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Original Article

## Patient Use of Complementary and Alternative Medicines in an Outpatient Pediatric Neurology Clinic



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## ABSTRACT

**BACKGROUND:** This article describes the use of complementary and alternative medicines in an outpatient pediatric neurology clinic, and assesses family attitudes toward the efficacy of complementary and alternative medicines versus prescription medications. Complementary and alternative medicine is an important element of the modern health care landscape. There is limited information about whether, and to what extent, families perceive its utility in childhood neurological disorders. **DESIGN/METHODS:** Surveys were distributed to 500 consecutive patients at a child neurology clinic in Rochester, Minnesota. Questions pertained to the child's diagnoses, use of complementary and alternative medicines, and the specific complementary and alternative medicine modalities that were used. Opinions were also gathered on the perceived efficacy of complementary and alternative medicines and prescription medications. Data were compared using  $\chi^2$  or Fisher exact tests as indicated. **RESULTS:** A total of 484 surveys were returned, of which 327 were usable. Only 17.4% admitted to use of complementary and alternative medicine to treat neurological problems. However, in follow-up questioning, actually 41.6% of patients recognized that they were using one or more types of complementary and alternative medicines. Disorders associated with a statistically significant increased prevalence of complementary and alternative medicine use were headache (50.8% with headache used complementary and alternative medicine versus 35.7% without headache;  $P = 0.008$ , Fisher exact test), chronic fatigue (63.2% vs 38.8%;  $P = 0.005$ , Fisher exact test), and sleep disorders (77.1% vs 37.3%;  $P < 0.0001$ , Fisher exact test). **CONCLUSIONS:** A large proportion of pediatric neurology patients in our clinic are also using complementary and alternative medicine. Only 38.5% of these recognize themselves as using complementary and alternative medicine, underlining the need to inquire in-depth about its use. Patients who are less satisfied with their prescription medications are more likely to use complementary and alternative medicine, perhaps reflecting the less tractable nature of their disorders.

**Keywords:** pediatric neurology, complementary and alternative medicine, headache, chronic fatigue, epilepsy

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### Introduction

The use of complementary and alternative medicines (CAMs) in the United States is becoming increasingly prevalent.<sup>1</sup> From 2002 through 2012, the prevalence of CAM use among Americans has remained stable at about one in three.<sup>2,3</sup> Among adults with neurological disorders, the prevalence of CAM use has been estimated to be 44% to 50%.<sup>4–6</sup>

The role of CAM is an area of increasing interest to pediatric care providers. The use of CAM in child neurology practice is estimated between 24% and 78%,<sup>7,8</sup> with wide variation among sites.<sup>9</sup> Specific conditions, such as autism spectrum disorders (ASDs) and migraine, may have greater association with use of CAM than other diseases.<sup>10,11</sup> It is therefore helpful for pediatric providers to understand how CAMs are being used in their specific community as well as in the larger population.

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### Methods

This project was approved by the Institutional Review Board of the Mayo Clinic. An anonymous questionnaire was developed with the aid of

the Mayo Clinic Survey Research Center. It was completed on a voluntary basis at the time of check-in to the Child Neurology clinic by families of new and returning patients. Patients were excluded if they had already been surveyed as part of this study. This survey contained a total of ten questions, requiring about five minutes complete. Questions included information on the neurological symptoms experienced by the patient, the level of education of the parent completing the questionnaire and that parent's spouse (if applicable); whether or not the patient was using any pharmaceuticals and their perceived efficacy, whether or not the patient was using CAM and their perceived efficacy; whether the patient intended to continue the use of CAM; if treatment has been attempted with CAM alone in the recent past, and the perceived level of expertise of the treating neurologist with CAM. Also included was a list of 56 commonly used CAM modalities, along with a blank in which others could be added (e-component 1). Patients were determined to be users of CAM if they answered in the affirmative to any of the modalities in the list or checked "other." Although the question "Does your child use CAM for their neurological condition?" was asked, this question was not used specifically to determine the prevalence of the use of CAM because of concerns that patients might not be able to reliably identify CAM. Instead, prevalence of CAM use was determined by whether or not one of the specific CAM modalities listed in question #5 was checked.

**Statistical methods**

De-identified data were collected and managed using REDCap electronic data capture tools hosted at Mayo Clinic. REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies.<sup>12</sup> In order to ensure accuracy in the responses, the surveys were completed on the same day as the clinic visit and placed in a drop box by the parent to clinic desk before leaving. Survey responses were summarized with frequencies and percentages and were compared between groups (i.e., CAM users versus non-CAM users) with  $\chi^2$  test (or Fisher exact test, as appropriate). Ordinal survey items (i.e., total neurological conditions) were compared with Wilcoxon rank-sum tests. *P* values less than 0.05 were considered statistically significant. All analyses were performed using SAS version 9.

**Results**

Four hundred and eighty-four surveys were returned, of which 327 included complete responses with respect to the primary analysis goals. The remaining surveys were not included in the analysis because they lacked data on the diagnosis or use of CAM. Surveys were still included in the analysis set regardless of missing data with regards to the educational level of the parent, that of the spouse, or their assessment of their physician's competence with CAM, but completed other segments of the questionnaire. Of the neurological disorders represented in this survey, the most common were headache (128 of 327; 39.1%), followed by epilepsy (107 of 327; 32.7%) (Table). Of the 327 surveys completed, 136 (41.6%) indicated the use of at least one type of CAM. Fifty-four patients (39.7% of the CAM users; 16.5% of the total) were using three or more CAM modalities. Although the actual number of users was higher, only 57 of 327 patients (17.4%) answered in the affirmative to the question "Does your child take CAM to treat neurological problems?" The patients with the largest use of CAM in this survey were those with sleep disorders (77.1%), which continued to be true even after controlling for the use of melatonin (a therapy that is more and more frequently being prescribed by allopathic providers; 62.9% of children with sleep disorders used non-melatonin CAM). This group was followed by patients with chronic fatigue (63.2%). It should be noted in these analyses that 43.7% of patients were

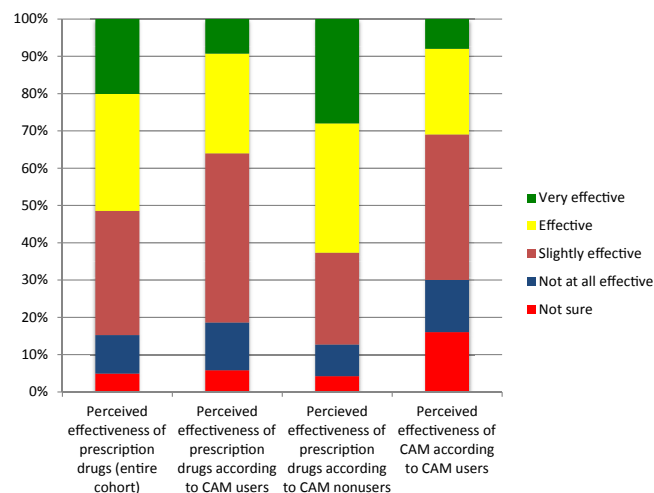
**TABLE.**  
Overview of Disorders Represented and Complementary and Alternative Medicine (CAM) Use

Disorder	Number of Patients (% of Total)	Number (%) Using CAM	Number of Patients (%) Using 3 or More CAM
2 or more	143 (43.7)	76 (53.1)	41 (12.5)
Epilepsy	107 (32.7)	37 (34.6)	13 (4.0)
Headache	128 (39.1)	65 (50.8)	31 (24.2)
Autism	19 (5.8)	11 (57.9)	7 (36.8)
Attention-deficit hyperactivity disorder	35 (10.7)	17 (48.6)	8 (22.9)
Delayed development, cause not known	45 (13.8)	18 (40.0)	12 (26.7)
Generalized body pain (not headache)	35 (10.7)	18 (51.4)	8 (22.9)
Chronic fatigue	38 (11.6)	24 (63.2)	14 (36.8)
Sleep disorder	35 (10.7)	27 (77.1)	13 (37.1)
Abnormal movements	28 (8.6)	15 (53.6)	8 (28.6)
Tumor	7 (2.1)	2 (28.6)	0 (0.0)
Multiple sclerosis (proven or suspected)	4 (1.2)	0 (0.0)	0 (0.0)
Other	86 (26.3)	39 (45.3)	17 (19.8)

Note that there is some overlap, because many patients (43.7%) listed more than one diagnosis; for this reason, percentages will not add to 100%.

marked as having multiple disorders, and each disorder was analyzed separately (with the goal of determining whether a given disorder was associated with an increased use of CAM). Of patients with multiple disorders, over half (53.1%) were users of CAM (compared with 32.6% of those without multiple disorders, *P* = 0.0003, Fisher exact test).

CAM users felt that these modalities were at least slightly effective (70.6%, Fig 1). Eighty-six patients were using both CAM and prescription medications (representing 63.2% of patients using CAM and 26.3% of the total cohort). Within the entire cohort, 51.5% of patients taking prescription medications rated them as "Very effective" or "Effective," whereas only 36.0% of CAM users who were taking prescription drugs rated the latter as very effective. On the



**FIGURE 1.** Perceived effectiveness of complementary and alternative medicine and prescription drug therapy. (The color version of this figure is available in the online edition.)

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