

Complementary and alternative medicine use in multiple sclerosis patients

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ABSTRACT – Objective: The aim of the study was to determine the frequency and modality of the complementary and alternative medicine (CAM) use among patients with multiple sclerosis (MS) and to analyze the link between CAM usage and patient age, sex, clinical course of MS, disease duration, and degree of disability. **Methods:** The study included 81 patients. A questionnaire on the use of CAM was filled in with the help of medical staff. The data obtained were compared between the groups of CAM users and non-users. **Results:** Sixty-four (79.0%) respondents reported that they were currently using CAM. In the group of CAM users, there were a significantly higher proportion of patients with lower level of disability ($p=0.009$), relapsing-remitting disease course ($p=0.015$) and shorter duration of disease ($p=0.002$) compared with the group of non-users. There were no statistically significant between-group differences according to sex ($p=0.078$) and age ($p=0.062$). Respondents most commonly used dietary supplements ($n=62$; 76.5%), followed by meditation ($n=9$; 11.1%), special dietary regimen ($n=8$; 9.9%), acupuncture ($n=6$; 7.4%), bioenergy ($n=6$; 7.4%), massage ($n=3$; 3.7%), chiropractic ($n=3$; 3.7%), yoga ($n=3$; 3.7%), magnetic therapy ($n=3$; 3.7%), homeopathy ($n=1$; 1.2%), heliotherapy ($n=1$; 1.2%) and bee venom therapy ($n=1$; 1.2%). **Conclusion:** Study results demonstrated frequent use of CAM procedures among MS patients and a wide range of CAM treatment modalities. The frequent use of CAM by MS patients calls for additional researches on the efficacy and safety of these procedures.

Key words: multiple sclerosis, complementary and alternative medicine, dietary supplements

INTRODUCTION

Complementary and alternative medicine (CAM) refers to a group of health care systems, practices and treatments that are not considered to be part of conventional medicine (1). The USA National Cent-

er for Complementary and Alternative Medicine (NCCAM) classifies CAM into five categories (1):

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- 1) Biological-based therapies, e.g., dietary supplements, various diets, herbs;
- 2) Mind-body therapies, e.g., meditation, deep-breathing exercises, tai chi, hypnotherapy, yoga;
- 3) Manipulative and body based systems, e.g., chiropractic, massage, reflexology, osteopathic manipulations;
- 4) Energy therapies, i.e. therapies that purport the existence of energy fields that surround the body, e.g., Reiki, therapeutic touch; and
- 5) Alternative medical systems, e.g., traditional Chinese medicine including acupuncture, homeopathy, naturopathy.

The rate of CAM use in MS patients has been estimated to 33%-80% (2-12), predominantly among those who are female, have higher education levels, and report poorer health (2-4,8,13). In most studies, CAM users had longer duration of illness than non-users (4,7,11,13), although shorter duration of illness was also observed among users (14). The majority of MS patients using CAM perceive it as being beneficial (2,4,8,9,15,16).

The aim of the study was to determine the prevalence of CAM usage among MS patients and to analyze the relationship between CAM usage and patient age, sex, clinical course of MS, degree of disability, and time elapsed from MS diagnosis.

PATIENTS AND METHODS

The study included 81 patients with MS that underwent inpatient rehabilitation at the Lipik Hospital for Medical Rehabilitation in the period from May 1, 2015 to September 1, 2015. Patients older than 18 years and diagnosed with MS according to the revised McDonald criteria were included in the study (17). The exclusion criterion was serious cognitive impairment. Data on patient age, sex, clinical course of MS, and time elapsed from MS diagnosis were collected. The degree of disability for all study subjects was based on the Expanded Disability Status Scale (EDSS) (18), while assessment of cognitive status was performed using the Mini Mental Status Exam (MMSE) (19). A semi-structured questionnaire on the current usage of CAM was applied. Closed ended questions referred to using the following forms of treatment modalities: vitamins, minerals, vitamin/mineral combinations, special dietary regimen, meditation, yoga, biofeedback, chiropractic, massage, reflexology, bioenergy, and magnetic therapy. The questionnaire was filled in with the help of medical

staff. The data obtained were compared between the groups of CAM users and non-users.

The study was approved by the Hospital Ethics Committee and patients were required to provide written consent for their participation.

Statistical analysis was performed using the SOFA Statistics for Windows. Comparison of the variables was conducted using the Student's t-test and Pearson's correlation test.

RESULTS

The study included 81 patients, 61 (75.3%) female and 20 (24.7%) male, mean age 51.6 years, age range 25 to 85 years. The mean time elapsed from MS diagnosis was 14.9 years, range 6 months to 62 years. The relapsing-remitting course of the disease (RRMS) had 36 (44.5%), secondary progressive MS (SPMS) 41 (50.6%), primary progressive (PPMS) 3 (3.7%) patients, and benign MS 1 (1.2%) patient. The mean EDSS was 5.2, range 1.5 to 9.

At the time of investigation, 64 (79%) MS patients reported that they were currently using one or more CAMs.

Patients were divided into two groups according to the usage of CAM. In the group of CAM users, there were a significantly higher proportion of patients with lower level of disability ($p=0.009$), relapsing-remitting disease course ($p=0.015$), and shorter duration of disease ($p=0.002$) compared with the group of non-users. There were no statistically significant between-group differences according to sex ($p=0.078$) and age ($p=0.062$). Demographic and clinical characteristics of study patients are shown in Table 1.

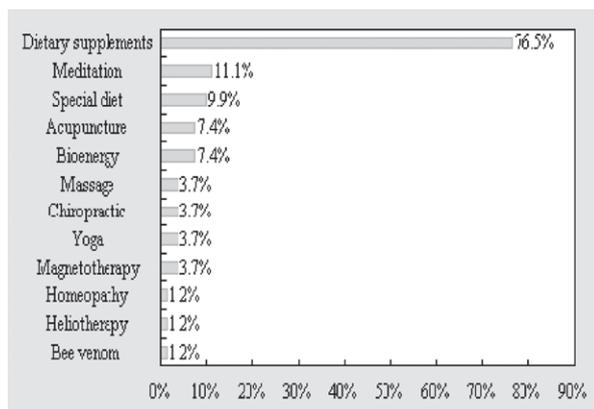
Due to the small number of patients suffering from PPMS and with benign course of disease, statistical analysis of these patients was not done.

Respondents most commonly used dietary supplements ($n=62$; 76.5%), followed by meditation ($n=9$; 11.1%), special dietary regimen ($n=8$; 9.9%), acupuncture ($n=6$; 7.4%), bioenergy ($n=6$; 7.4%), massage ($n=3$; 3.7%), chiropractic ($n=3$; 3.7%), yoga ($n=3$; 3.7%), magnetic therapy ($n=3$; 3.7%), homeopathy ($n=1$; 1.2%), heliotherapy ($n=1$; 1.2%) and bee venom therapy ($n=1$; 1.2%) (Fig. 1). Types of special diets used were Swank's diet ($n=4$), and Mediterranean, vegetarian, low-calorie and gluten-free diet (one patient each). Using multiple treatment modalities was reported by 39.1% of CAM users.

Table 1. Demographic and clinical characteristics of respondents

| Characteristic | CAM users | CAM non-users |
|---|------------------|------------------|
| n (%) | 64 (79) | 17 (21) |
| Age (yrs), $\bar{x}\pm$ SD | 50.3 \pm 11.92 | 56.5 \pm 11.67 |
| Female, n (%) | 51 (79.7) | 10 (58.8) |
| Male, n (%) | 13 (20.3) | 7 (41.2) |
| EDSS, $\bar{x}\pm$ SD | 4.9 \pm 1.81 | 6.3 \pm 1.58 |
| MS course, n (%) | | |
| RRMS | 34 (53.1) | 2 (11.8) |
| SPMS | 27 (42.2) | 14 (82.3) |
| PPMS | 2 (3.1) | 1 (5.9) |
| Benign MS | 1 (1.6) | 0 (0.0) |
| Time elapsed from MS diagnosis (yrs), $\bar{x}\pm$ SD | 12.9 \pm 9.65 | 22.4 \pm 15.26 |

CAM = complementary and alternative medicine; EDSS = Expanded Disability Status Scale; MS = multiple sclerosis; RRMS = relapsing-remitting multiple sclerosis; SPMS = secondary progressive multiple sclerosis; PPMS = primary progressive multiple sclerosis; Benign MS = benign multiple sclerosis



CAM = complementary and alternative medicine; MS = multiple sclerosis

Fig. 1. CAM treatment modalities used by MS patients.

Of the patients taking dietary supplements, vitamin D was most commonly reported (n=40; 64.5%), followed by vitamin B complex (n=29; 46.8%), magnesium (n=9; 30.6%), calcium (n=15; 24.2%), ready-made multivitamin/mineral preparations (n=13; 21%), hemp products (n=8; 12.9%), omega-3 fatty acids (n=7; 11.3%), vitamin C (n=4; 6.5%) and vitamin E (n=4; 6.5%). Other types of dietary supplements were taken by less than 5% of dietary supplement users (Table 2).

Hemp products were taken in the form of oil and seeds, and bee products in the form of meadow honey, propolis and royal jelly. Mushroom extract preparations consisted of *Cordyceps sinensis* mush-

Table 2. Prevalence of dietary supplement usage among multiple sclerosis patients

| Dietary supplement | n | % |
|----------------------|----|------|
| Vitamin D | 40 | 64.5 |
| Vitamin B complex | 29 | 46.8 |
| Magnesium | 19 | 30.6 |
| Calcium | 15 | 24.2 |
| Multivitamin/mineral | 13 | 21.0 |
| Hemp products | 8 | 12.9 |
| Omega-3 fatty acids | 7 | 11.3 |
| Vitamin C | 4 | 6.5 |
| Vitamin E | 4 | 6.5 |
| Evening primrose oil | 3 | 4.8 |
| Bee products | 3 | 4.8 |
| Chokeberry extract | 2 | 3.2 |
| Mushroom extract | 2 | 3.2 |
| Beta carotene | 2 | 3.2 |
| Cranberry syrup | 2 | 3.2 |
| Fish oil | 1 | 1.6 |
| Olive oil | 1 | 1.6 |
| Coenzyme 1 | 1 | 1.6 |
| Copper | 1 | 1.6 |
| Ginkgo extract | 1 | 1.6 |
| Black cumin oil | 1 | 1.6 |
| Klamath algae | 1 | 1.6 |
| Noni juice | 1 | 1.6 |
| Zinc | 1 | 1.6 |
| Sesame oil | 1 | 1.6 |

room and *Cordyceps sinensis*/*Ganoderma lucidum* mushrooms.

Of the patients taking dietary supplements, 15 (24.2%) were taking monotherapy (including B complex preparations) and 47 (75.8%) different combinations (including ready-made poly-vitamin/mineral preparations).

DISCUSSION

Studies on the use of CAM have documented the popularity of CAM for the treatment of health problems that lack definitive cures (20). The possible reasons for this are dissatisfaction with the currently available treatments and anecdotal reports of CAM guide (21,22). Active coping strategies such as searching for information also seem to stimulate CAM utilization (23,24), as well as determination for more personal involvement in the healing process (25).

The present study showed a widespread use of CAM treatments among people with MS, as well as large variation of CAM modalities. These findings support the results of other studies (3-6,9,15,26-29).

Regarding the types of CAM treatment used, we found dietary supplements, meditation, special diets, acupuncture and bioenergy to be the CAM treatment modalities most commonly used, which is in concordance with other studies (4,8-10). In the majority of studies, the use of CAM was more prevalent in women (4,8,13), however, others report no sex difference in CAM usage (6). We found no statistically significant sex difference between CAM users and non-users.

In the study by Skovgaard *et al.* (30), CAM users were more likely to be 18-40 years of age, while Harirchian *et al.* (11) found no age difference between the users and non-users. To our knowledge, there is no study analyzing other factors that may affect difference in the rate of CAM usage depending on age or sex, so the reason for diverse findings remains obscure. In our study, there was no statistically significant age difference between the two groups of patients either.

Our results showed shorter MS duration to be a predisposing factor for the usage of CAM. The same findings were obtained in the study by Kochs *et al.* (14), but longer disease duration was recorded in other studies (4,7,11,13). CAM usage in the early stage of the disease could be the patient's attempt to slow down the progression of the disease and thus to prevent serious disability, and may be influenced by regional and cultural differences.

According to the EDSS score, CAM users were less severely affected by MS than non-users. While some researchers showed higher CAM usage among patients with mild and moderate disease (9,14), others showed higher CAM usage in more severely affected patients (6,7). The possible explanation for lesser CAM usage among patients in an advanced stage of the disease is that they have resigned for being aware of suffering from an incurable disease (14). However, heterogeneous findings reported in the literature could also be due to different definition of CAM, small sample size, and differences in the length of CAM usage (8).

The frequency of RRMS was significantly higher in the group of CAM users. In the study by Campbell *et al.* (31), CAM use was more likely among patients with progressive-relapsing MS, while other studies did not analyze the relationship between CAM usage and disease course.

A limitation of the study is the fact that it was conducted in MS patients having undergone inpatient rehabilitation. These patients are also under conventional neurological care, so we could not estimate the prevalence of exclusive CAM use as an alternative to conventional therapies. Furthermore, we did not evaluate the use of cannabinoids because in our country preparations of cannabis were not registered at the time of investigation.

CONCLUSION

Study results pointed to frequent use of CAM among MS patients, with a broad range of CAM treatment modalities. CAM users were more likely to be patients with a lower level of disability and shorter disease duration as compared with CAM non-users. Respondents most commonly used dietary supplements as a CAM modality. The frequent use of CAM by MS patients calls for additional research on the efficacy and safety of these procedures.

REFERENCES

1. National Center of Complementary and Alternative Medicine (NCCAM). What is complementary and alternative medicine (CAM)? <http://nccam.nih.gov/health/whatiscam/> Accessed: July 25, 2008.
2. Schwartz CE, Laitin E, Brotman S, LaRocca N. Utilization of unconventional treatments by persons with MS: is it alternative or complementary? *Neurology* 1999;52:626-9.
3. Marrie RA, Hadjmichael O, Vollmer T. Predictors of alternative medicine use by multiple sclerosis patients. *Mult Scler* 2003;9:461-6.
4. Nayak S, Matheis RJ, Schoenberger NE, Shiflett SC. Use of unconventional therapies by individuals with multiple sclerosis. *Clin Rehab* 2003; 17:181-91.
5. Stuijbergen AK, Harrison TC. Complementary and alternative therapy use in persons with multiple sclerosis. *Rehab Nurs* 2003;28:141-7.
6. Apel A, Greim B, Zettl UK. How frequently do patients with multiple sclerosis use complementary and alternative medicine? *Complement Ther Med* 2005;13:258-63.
7. Apel A, Greim B, König N, Zettl UK. Frequency of current utilisation of complementary and alternative medicine by patients with multiple sclerosis. *J Neurol* 2006;253:1331-6.

8. Schwartz S, Knorr C, Geiger H, Flachenecker P. Complementary and alternative medicine for multiple sclerosis. *Mult Scler* 2008;14:1113-9.
9. Leong EM, Semple SJ, Angley M, Siebert W, Petkov J, McKinnon RA. Complementary and alternative medicines and dietary interventions in multiple sclerosis: what is being used in South Australia and why? *Complement Ther Med* 2009;17:216-23.
10. Skovgaard L, Nicolajsen PH, Pedersen E, *et al.* Use of complementary and alternative medicine among people with multiple sclerosis in the Nordic countries. *Autoimmune Dis.* 2012; 2012: 841085. doi:10.1155/2012/841085. PubMed PMID: 23304461; PubMed Central PMCID: PMC3529905.
11. Harirchian MH, Sahraian MA, Hosseinkhani A, Amirzargar N. Level of attitude toward complementary and alternative medicine among Iranian patients with multiple sclerosis. *Iran J Neurol* 2014;13:13-8.
12. Masullo L, Papas MA, Cotugna N, Baker S, Mahoney L, Trabulsi J. Complementary and alternative medicine use and nutrient intake among individuals with multiple sclerosis in the United States. *J Community Health* 2015;40:153-60.
13. Shinto L, Yadav V, Morris C, Lapidus JA, Senders A, Bourdette D. Demographic and health-related factors associated with complementary and alternative medicine (CAM) use in multiple sclerosis. *Mult Scler* 2006;12:94-100.
14. Kochs L, Wegener S, Sühnel A, Voigt K, Zettl UK. The use of complementary and alternative medicine in patients with multiple sclerosis: a longitudinal study. *Complement Ther Med* 2014;22:166-72.
15. Page SA, Verhoef MJ, Stebbins RA, Metz LM, Levy JC. The use of complementary and alternative therapies by people with multiple sclerosis. *Chronic Dis Can* 2003;24:75-9.
16. Yadav V, Shinto L, Morris C, Senders A, Baldauf-Wagner S, Bourdette D. Use and self reported benefit of complementary and alternative medicine (CAM) among multiple sclerosis patients. *Int J MS Care* 2006;8:5-10.
17. Polman CH, Reingold SC, Banwel B, *et al.* Diagnostic criteria for multiple sclerosis: 2010 revision to the McDonald criteria. *Ann Neurol* 2011;69:292-302.
18. Kurtzke JF. Rating neurologic impairment in multiple sclerosis: an expanded disability status scale (EDSS). *Neurology* 1983;33:1444-52.
19. Folstein MF, Folstein SE, McHugh PR. "Minimal state". A practical method for grading the cognitive state of patients for the clinician". *J Psychiatr Res* 1975;12:189-98.
20. Institute of Medicine (US) Committee on the Use of Complementary and Alternative Medicine by the American Public. *Complementary and Alternative Medicine in the United States.* Washington (DC): National Academies Press (US), 2005.
21. Giveon SM, Liberman N, Klang S, Kahan E. A survey of primary care physicians' perceptions of their patients' use of complementary medicine. *Complement Ther Med* 2003;11:254-60.
22. Sirois FM, Gick ML. An investigation of the health beliefs and motivations of complementary medicine clients. *Soc Sci Med* 2002;55: 1025-37.
23. Skovgaard L, Bjerre L, Haahr N, *et al.* An investigation of multidisciplinary complex health care interventions – steps towards an integrative treatment model in the rehabilitation of people with multiple sclerosis. *BMC Complement Altern Med* 2012;12:50.
24. Zadro I. Is complementary and alternative medicine in multiple sclerosis evidence based? *Neurol Croat* 2014; 63 (1-2):19-28.
25. Wapf V, Busato A. Patients' motives for choosing a physician: comparison between conventional and complementary medicine in Swiss primary care. *BMC Complement Altern Med* 2007;7:41.
26. Yadav V, Shinto L, Bourdette D. Complementary and alternative medicine for the treatment of multiple sclerosis. *Expert Rev Clin Immunol* 2010;6:381-95.
27. Olsen SA. A review of complementary and alternative medicine (CAM) by people with multiple sclerosis. *Occup Ther Int* 2009;16:57-70.
28. Sastre-Garriga J, Munteis E, Río J, Pericot I, Tintoré M, Montalban X. Unconventional therapy in multiple sclerosis. *Mult Scler* 2003;9:320-2.
29. Hooper KD, Pender MP, Webb PM, McCombe PA. Use of traditional and complementary medical care by patients with multiple sclerosis in South-East Queensland. *Int J MS Care* 2001;3: 13-28.
30. Skovgaard L, Nicolajsen PH, Pedersen E, *et al.* Differences between users and non-users of complementary and alternative medicine among people with multiple sclerosis in Denmark: a comparison of descriptive characteristics. *Scand J Public Health* 2013;41:492-9.

31. Campbell DG, Turner AP, Williams RM, *et al.* Complementary and alternative medicine use in veterans with multiple sclerosis: prevalence and demographic associations. *J Rehabil Res Dev* 2006;43:99-110.

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Uporaba komplementarne i alternativne medicine kod oboljelih od multiple skleroze

SAŽETAK – Cilj rada: Cilj rada bio je ispitati učestalost i oblike liječenja komplementarnom i alternativnom medicinom (CAM) kod bolesnika s multiplom sklerozom (MS) i odrediti povezanost uporabe postupaka CAM-a s dobi ispitanika, spolom, tipom MS, trajanjem bolesti i stupnjem onesposobljenosti. **Metode:** Ispitivanje je uključilo 81 bolesnika. Upitnik o uporabi CAM-a ispunjen je uz pomoć medicinskog osoblja, a dobiveni podatci uspoređeni su između skupina bolesnika koji su koristili i onih koji nisu koristili liječenje CAM-om. **Rezultati:** U vrijeme istraživanja liječenje CAM-om koristilo je 64 (79,0%) ispitanika. U skupini koja se liječila CAM-om utvrđena je statistički značajno veća zastupljenost bolesnika s manjim stupnjem onesposobljenosti ($p=0,009$), relapsno-remitirajućim tijekom bolesti ($p=0,015$) i kraćim trajanjem bolesti ($p=0,002$) u odnosu na skupinu koja se nije liječila CAM-om. Nije nađena statistički značajna razlika u odnosu na spol ($p=0,078$) i životnu dob ($p=0,062$). Ispitanici su kao oblik liječenja najčešće koristili dijetalne nadomjestke ($n=62$; 76,5%), potom meditaciju ($n=9$; 11,1%), poseban dijetetski režim ($n=8$; 9,9%), akupunkturu ($n=6$; 7,4%), bioenergiju ($n=6$; 7,4%), masažu ($n=3$; 3,7%), kiropraktiku ($n=3$; 3,7%), jogu ($n=3$; 3,7%), magnetoterapiju ($n=3$; 3,7%), homeopatiju ($n=1$; 1,2%), helioterapiju ($n=1$; 1,2%) i terapiju pčelinjim otrovom ($n=1$; 1,2%). **Zaključak:** Rezultati istraživanja pokazali su učestalo liječenje postupcima CAM-a kod oboljelih od MS-a, kao i širok spektar oblika liječenja. Potrebna su daljnja istraživanja o učinkovitosti i sigurnosti primjene postupaka CAM-a s obzirom na visoku učestalost korištenja navedenih postupaka kod oboljelih od MS-a.

Ključne riječi: multipla skleroza, komplementarna i alternativna medicina, dijetalni nadomjestci