Use and Perceived Effectiveness of Complementary and Alternative Medicine to Treat and Manage the Symptoms of Autism in Children: A Survey of Parents in a Community Population

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Abstract

Objective: Parents of children with autism spectrum disorders (ASDs) often try a variety of treatments for their children, including complementary and alternative medicine (CAM). The objective of this study was to improve understanding of the frequency of CAM use by parents for their children with autism and to quantify the parents' perceived effectiveness of various CAM therapies in mitigating the health and functioning problems associated with autism.

Methods: Parents in southeastern Virginia were recruited for study participation from local autism organizations and a clinical practice where a large proportion of the patients are children with autism. Parents completed an online survey and answered questions about CAM use for their children with autism, and they rated the perceived effectiveness of each therapy.

Results: Of 194 parents surveyed, 80.9% reported that they had tried some form of CAM for their child with autism. Among CAM users, the most frequently used therapies were multivitamins (58.6%), the gluten-free casein-free diet (54.8%), and methyl B-12 injections (54.1%). The CAM therapies that received the highest average rating of effectiveness were sensory integration therapy, melatonin, and off-label use of prescription antifungal medications.

Conclusion: CAM therapies were frequently used in this population, and many were perceived to be effective in helping to ease some of the health challenges associated with autism. CAM therapies for the autism population should be further studied in well-controlled clinical research settings to provide safety and efficacy data on treatments, as well as validated treatment options for those with ASD.

Introduction

AUTISM IS A NEURODEVELOPMENTAL disorder, currently estimated to affect 1 out of every 68 children in the United States.¹ The term “autism spectrum disorders” (ASDs) has been used to describe those who, beginning in early childhood, have communication deficits, social deficits, and perseverations regarding routines, their environment, and items.² Children with ASD have core deficits in social interaction and verbal and nonverbal communication and have restricted, repetitive behaviors or interests. They will often also have unusual responses to sensory input, such as noise or touch. The severity of symptoms ranges from mild to severe.³ ASDs, similar to other neurodevelopmental disorders, are commonly not considered “curable,” and long-term management is required.⁴

Over the past decade, the incidence and prevalence of autism spectrum disorders have increased 10-fold.⁵ As a result, ASDs have become an urgent public health concern and challenge, with enormous related financial and societal costs.⁶ A recent study conducted by the Harvard School of Public Health estimated that the lifetime cost to care for an individual with an ASD is \$3.2 million.⁷

Research into what is causing this increase in the incidence of ASDs has yielded little concrete results; as with many other complex disorders, the cause of autism is thought to involve a combination of genetics and environmental exposures.⁶ Increased surveillance and broadening of the definition of ASDs may also be contributing to increased diagnoses.⁸

Outside of educational interventions for a child with ASD, parents often seek help and treatment from the

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medical community, usually beginning with their child's primary care physician. Within the current healthcare model, limited conventional treatment options are available to parents who are seeking to ameliorate the symptoms of their child's autism. The most common conventional therapeutic treatments are based on improving function or reducing symptoms: speech therapy to improve the child's language deficits and occupational therapy to improve a child's motor skills, self-care skills, and sensory issues. Intensive and frequent applied behavioral analysis (ABA) therapy is a scientifically validated, recommended treatment, although it is often not covered by health insurance and can be cost-prohibitive for families to commit to a long-term ABA program.

Pharmaceuticals are often prescribed to reduce symptoms related to affect, aggression, and troublesome behaviors.⁹ Although some troublesome behaviors are modifiable with psychopharmacologic intervention, sometimes underlying medical conditions in the child may be causing or exacerbating the behaviors.⁴

Because of the limited number of options for treatment within the conventional medical model, many parents turn to complementary and alternative medicine (CAM) in an attempt to improve their child's health, functioning, and capabilities.¹⁰ The purpose of the current exploratory study was to survey a group of parents of children with autism in a community population, to learn about the use of CAM treatments in this population, and to record the parents' perceptions on effectiveness of CAM with regard to their child.

What is CAM? The National Center for Complementary and Integrative Health (a branch of the National Institutes of Health) defines CAM as a "group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine. Conventional medicine (also called Western or allopathic medicine) is medicine as practiced by holders of M.D. (medical doctor) and D.O. (doctor of osteopathy) degrees and by allied health professionals, such as physical therapists, psychologists, and registered nurses."¹¹ Generally speaking, "complementary medicine" usually refers to a CAM product or procedure used in tandem with conventional medicine. "Alternative medicine" usually refers to the use of CAM instead of conventional medicine.¹¹

A study conducted in China found that CAM was used by 40.8% of families with a child with ASD (compared with 21.4% of the non-ASD population). In that study, the most common types of CAM used were acupuncture, sensory integration therapy, and Chinese medicine.¹² In a North American registry of 1212 children with ASD, 17% were on a special diet. Children in the registry with gastrointestinal problems were the most likely to be on a special diet and were also more likely to have been treated with digestive enzymes, vitamins, or probiotics.¹³

Also in the published literature about this topic, a survey of parents found that more than 50% had used at least one CAM therapy for their children with ASD.¹⁴ Other surveys indicate that caregivers don't always inform their child's primary care physician about the use of CAM,¹⁵ although more information about CAM is something that families specify that they want from the child's primary healthcare providers.¹⁶

To gain further knowledge and insight regarding CAM use in a community-based autism population, a survey tool was developed to measure the frequency of CAM use and to better understand child- and family-specific characteristics of CAM users. Although CAM use in the autism population has been studied previously, the perceived effectiveness of these treatments has not been well studied. For this study, a perceived efficacy scale was also developed to measure the parents' impressions of how effective the CAM treatments were for their children. The study protocol was designed in collaboration with physicians who care for children with autism, and the following study objectives were established: (1) What proportion of parents use CAM in a community-based population of parents of children with ASD? (2) What types of CAM therapies are most used in a typical autism community population? (3) What are the parents' perceptions of efficacy of various CAM treatments in improving their child's health, functioning, and reducing the features of ASD?

Materials and Methods

Parents in a midsized metropolitan area in southeastern Virginia were surveyed on their use and experiences of using CAM with their autistic children. The survey was web-based (SurveyMonkey), and prospective volunteers were invited to participate via an email invitation that contained a hyperlink to the study. The Institutional Review Board (IRB) at Eastern Virginia Medical School in Norfolk, Virginia, reviewed and approved the research protocol and surveys for use in May 2011. This study was initiated in June 2011 and was open to respondents until October 2011. No protected health information on the children was collected.

Study participants

The inclusion criteria required that the study participant be a parent or primary caregiver of a child (or children) with an ASD (as defined by the criteria of the *Diagnostic and Statistical Manual of Mental Disorders [DSM], Fourth Edition*) in the Hampton Roads area (southeastern Virginia). Parent participants were invited via a link to complete an anonymous, web-based survey, as noted earlier. A parent with more than one child with an ASD was instructed to complete one survey per child.

Several regional community autism organizations agreed to participate in the study; they sent a web-based survey invitation to their email distribution list with a request that their members complete this optional, descriptive survey. (The participating organizations were Autism Fellowship in Chesapeake, VA; Autism Society, Tidewater, VA; and Families of Autistic Children, Tidewater). Survey invitations were also made available at the office of Dr. Madren (study investigator), where children with autism and their families make up a large proportion of the patient population. The survey questionnaire took approximately 10–15 minutes to complete.

Respondents were asked to answer a series of questions (see Supplementary Appendix A; Supplementary materials are available online at www.liebertpub.com/acm) and had to choose a response from a predefined list. The survey was

designed so that some of the questions required an answer; if no answer was given, the program would flash an error message. For all of the specific CAM use questions, an “other” field was available for participants who used a CAM therapy that was not on the available list of responses. Skip logic was also programmed into the survey to route respondents to specific questions based on a previous yes/no answer. These validation techniques had been put in place to prevent erroneous or illogical responses.

For the purposes of this study, conventional medicine for treating ASDs was defined as the use of psychotropic pharmaceuticals (to treat some of the presenting symptoms and features of autism), speech therapy, occupational therapy, ABA, and educational-based interventions (i.e., academic models and programs for teaching children with ASDs). All other treatments were considered to be in the realm of CAM. Demographic information, including age and sex, was collected for both the parent and the child. Information was also collected on the child’s health challenges, including digestive problems, sleep problems, and psychiatric disorders. The survey then asked whether the parent had ever used any CAM treatments or therapies on the child; those who answered yes were routed to a series of questions about use of different CAM therapies and perceived effectiveness, and those who had not used CAM were routed to the last page of the survey and exited from the program. For the parents who use CAM on their child, additional questions regarding usage and effectiveness were asked on more than 120 types of CAM therapies and products.

The questions regarding the parents’ ratings of perceived effectiveness of the CAM therapy were presented on a Likert scale, using a scale of 1–5, whereby the parents could rate perceived effectiveness of a therapy (from 1 = “made things much worse” to 5 = “made things much better”). This scale was coded and weighted with these numeric values.

The responses that were generated were confidential, and no identifying information, such as name or Internet provider address, was collected within the survey. All data were stored in a password-protected electronic format, available only to the principal investigator.

Human subjects protections

This was a minimal-risk survey. An alteration of the consent process was requested and approved by the reviewing IRB; participants were informed about the study through an information page at the beginning of the online survey.

Data analysis

The web-based survey program used in this study created data tables as completed surveys were submitted to the program. Once the survey was closed, results were tabulated in Microsoft Excel (Microsoft Corp., Redmond, WA) using descriptive statistics. Frequencies were calculated for categorical data and descriptive statistics were generated for continuous variables such as age.

The perception-of-efficacy scores were based on the weighted Likert scale responses (1–5) and treated as ordinal data. Mean efficacy ratings were calculated for each CAM treatment.

When the number of respondents about a particular CAM treatment was five or fewer within a CAM therapy category, that CAM treatment variable was deleted because of low sample size since the resulting data could be highly skewed by the low response count.

Results

One hundred and ninety-four parent caregivers (or other primary caregivers) completed the study survey. Among the respondents, 80.9% ($n = 157$) indicated that they had used at least one CAM therapy for their child with autism. Table 1 shows demographic and other parent and child characteristics for both the total population of parent respondents and the CAM-user parent respondents.

The mean age ($\pm$ standard deviation) age of the parent/caregiver who used CAM for their child with autism was 40.9 ± 7.6 years, which is similar to the age of the study sample population as a whole 41.0 ± 7.8 years. Most survey respondents and CAM users were white (74.2% and 77.7%, respectively). As indicated by the parent/caregiver responses, the children with autism in this study were far more likely to be male than female (78.4% versus 17.0%), which mirrors the sex distribution of the autism population at large in the United States.¹ The mean age of the child receiving one or more CAM therapies was 9.9 ± 4.1 years. Among the possible ASD diagnostic labels, most CAM user parents noted that their child’s diagnosis was autism (45.9%), followed by ASD (21.7%) and Asperger’s syndrome (19.1%).

Regarding the child’s comorbidities, there was a slightly higher proportion of comorbid conditions in the CAM user population than the sample population as a whole. The comorbid conditions with the highest prevalence in the overall study population was digestive disorders (53.1%), followed by sleep disorders (49.0%) and immune system disorders (45.9%). By extension, the subgroup with the highest CAM use was among those with digestive disorders (58.6%) followed by the subgroup with sleep disorders (52.9%).

A survey question was asked about whether the adult caregiver thought that the child had been autistic from birth or had regressed after some period of normal development. The responses to this question illustrate that most parent/primary caregivers believe that their child had regressed into autism after some period of normal development (61.9%).

The 157 parents who were CAM users were then presented with a series of questions regarding their use or nonuse of more than 120 specific CAM therapies. They were asked to rank the perceived effectiveness of each (the remaining 37 parents who were not CAM users were routed to the end of the survey and then exited). The questions regarding CAM use and effectiveness were grouped into the following therapeutic categories: diet modifications, vitamin and mineral supplements, amino acid supplements, bodywork/energywork, detoxification therapies, hormone therapies, off-label use of prescription medications, oral antifungal agents, herbal therapies, and miscellaneous treatments. Within each category, there was an option of selecting “None,” should the parent/caregiver not have tried any treatments from that category.

Table 2 displays the three most commonly used CAM treatments from each of the CAM therapeutic groups.

TABLE 1. SURVEY RESPONDENT DEMOGRAPHICS AND CHILD CHARACTERISTICS

<i>Variable</i>	<i>All parent/caregiver survey respondents (n = 194)</i>	<i>Parent/Caregiver respondents who use CAM on their child (n = 157)</i>
Parent/caregiver respondents who have used CAM on their child (%)		
Yes	80.9	100
No	15.0	NA
No response/unknown	4.1	NA
Role of survey respondent (%)		
Mother	80.4	85.4
Father	11.9	11.5
Other primary caregiver	4.1	3.1
No response/Unknown	3.6	0
Age of parent respondent		
Respondents (n)	187	157
Mean age $\pm$ SD (y)	41.0 $\pm$ 7.8	40.9 $\pm$ 7.6
Median (minimum, maximum) (y)	40 (26, 75)	40 (27, 75)
Ethnicity of parent respondents (%)		
African American	11.3	10.8
American Indian	0	0
Asian	1.6	1.3
Hispanic	3.6	3.8
Pacific Islander	0	0
White	74.2	77.7
Other	3.1	3.8
No response/Unknown	6.2	2.5
Sex of child of respondent (%)		
Male	78.4	80.9
Female	17.0	17.8
No response/unknown	4.6	1.3
Age of child		
Children (n)	187	157
Mean $\pm$ SD (y)	10.2 $\pm$ 4.7	9.9 $\pm$ 4.1
Median (minimum, maximum) (y)	9 (2, 32)	9 (2, 22)
Does the child have one or more of these health issues? (%)		
Digestive disorders ^a	53.1	58.6
Sleep disorders ^b	49.0	52.9
Immune system disorders ^c	45.9	52.2
Psychiatric disorders ^d	43.3	44.6
Neurologic disorders ^e	19.1	22.9
Genetic disorders ^f	6.7	5.7
Metabolic disorders ^g	4.1	5.1
Child's ASD diagnosis ^h (%)		
Autism	43.3	45.9
Asperger's syndrome	19.1	19.1
PDD-NOS	11.3	10.8
ASD	20.6	21.7
No response/unknown	5.7	2.5
Regression status of child, per parent (%)		
Autistic from birth	34.5	33.1
Regressed after normal development	61.9	66.9
No response/unknown	3.6	0

^aDescribed in the study survey as "e.g. constipation, diarrhea, vomiting, reflux."

^bDescribed in the study survey as "trouble falling asleep or staying asleep."

^cDescribed in the study survey as "e.g. allergies/hay fever, eczema, food sensitivities."

^dDescribed in the study survey as "e.g. anxiety, OCD [obsessive-compulsive disorder], ADD [attention-deficit disorder], ADHD [attention-deficit/hyperactivity disorder], depression, bipolar disorder, etc."

^eDescribed in the study survey as "e.g. headaches, tics, seizures."

^fDescribed in the study survey as "e.g. Landau-Kleffner, Fragile X, Down's syndrome, etc."

^gDescribed in the study survey as "e.g. PKU [phenylketonuria], mitochondrial disorders."

^hAs defined by criteria of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*; study was conducted in 2011–2012. CAM, complementary and alternative medicine; NA, not available; SD, standard deviation; ASD, autism spectrum disorder; PDD-NOS, pervasive developmental disorder, not otherwise specified.

TABLE 2. TOP THREE RESPONSES REGARDING USE AND PERCEIVED EFFECTIVENESS OF CAM THERAPIES:
PARENT RESPONSES BY THERAPEUTIC CATEGORY

<i>Variable</i>	<i>Parent/caregiver respondents who use CAM (n = 157) (%)</i>	<i>Average rating of effectiveness^b (scale, 1–5) among CAM users who responded</i>
Diet modifications or restrictions		
Gluten-free, casein-free diet	54.8	4.17
Low sugar/no sugar	28.0	4.23
Gluten-free diet	26.8	3.95
Vitamin and/or mineral supplements		
Multivitamin	58.6	3.68
Methyl B-12 injections	54.1	4.01
Zinc	29.9	3.96
Amino acid and other nutritional supplements		
None	53.5	n/a
Fish oils/essential fatty acids	51.6	4.10
Digestive enzymes	28.0	4.05
Bodywork or energywork		
Prayer (on behalf of child)	40.8	4.23
None	24.2	n/a
Massage therapy	22.9	4.08
Detoxification therapies		
None	40.8	n/a
Epsom salt baths	36.3	3.81
Chelation-DMSA	18.5	3.94
Hormone therapies		
Melatonin	45.2	4.50
None	40.1	n/a
Oxytocin nasal spray	14.0	3.76
Off-label use of prescription medications ^a		
None	42.0	n/a
Oral antifungals (e.g., nystatin)	42.0	4.41
Oral Anti-inflammatories	12.7	4.00
Oral antifungal agents (nonprescription)		
Probiotics	52.2	4.26
None	38.9	n/a
Grapefruit seed extract	15.3	3.96
Herbal therapies		
None	65.0	n/a
Curcumin	14.0	3.54
Homeopathy	8.3	4.29
Miscellaneous CAM therapies ^c		
Sensory integration therapy	43.3	4.52
Music therapy	22.9	4.24
Auditory integration therapy	19.7	4.18

^aAs with prescribing practices for other conditions, physicians may sometimes prescribe a medication that is indicated for a different indication, to treat a presenting problem in the child with autism, for example, prescribing a nighttime dose of clonidine (a centrally acting α -agonist hypotensive agent) to a child with autism to help with sleep problems.

^bThe CAM entries that were deleted because of low sample size (<5 responses) were pescatarian diet, lacto-ovo diet from the diet therapy category; cysteine, creatine, L-arginine, Sam-E, and tyrosine from the amino acid supplement category; Reiki, osteopathic manipulations, and *qigong* from the bodywork/energywork category; N-acetyl cysteine, ionic foot baths, oral glutathione, intravenous glutathione, tetrahydrofurfuryl disulfide, and sauna treatments from the detoxification therapies category; *Ginkgo biloba* and evening primrose oil from the herbal therapy category; and Traditional Chinese Medicine, intravenous immunoglobulin therapy, and Ayurvedic medicine from the miscellaneous CAM category.

^cAt the time of data analysis, the entries “fish oils/essential fatty acids” and “digestive enzymes” were moved from the miscellaneous category to amino acids/other nutritional supplements

DMSA, meso-2, 3-dimercaptosuccinic acid.

Among CAM users, the average rating of effectiveness of that specific therapy (among those who responded) was calculated. Overall, the most common CAM treatments that had been used were multivitamins (58.6%); the gluten-free, casein-free diet (54.8%); and methyl B-12 injections (43.8%). The perceived effectiveness ratings were 3.68, 4.17, and 4.01, respectively.

The therapies and products that had the highest rating average for improving the child’s health and/or reducing the symptoms of autism are shown in Table 3 (top 20 shown).

TABLE 3. PRODUCTS AND THERAPIES WITH HIGHEST AVERAGE RATINGS OF EFFECTIVENESS: TOP 20

<i>Product or therapy</i>	<i>Average rating (scale, 1–5)</i>
Sensory integration therapy	4.52
Melatonin	4.50
Prescription antifungals (off-label use)	4.41
Biofeedback	4.40
Meditation	4.38
Yeast-free diet	4.33
Homeopathy	4.29
Garlic	4.27
Probiotics	4.26
Feingold diet	4.25
Music therapy	4.24
Low-sugar/no-sugar diet	4.23
Prayer (on behalf of the child)	4.23
Exercise	4.22
Auditory integration therapy	4.18
Gluten-free and casein-free diet	4.17
Animal therapy	4.16
Fish oils/essential fatty acids	4.10
Massage	4.08
Alpha lipoic acid	4.08

Among parents who responded. If there were <5 responses for a CAM option, it was deleted from the data analysis because of low sample size.

The CAM therapies with the highest average rating of perceived effectiveness were sensory integration therapy (4.52), melatonin (4.50), and the off-label use of prescription antifungal medications (4.41).

Discussion

Parents serve as an enormous source of information and experience regarding how to live with and manage the symptoms and features of autism. This exploratory study sought to tap into that base of information with regard to CAM use by parents on their children with autism.

This study sought to assess the frequency of CAM use in a community-based autism population of children and the parents' perceptions of the efficacy of these treatments. Because of the limited number of conventional medical treatment options, and possible safety concerns of using CAM without the supervision of a clinician, it is important to study why and how CAM is being used and the perceived effectiveness of these treatments. Although other studies have quantified frequency of CAM use in the autism population, there are limited published data regarding perceived effectiveness of these treatments from the parents' perspective.^{17,18}

Of 194 parents surveyed, 80.9% reported that they had tried some form of CAM on their child with autism. This proportion is higher than what has been reported in previous studies.^{13,14} Among those who used CAM therapies, the most frequently used treatments were multivitamins (58.6%); the gluten-free, casein-free diet (54.8%); and methyl B-12 injections (54.1%). The finding of a high proportion of users who have tried methyl B-12 injections is much higher than what has been found in other studies, although this may be due to the prescribing patterns of the physician's office from which many participants were recruited.

This study found that parents rated many CAM therapies as effective in remediating their child's symptoms of autism. The CAM treatments that were rated as most effective were sensory integration therapy, melatonin, prescription antifungal medications, and biofeedback. The use and high ratings of effectiveness of prescription antifungal medications are interesting findings because this is a novel (off-label) use of these medications, presumably for remedying disturbances in the gastrointestinal tract due to overgrowth of candida (yeast). Further study is needed in this and other areas of biomedical treatments for autism. The other high ratings for sensory integration therapy, melatonin, and biofeedback are compelling. The authors presume that the sensory integration therapy and biofeedback treatments assist the child's processing of information with internal and external stimuli and that melatonin is helpful for sleep initiation and sleep disturbances.

The findings were similar to results from previously published works in several areas. The current study population reported that 53.1% of the children with ASD experience gastrointestinal problems; other studies have found that the prevalence of gastrointestinal problems in children with ASD ranges from 9% to 70% or higher.²⁰ Additionally, the sex distribution among the children with ASD (78.4% male), the proportion of sleep problems (49.0%), the history of regression into ASD (61.9%), and the use of CAM (80.9%) were also similar to the findings from other studies.^{1,14,19,21}

Why do parents turn to CAM treatments for their children with ASD? The reasons are many and varied, but CAM may be used for the following reasons:

First, the devastation of an autism diagnosis sends parents searching for information, products, and therapies that may help their children. There is a substantial amount of anecdotal information about what may work for a child with ASD, in addition to the perception that most CAM therapies are safe or free from adverse effects. Many individuals and companies seek to capitalize on parent's fear and confusion by making unsubstantiated claims about unregulated products.

Second, the treatment options presented by the conventional medical system are generally limited, which leads to frustration of the parents who are seeking to improve their child's health and functioning.

Third, there are few peer-reviewed, well-controlled, independent studies about CAM therapies, both for the autism population and for many other illnesses and health conditions. This scarcity of validated, evidence-based data about CAM therapies may impair the ability to make a fully informed decision about the appropriateness of a treatment, particularly when considering that some treatments are done without the guidance of a medical professional.

Although rigorous testing and validated safety and efficacy data are lacking for many CAM therapies, they are commonly used in many populations. As many as 42% of the U.S. public uses CAM for healthcare needs.²² Despite their potential, some CAM therapies may interfere with conventional treatments or even expose patients to toxic agents.²² The National Center for Complementary and Integrative Health states that it seeks to make clinical research on CAM therapies its "highest priority and the centerpiece of its research portfolio."²²

Limitations

Because this was a descriptive study, a hypothesis with defined predictor and outcome variable was not established *a priori*. With regard to the ASD diagnosis, this was self-reported by the parents; it is unknown as to which *DSM* criteria were used. Because the survey was anonymous, the investigators did not have access to this level of detail, nor could the diagnosis be confirmed via a query of medical records.

Respondents were asked to note their use of each CAM therapy, and a separate question asked about perceived efficacy of each treatment. Although the sample sizes for use and efficacy were often similar, it is not known whether those who answered the use questions were the same respondents to the efficacy questions.

The sample size was fairly small (194 caregivers responded, of whom 157 were CAM users), which may limit the generalizability of the results. Also, within each rating response, some of the sample sizes were small and therefore subject to potentially skewing the finding in either direction. When the number of respondents about CAM use or treatment efficacy was five or fewer within a CAM therapy category, that CAM entry was deleted because of low sample size since the resulting data could be highly skewed by the low response count. Therefore, those deleted items were not adequately evaluated or represented. Also, the survey instrument has not been validated in previous research.

Additionally, most of the respondents self-identified as white, so there is not a significant representation of the experiences of other racial and ethnic groups. The respondents also all had access to e-mail and belonged to one or more autism groups; it is unknown whether those without these characteristics had the same level of use or experience with CAM.

One of the study investigators offers CAM options to patients with autism; therefore, the prevalence of use of these therapies may be over-represented when compared with other study populations. It is also possible that some of the parents who use CAM on their children with autism may have an expectancy bias in perceiving a positive response to CAM therapies.

Conclusion

The findings from this community sample of parents are similar to those of other studies, suggesting that CAM use is common in the autism community. The findings also show that many of the therapies are perceived to be effective in improving the health or functioning of the children under study. On the basis of the results of this study, research hypotheses about possible associations may be generated for future analytic studies. Promising CAM therapies for the autism population should be further studied in well-controlled clinical research settings to provide more robust safety data, efficacy information, and validated treatment options to this community.

Author Disclosure Statement

No competing financial interests exist.

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