At this time, we do not have enough evidence to suggesting a causal role of selenium and MS.[13,14] The American Academy of Neurology reviewed many studies looking at the various supplements and many other complementary alternative medical therapies in MS. The authors concluded that fish oils were ineffective at decreasing relapse rate in MS, and the other supplements that were studied did not confirm high level effects on MS.[14]

The third video focuses on the exciting topic of the gut microbiome in patients with MS. First it was explained that the bacteria in the gastrointestinal tract relate to the associated immune cells and are involved in our CNS immune system. There is a wealth of manuscripts in both adult and pediatric MS looking at how to identify the gut microbiome's function with MS and if we are able to alter it to help MS. The early studies of MS and the gut microbiome show that there is gut microbial dysbiosis, with a decreased population of bacteria generating immune-modulating molecules, and more bacteria producing immune-stimulatory molecules. This dysbiosis may promote immune responses to the CNS.[15] The interventions that may alter the gut microbiome in MS include vitamin D supplementation, probiotic consumption and diet modification.[15] Dietary changes and the use of probiotics in animal models of MS suggest diet and/or probiotics may indeed alter the course of MS,[16,17] but more work needs to be done to determine if this occurs in humans. Fiber and various diets likely affect the microbiome. In a pilot study, a high-fiber diet high in vegetables and low in protein resulted in improvement in disability scores on the Expanded Disability Status Scale (EDSS) and relapse rate in the one-year follow-up period, as well as an alteration of the microbiome composition following the diet change, compared with a typical "Western diet".[18]

Cardiovascular risk factors also seem to affect the risk of having MS, the development of brain atrophy, clinical outcomes and lesion burden.[19,20] Addressing cardiovascular risks can be used as an opportunity to improve overall health, lessen long-term disability and avoid comorbidities. Comorbidities, diseases in addition to MS, have many negative effects on MS including delay to diagnosis, higher level of

Video 4: MS nutrition—your lifestyle support team

disability and poor compliance.[21] Healthy cardiovascular diets may also help MS. For example, a cross-sectional study of current diet composition of 6,990 participants in the North American Research Committee on MS (NARCOMS), as compared with the general population, showed the overall diet was not different from an age-matched sample without MS, yet was low in intake of fruits, vegetables and legumes for all age groups. Individuals having any experience with a healthy diet plan tended to also follow other healthy behaviors such as no smoking, less obesity and more physical activity, regardless of the specific diet plan.[20] This same study looked at diet quality and level of disability, and those with higher diet quality had lower chance of disability. Diet quality was defined by a score according to higher intake of fruits, vegetables, legumes and whole grains, and lower intake of sugars from desserts, sweetened beverages, red and processed meats. Those with a composite healthy lifestyle – healthy weight, routine physical activity, abstinence from smoking, better than average diet – had lower odds of having fatigue, depression, pain and/or cognitive impairment.[20] This study is limited as the information was obtained from self-reports of patients with MS, but it did have a high sample size. This study certainly suggests, and the videos review in detail, that lifestyle practices can affect the long-term outcomes of MS.

In summary, as discussed in the videos, "getting busy" on making healthy changes is likely to result in positive outcomes for our patients. ❑

1. Marrie RA. Comorbidity in multiple sclerosis: implications for patient care. *Nat Rev Neurol.* 2017;13:375–82.
2. Berrigan LI, Fisk JD, Patten SB, et al. Health-related quality of life in multiple sclerosis: direct and indirect effects of comorbidity. *Neurology*. 2016; 86:1417–24.
3. Giovannoni G, Butzkueven H, Dhib-Jalbut S, et al. Brain health: time matters in multiple sclerosis. 2015. Available at: https://msbrainhealth.org/perch/resources/brain-health-time-matters-in-multiple-sclerosis-sep-17-1.pdf (accessed March 13, 2018).
4. Ysrraelit MC, Fiol MP, Gaitán MI, Correale J. Quality of life assessment in multiple sclerosis: different perception between patients and neurologists. *Front Neurol*. 2018;8:729.
5. Shoemaker TJ, Mowry EM. A review of vitamin D supplementation as disease-modifying therapy. *Mult Scler J*. 2018;24:6–11.
6. Bhargava P, Steele SU, Waubant E, et al. Multiple sclerosis patients have a diminished serologic response to vitamin D supplementation compared to healthy controls. *Mult Scler.* 2016;22:753–60.
7. Borel P, Caillaud D, Cano NJ. Vitamin D bioavailability: state of the art. *Crit Rev Food Sci Nutr.* 2015;55:1193–205.
8. Jelinek GA, De Livera AM, Marck CH, et al. Associations of lifestyle, medication, and socio-demographic factors with disability in people with multiple sclerosis: an international cross-sectional study. *PLoS One*. 2016;11:e0161701.
9. Jelinek GA, Hadgkiss EJ, Weiland TJ, et al. Association of fish consumption and Ω 3 supplementation with quality of life, disability and disease activity in an international cohort of people with multiple sclerosis. *Int J Neurosci*. 2013;123:792–800.
10. Jiménez-Martín E, Antequera Rojas T, Gharsallaoui A, et al. Fatty acid composition in double and multilayered microcapsules of ω-3 as affected by storage conditions and type of emulsions. *Food Chem*. 2016;194:476–86.
11. Xie L, Li XK, Takahara S. Curcumin has bright prospects for the treatment of multiple sclerosis. *Int Immunopharmacol*. 2011;11:323–30.
12. Riccio P, Rossano R, Larocca M, et al. Anti-inflammatory nutritional intervention in patients with relapsing-remitting and primary-progressive multiple sclerosis: a pilot study. *Exp Biol Med* (Maywood). 2016;241:620–35.
13. Alizadeh A, Mehrpour O, Nikkhah K, et al. Comparison of serum concentration of Se, Pb, Mg, Cu, Zn, between MS patients and healthy controls. *Electron Physician*. 2016;8:2759–64.
14. Yadav V, Narayanaswami P. Complementary and alternative medical therapies in multiple sclerosis–the American Academy of Neurology guidelines: a commentary. *Clin Ther*. 2014;36:1972–78.
15. Mowry EM, Glenn JD. The dynamics of the gut microbiome in multiple sclerosis in relation to disease. *Neurol Clin*. 2018;36:185–96.
16. Libbey JE, Sanchez JM, Doty DJ, et al. Variations in diet cause alterations in microbiota and metabolites that follow changes in disease severity in a multiple sclerosis model. *Benef Microbes*. 2018:1–20. doi: 10.3920/BM2017.0116. [Epub ahead of print]
17. Calvo-Barreiro L, Eixarch H, Montalban X, Espejo C. Combined therapies to treat complex diseases: the role of the gut microbiota in multiple sclerosis. *Autoimmun Rev.* 2018;17: 165–74.
18. Saresella M, Mendozzi L, Rossi V, et al. Immunological and clinical effect of diet modulation of the gut microbiome in multiple sclerosis patients: a pilot study. *Front Immunol*. 2017;8:1391.
19. Kappus N, Weinstock-Guttman B, Hagemeier J, et al. Cardiovascular risk factors are associated with increased lesion burden and brain atrophy in multiple sclerosis. *J Neurol Neurosurg Psychiatry*. 2016;87:181–7.
20. Fitzgerald KC, Tyry T, Salter A, et al. A survey of dietary characteristics in a large population of people with multiple sclerosis. *Mult Scler Relat Disord.* 2018;22:12–8.
21. Yamamoto E, Ginsberg M, Rensel M, Moodley M. Pediatric-onset multiple sclerosis: a single center study. *J Child Neurol.* 2018;33:98–105.