Use of Therapies Other Than Disease-Modifying Agents, Including Complementary and Alternative Medicine, by Patients With Multiple Sclerosis: A Survey Study

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Context: Many patients with multiple sclerosis use complementary and alternative medicine (CAM) to supplement their traditional treatment.

Objective: To identify both the prevalence and frequency of use of therapies other than disease-modifying agents (DMAs), including CAM, among patients with multiple sclerosis.

Design: The authors administered a 13-question survey regarding patients’ current use of non-DMA therapies—including dietary supplements, exercise, and “true” CAM (eg, acupuncture, chiropractic, massage)—and mainstream treatments, including physical therapy and osteopathic manipulative treatment. Patients rated their level of disability on a scale of 1 to 10 (with 10 being most severe).


Patients: Inclusion criteria were physician-confirmed multiple sclerosis (either relapsing-remitting or progressive), regardless of sex, duration of disease, age at onset, disability level, or type of disease. Patients were excluded if they were younger than 18 years.

Main Outcome Measure: Patient-reported use of non-DMA therapies and perception of disability.

Results: A total of 111 patients with multiple sclerosis completed the survey properly. All respondents used non-DMA therapies. Twenty-three patients (20.7%) used these therapies without concomitantly taking a DMA. A plurality (34.8%) of those patients reported a disability score of 7 or 8. Sixty-two of the 88 participants (70.5%) who used DMAs reported disability scores of 5 or less. Sixty-five patients (58.6%) reported exercising on a weekly basis. Among those patients, 47 (72.3%) reported a disability score of 5 or less. Sixty-four patients (57.7%) used such CAM therapies as acupuncture and massage, or such other non-DMA treatments as osteopathic manipulative treatment and psychotherapy. Among those patients, 37 (64.9%) reported a disability score of 5 or less.

Conclusion: Many patients with multiple sclerosis are seeking more than traditional medical treatment. Physicians and other health care professionals must be aware of the extensive use of alternative modalities among these patients, and these professionals must provide guidance and monitoring in use of these therapies to improve outcomes.


By conservative estimates, 400,000 people in the United States have multiple sclerosis.1 Many patients with this condition are treated with 1 of 3 first-line disease-modifying agents (DMAs): interferon beta-1a (Avonex, Biogen Idec Inc, Cambridge, Massachusetts; Rebif, EMD Serono Inc, Rockland, Massachusetts, and Pfizer Inc, New York, New York); interferon beta-1b (Betaseron, Bayer HealthCare Pharmaceuticals, Montville, New Jersey); or glatiramer acetate (Copaxone, Teva Neuroscience Inc, Kansas City, Missouri).1 However, multiple sclerosis is a complicated disease with far-reaching effects, and many patients turn to additional measures in an effort to combat its progression.2-4 Some researchers and physicians have speculated that the natural history of multiple sclerosis can be altered with lifestyle and dietary modifications or with maintenance of one’s general health and well-being to decrease the effects of natural stressors on the body.5-9 Unfortunately, validated quantitative evidence for these speculations is lacking.10 Patients are not waiting for the medical community to assist them in establishing therapeutic regimens to use in conjunction with conventional medical treatments. Physicians and other health care professionals treating patients with mul-
ultiple sclerosis need to be aware of their patients’ use of complementary and alternative medicine (CAM) in order to advise them on CAM use, on possible adverse effects of CAM, and on possible interactions of CAM therapies with conventional agents.

Currently, to our knowledge, there is no consensus in the medical community regarding which therapies are considered alternative, complementary, or unconventional.\textsuperscript{11} Definitions of CAM vary widely, and many types of therapy not proven to alter disease progression to a statistically significant degree are nevertheless recommended by physicians to their patients in conjunction with DMAs. Complementary and alternative medicine has been defined as “unconventional medicine,”\textsuperscript{12} and the term generally refers to forms of treatment not taught widely in medical schools or not typically available in hospitals.\textsuperscript{13,14}

Our study considered 3 types of non-DMA therapies used by patients with multiple sclerosis: (1) dietary supplements (eg, vitamins and minerals); (2) exercise modalities, including yoga; and (3) therapies that may be considered “true” CAM, such as acupuncture, chiropractic, and massage therapy. We also considered mainstream treatments and therapies for patients with multiple sclerosis, such as osteopathic manipulative treatment (OMT), physical therapy, and behavioral therapy. We sought data on the use of these various therapies by patients with multiple sclerosis and on whether these therapies decreased patients’ perceived disability.

**Methods**

The present study was performed at Drexel University College of Medicine in Philadelphia, Pennsylvania, and approved by the university’s institutional review board. The present survey-based study was conducted between February 2010 and April 2010 to identify both the prevalence and frequency of use of non-DMA therapies, including CAM, by patients with multiple sclerosis. All patients with physician-confirmed multiple sclerosis, regardless of sex, duration of disease, age at onset, disability level, or type of disease, were eligible to participate in this study. Included patients needed to have previously established multiple sclerosis of either the relapsing-remitting or progressive type. Patients were excluded if they were younger than 18 years.

Patients could access the survey by means of 1 of 2 routes: (1) at 1 of 2 Drexel University College of Medicine neurology outpatient clinics in Philadelphia or (2) via a link on the College of Medicine’s multiple sclerosis Web page (http://www.surveymonkey.com). The confidentiality protocol included signs posted in each neurology outpatient office asking patients with multiple sclerosis whether they would like to fill out a survey. Surveys were attached to the signs. The print and Web surveys were identical. After completing the print survey, which could be taken home to be completed, patients returned the form by dropping it into a box at the clinic. Surveys were neither handed out nor collected by the office staff. Patients submitted the Web survey electronically. Neither the paper nor electronic survey required patient identifiers, so no associations could be made with the individuals who completed the survey.

The survey included 14 questions (most were fill-in-the-blank, some were multiple choice) divided into 4 categories. The first category was demographic information of the study participants, such as age, age at diagnosis, and sex. The next set of questions focused on specific characteristics of the patient’s disease, including duration of disease, DMAs the patient was taking, number of relapses, number of pulse steroid infusions in the past 4 years, and form of multiple sclerosis (ie, relapsing-remitting or progressive). The third set of questions focused on the patient’s use of non-DMA therapies. Patients were asked about their dietary interventions, such as vitamins and minerals, and about their exercise activities used for more than 30 days. They were also asked whether they used any other therapeutic modalities to help them combat the symptoms of multiple sclerosis. Finally, patients were asked to rate their disability on a scale of 1 to 10, with 10 being completely debilitating. Disability was rated on a subjective basis.

Data were compiled and analyzed using the PASW Statistics 18 program (SPSS Inc, Chicago, Illinois).

**Results**

A total of 133 individuals submitted the survey. However, only 111 of the surveys were used for data analysis. The remaining 22 surveys were excluded because they were incomplete or contained illegible answers. The survey results are presented in the Table. Ninety-seven participants (87.4%) were women, and the mean (standard deviation [SD]) age of all participants was 44.9 (11.9) years. The participants’ mean (SD) age at onset of multiple sclerosis was 35.6 (10.5) years. Eighty-one participants (73.0%) reported being diagnosed as having relapsing-remitting multiple sclerosis.

Eighty-eight participants (79.3%) indicated that they were taking at least 1 of the conventional DMAs. More patients (35 [31.5%]) were taking glatiramer (ie, Copaxone) than any other DMA (Figure 1). The mean number of relapses among all participants in the past 4 years was 3.8 (6.1). The mean (SD) number of months that participants had been taking their current DMA was 42.2 (42.4). The mean (SD) number of months that participants had taken any form of DMA was 75.8 (59.8). The mean (SD) number of inpatient or outpatient intravenous steroid treatments that patients reported undergoing in the past 4 years was 3.7 (11.6).

Of the 111 participants in the study, 100% had used a CAM or other non-DMA remedy, such as supplements or exercise. Among the 23 participants (20.7%) who reported not currently using any DMA, a plurality (8 [34.8%]) reported a disability score of 7 or 8 on the 10-point scale. Sixty-two of the 88
Participants (70.5%) who reported currently using a DMA scored their disability at 5 or lower on the same 10-point scale.

All 111 participants used dietary supplements for at least 30 days; 65 patients (58.6%) used exercise for at least 30 days; and 64 patients (57.7%) used such CAM forms of therapy as acupuncture and massage therapy or other non-DMA treatments, such as OMT and psychotherapy. Although all of the participants in the study consumed supplements, more patients (36 [32.4%]) took vitamin D than any other vitamin supplement. The second most prevalent type of supplement consumed by the study participants consisted of the B vitamins (21 [18.9%]).

Among the 65 patients who reported performing some form of exercise, 47 (72.3%) reported a disability score of 5 or less on the 10-point scale (Figure 2).

Comment
All of the long-established DMAs have an extensive list of commonly experienced adverse reactions, including flulike symptoms, injection site reactions, fatigue, and depression. However, these adverse effects are mild compared with the adverse effects of DMAs that are newly approved or close to market—including severe infection, cancer, and even death. Several DMAs are currently in phase 3 clinical trials or have recently been approved by the US Food and Drug Administration. As promising as these new agents are, none of them is a cure for patients with multiple sclerosis. Multiple sclerosis has an enormous impact on an individual’s life. As many as 50% of patients with multiple sclerosis will have depression during the course of the disease, and patients with multiple sclerosis have a considerably elevated suicide rate. Lacking hope for a cure and frequently

### Table.
**Demographics and DMA and non-DMA Use Among Patients With Multiple Sclerosis (N=111)**

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Findinga</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y, mean (SD)</td>
<td>44.9 (11.9)</td>
</tr>
<tr>
<td>Sex, women</td>
<td>97 (87.4)</td>
</tr>
<tr>
<td>Age at Diagnosis of MS, y, mean (SD)</td>
<td>35.6 (10.5)</td>
</tr>
<tr>
<td>Current DMA for MS</td>
<td>88 (79.3)</td>
</tr>
<tr>
<td>Avonex (interferon beta-1a)</td>
<td>20 (18.0)</td>
</tr>
<tr>
<td>Betaseron (interferon beta-1b)</td>
<td>9 (8.1)</td>
</tr>
<tr>
<td>Copaxone (glatiram er acetate)</td>
<td>35 (31.5)</td>
</tr>
<tr>
<td>Extavia (interferon beta-1b)</td>
<td>1 (0.9)</td>
</tr>
<tr>
<td>Rebif (interferon beta-1a)</td>
<td>11 (9.9)</td>
</tr>
<tr>
<td>Tysabri (natalizumab)</td>
<td>8 (7.2)</td>
</tr>
<tr>
<td>Other</td>
<td>4 (3.6)</td>
</tr>
<tr>
<td>None</td>
<td>23 (20.7)</td>
</tr>
<tr>
<td>Months on Current DMA, mean (SD)</td>
<td>42.2 (42.4)</td>
</tr>
<tr>
<td>Total Months on Any DMA, mean (SD)</td>
<td>75.8 (59.8)</td>
</tr>
<tr>
<td>Relapses, mean (SD)</td>
<td>3.8 (6.1)</td>
</tr>
<tr>
<td>IV Steroid Treatments, mean (SD)</td>
<td>3.7 (11.6)</td>
</tr>
<tr>
<td>Current MS Diagnosis</td>
<td></td>
</tr>
<tr>
<td>Relapsing-remitting</td>
<td>81 (73.0)</td>
</tr>
<tr>
<td>Progressive</td>
<td>16 (14.4)</td>
</tr>
<tr>
<td>Other</td>
<td>14 (12.6)</td>
</tr>
<tr>
<td>Supplementsb</td>
<td>111 (100)</td>
</tr>
<tr>
<td>B vitamins</td>
<td>21 (18.9)</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>36 (32.4)</td>
</tr>
<tr>
<td>Exercise Activities</td>
<td>65 (58.6)</td>
</tr>
<tr>
<td>CAM/other Non-DMAc</td>
<td>64 (57.7)</td>
</tr>
<tr>
<td>Acupuncture</td>
<td>8 (7.2)</td>
</tr>
<tr>
<td>Massage therapy</td>
<td>20 (18.0)</td>
</tr>
<tr>
<td>OMT</td>
<td>6 (5.4)</td>
</tr>
<tr>
<td>Physical therapy</td>
<td>53 (47.7)</td>
</tr>
<tr>
<td>Psychotherapy</td>
<td>13 (11.7)</td>
</tr>
<tr>
<td>Reflexology</td>
<td>5 (4.5)</td>
</tr>
<tr>
<td>Other</td>
<td>5 (4.5)</td>
</tr>
<tr>
<td>a All data shown as No. (%) unless otherwise indicated.</td>
<td></td>
</tr>
<tr>
<td>b In past 4 years.</td>
<td></td>
</tr>
<tr>
<td>c Used for more than 30 days.</td>
<td></td>
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<tr>
<td>d Each patient could use more than 1 type of therapy or treatment.</td>
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</tbody>
</table>

**Abbreviations:** DMA, disease-modifying agent; IV, intravenous; MS, multiple sclerosis; OMT, osteopathic manipulative treatment.
Studies have been conducted to pinpoint the reason for the widespread use of CAM therapies within the multiple sclerosis population. Research has shown that many patients perceive CAM as effective and milder forms of therapy with fewer adverse effects than conventional treatments.\(^{30,31}\)

Patients may turn to remedies not prescribed by their physicians when their disease intensifies and conventional medications become less effective. However, patients using CAM report having more symptoms and a worse state of health than nonusers.\(^{32-34}\) The reasons for these findings are unknown. One possible explanation for the worsening state of health with CAM could be that once a patient’s disease progresses, he or she abandons DMAs but not other treatments. Another explanation could be that in patients not taking a DMA, the disease progresses exponentially, leading to increased disability. Our study found that a patient’s perceived disability was substantially decreased when non-DMA therapies were used in conjunction with established DMAs. The 20.7% of our survey participants not using a DMA reported an average perceived disability score of 7.1 on a 10-point scale, whereas the 79.3% of participants using a DMA scored 5 or less on the same disability scale.

Increasing numbers of patients with multiple sclerosis are taking—and more physicians are prescribing—vitamin D supplements despite the need for further research on the effectiveness of these supplements. Recent evidence indicates that consuming a high daily dose of vitamin D can decrease multiple sclerosis–related disability and improve scores on the Expanded Disability Status Scale.\(^{35-37}\) Recent evidence also demonstrates a direct correlation between an increase in 25-hydroxyvitamin D and a reduction in multiple sclerosis relapse rate.\(^{38}\) Among participants in our study who consumed vitamin D regularly, 56.1% scored their disability at 5 or less on the 10-point scale.

The B vitamins are considered effective for inhibiting the lipopolysaccharide-induced production of matrix metalloproteinase-9.\(^{39}\) Omega-3 fatty acids have been shown to produce anti-inflammatory responses.\(^{40}\) According to a systematic review, although some studies have shown no reduction in relapse rate and no improvement in disability among patients with multiple sclerosis using polyunsaturated fatty acids, other studies have proven otherwise.\(^{41}\) In a study by Nordvik et al,\(^{42}\) 16 patients who had newly diagnosed multiple sclerosis took 0.9 g/d of long-chain marine fatty acids and vitamins. Two-year follow-up showed statistically significant reductions in the mean annual exacerbation rate and in the mean Expanded Disability Status Scale score among these patients.

Many physicians encourage patients with multiple sclerosis to exercise, because higher exercise levels in such patients have been associated with lower functional disability, improved quality of life, decreased fatigue,\(^{43,44}\) and a faster cognitive response.\(^{45-48}\) These studies disprove the old way of thinking among physicians that patients with multiple sclerosis should having negative experiences with orthodox medicine,\(^{25}\) many patients turn to alternative methods to help combat their disease progression.

Comparing reported rates of use of CAM and other non-DMA remedies among patients can be difficult because of the many different definitions of CAM used in the literature. For example, 1 study defined CAM as “a broad domain of healing resources that encompasses all health systems, modalities, and practices ... other than those intrinsic to the politically dominant health system of a particular society or culture in a given historical period.”\(^{26}\) That particular study, which based its CAM definition on a panel definition proposed at the CAM Research Methodology Conference of 1995,\(^{27}\) found that 70% of its patient population with multiple sclerosis reported lifetime use of at least 1 form of CAM.\(^{26}\) Other studies have found that between 54% and 81% of their patient populations with multiple sclerosis used some form of CAM treatment, which was variously defined as dietary supplements, massage therapy, or chiropractic manipulation.\(^{34,28}\)

Few data support the benefits of CAM or other non-DMA treatments in delaying the progression of multiple sclerosis, in preventing relapses or long-term disability, or in stabilizing magnetic resonance imaging measures of the disease.\(^{28}\) Several
not overexert themselves because of the possibility of fatigue and eventual relapse. Most patients in our study who participated in exercise, including yoga, reported disability scores of 5 or less (Figure 2).

The CAM therapies used by the patients in the present study included acupuncture, chiropractic, and massage. We included OMT and physical therapy as non-DMA treatments because although they are not generally considered “complementary” or “alternative,” to our knowledge, neither treatment has been proven to stabilize magnetic resonance imaging measures of multiple sclerosis or to decrease relapse rates of multiple sclerosis. Among our survey participants, physical therapy was used by 53 patients (47.7%), massage therapy by 20 patients (18.0%), and OMT by 6 patients (5.4%) (Figure 3). Patients with multiple sclerosis may use the types of treatments shown in Figure 3 because of the well-known association between emotional and physical stressors and aggravation of multiple sclerosis symptoms, often called the Uhthoff phenomenon.5-9

Osteopathic manipulative treatment is generally used by patients with multiple sclerosis to help improve their gait, balance, strength, coordination, and endurance and to reduce their fatigue.50,51 In 1 study, the combination of OMT with maximal-effort exercise showed a statistically significant (\(P < .05\)) improvement in patients’ strength and ambulation.51 Data have also shown that gait disturbance caused by dysfunction of ipsilateral hip abduction in patients with multiple sclerosis (referred to as compensated Trendelenburg gait) can be alleviated with OMT.52 Among survey participants who used any CAM or other non-DMA treatments, 41 (36.9%) rated their disability score as 5 or less on the 10-point scale (Figure 4). By monitoring and controlling their stressors, patients with multiple sclerosis can sometimes decrease the effects of their condition on their everyday activities.

**Limitations**

The primary limitation to the present study is the small patient population. Another limitation is that all of the survey participants were patients at a single facility. Therefore, the results may lack external validity. Further investigations on this matter should include patients from multiple geographic areas to increase the patient population and, thus, the validity of findings.

Because the survey was anonymous, we cannot be sure that the patients met the inclusion criteria. In addition, our survey did not question patients about their motivation for using nonmedical therapies, or about which OMT techniques they used. Therefore, we cannot ascertain patients’ reasoning with respect to the effectiveness of these therapies in preventing disease progression or managing symptoms.

“Bridging” treatments that combine alternative therapies with conventional disease-modifying treatment modalities are currently recommended by a number of European multiple
sclerosis societies.33,35 However, a positive correlation between use of non-DMA therapies alone and decreased disability could not be observed in our study because all of our study population used such therapies.

Finally, patients' reported perceptions of disability on a 10-point scale were a subjective measurement. Future studies should incorporate objective measures of multiple sclerosis-related disability.

Conclusion
Multiple sclerosis is a lifelong disease with a potentially devastating progression. One hundred percent of our survey population used some form of non-DMA therapy. Physicians and other health care professionals should provide guidance and monitoring in use of these remedies to improve outcomes in their patients. Additional research needs to be conducted to establish which types of therapies, supplements, and exercise modalities would be most beneficial for patients with multiple sclerosis.

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References

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