



Review:

Do Alternative Therapies Have a Role in Autism?

Sabyasachi Ghosh, Minakshi Koch, Suresh Kumar V, Ananth N Rao,

Department of Metabolic Diseases & Research, Apollo Hospitals, Bangalore

Address For Correspondence:

Dr. Sabyasachi Ghosh,

Department of Metabolic Diseases & Research,

Apollo Hospitals, 154/11, Opposite I.I.M.,

Bannerghatta Road, Bangalore- 560 076

E-mail: sabyammlt@gmail.com

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Abstract:

Interventions considered to be branches of Complementary & Alternative Medicine (CAM) for autism are on the rise. Many new treatments have emerged & traditional beliefs of Ayurveda, Yoga, Behavioral therapy, Speech therapy and Homoeopathy have gained popularity and advocacy among parents. It is imperative that data supporting new treatments should be scrutinized for scientific study design, clinical safety, and scientific validity, before embarking on them as modes of therapy. Practitioners take care in explaining the rationale behind the various approaches that they practice, it is important to indicate possible limitations too during the initial clinical examination and interactive session. Clinicians must remember that parents may have different beliefs regarding the effectiveness of treatment since their information is derived more from the 'hear-say' route when they compare benefits/effects of CAM therapies on other children and often underestimate differential tolerance for treatment risks. It is thus significant that practitioners do not assume a "don't ask, don't tell" posture. The scientific validation and support for many interventions is incomplete and very different from the recommendations of the American Academy of Pediatrics Policy Statement. In this article, we discuss the various modes of CAM and their utilities and limitations in relation to autism.

Key Words: Ayurveda, Homoeopathy, Hyperbaric therapy, Autism, Behavioral therapy, Occupational therapy, Yoga

Introduction:

Autism is a mental health and developmental disorder, characterized by things such as difficulty or an inability to create normal social relationship, compulsive and ritualistic behavior, and sometimes a failure to develop normal levels of intelligence. Autism Spectrum Disorder (ASD) are common disorder (affecting 1 in 150 children) and are typically first recognized in early childhood.(1) The disease is four time more prevalent in boys than girls and has been associated no specific social class or demographical population. Repetitive body motions like rocking and hand or finger flapping, unusual response to environment or people and potentially aggressive or self behavior are hallmark features of the disease. (2)

In this review we will discuss the common use of complementary and Alternative medicine (CAM) by families of children with ASD. The most commonly used CAM treatments

for ASD fall into categories of biologically based practice and manipulative and body based practices.(1) Many parents of autistic children are turning to Alternative therapies in an effort to stimulate developmental progression in language skills and social interactions.(2)

Ready access to information through the internet has contributed to the general increased use of CAM in other side many parents with autistic child are unaware of CAM therapies which can help them to manage autism. According to National Center for Complementary and Alternative Medicine (NC-CAM) the definition of CAM includes all such practices and ideas which are outside the domain of conventional medicine in several countries and defined by its users as preventing or treating illness or promoting health and well being.(3)

Why Use CAM for Symptoms of Autism in Children?

People often turn to CAM when they have a long lasting problem that conventional medicine hasn't cured. CAM is often perceived as 'natural' without the side effects of conventional medical treatments.(1) Most CAM was reported by families to be either helpful or without effect but not harmful. Families perceived CAM as a risk free approach that may improve their child outcome. There is no one treatment for ASD that is going to work for all children or one treatment that is going to everything for any given child over a long period of time. Certain therapies, diets, behavioral therapies, herbal remedies have shown to have amazing effects on autism patients who's Conventional Medicine had failed.(3)

The main reasons for choosing CAM were related to concerns with the safety and side effects of prescribed medications. Parents who use CAM for their autistic child believe that a combined approach of CAM and conventional therapy is more likely to be successful than either one alone, that nutritional support is an important part of the health maintenance, prefer not to take prescription medications.(4)

With changes in society such as self determination in health care, greater accessibility to information on the internet and a decline in the faith in science and technology people seek more control over their own medical decision making.(4,5)

CAM Therapies

All treatments should be based on principles of evidence-based medicines (EBM), integrating clinical expertise, patient (or family) values, and the best evidence for efficacy. A wide range of CAM therapies are used in children with ASD.

(1) Unfortunately, even some commonly used medical treatments have not proven by scientific studies, for the purpose of this paper, we reviewed the existing literature and summarized on the following therapies.

Behavioral Therapy: Many parents have discovered that their autistic children will challenge their parenting behavior. Extreme of behavior would include such thing as temper tantrums, self injuries behavior, aggression and agitation. In this therapy whenever parents are talking to an autistic child they need to be both simple and direct. Applied behavior analysis (ABA) is the applied research field of the science of behavior analysis, and it underpins a wide range of techniques used to treat autism and many other behaviors and diagnoses.(6) ABA is one form of behavior therapy which involves breaking down tasks into individual's components, and then whenever a child successfully completes each step of the task they should be rewarded. In 2008 an evidence-based review of comprehensive treatment approaches found that ABA is well-established for improving intellectual performance of young children with ASD.(7)

Physical Activity: Physical activity is vital for a healthy lifestyle for children with and without disabilities.(8)A right exercise can also introduce the autistic child to social environments and a chance to interact with their peers. Physical exercise is proven way to help autistic children (and even non autistic one) to burn off excess energy and be able to focus better on their school work or other learning opportunity. A physical activity-based program is easy to implement and has been shown to be effective in controlling many types of inappropriate behaviors associated with autism.(9) An example of a program integrating physical activities for children with autism is Daily Life Therapy. This program, designed for children with autism, involves highly structured, group-oriented instruction. In the Daily Life Therapy Program, vigorous physical activities are used to reduce stereotypical behaviors. Vigorous physical activities, in conjunction with appropriate behavior management practices (10), can be helpful in reducing inappropriate behaviors in children with autism.

Yoga Therapy: Yoga is a mind-body approach that enjoys popular practice for increasing the sense of well being and control with the potential to decrease anxiety. A trial of yoga for symptoms of ADHD was underpowered to demonstrate effect, but suggested some benefit in children on medication. (11) Relaxation therapy decreased symptoms of anxiety in inpatients with anxiety on a child psychiatry service, and in children with mental retardation.(12,13) No studies have yet been published related to symptoms of autism and response to yoga techniques.

Nutrition and Diet Therapies: Vitamin supplements to improve symptoms of mental health disorders have been in use for over 50 years with B6 and Magnesium a popular treatment for autism over the past 20 years. This treatment has been the subject of reviews by several authors.(14-16) Supplements that contain amino acids also reduced symptoms, because they are converted to neurotransmitters that alleviate depression and other mental disorder.

Polyunsaturated fatty acids, in particular Omega 3 fatty acids, are crucial for brain development and cannot be manufactured in the body. Dietary consumption occurs through ingestion of fish or fish oils. Oral supplementation with essential fatty acids has become popular for children with developmental differences including autism and ADHD.(17)

Gluten-Free/ Casein Free(GF-CF) diet: It has been suggested that the elimination of the proteins gluten (found in barley, wheat, and rye) and casein (found in milk products) which either cause or aggravate symptoms of ASD after absorption across a damaged ("leaky") intestinal lining by acting as false

opiate neuropeptides will improve behavior of children with ASD. The significance of reports of increased levels of metabolites of casein and gluten in the urine of people with autism remains unclear.(18)In the early 1990s, it was hypothesized that autism can be caused or aggravated by opioid peptides like casomorphine that are metabolic products of gluten and casein.(19) Dietary restrictions, including removal of milk and other casein dairy products, wheat and other gluten sources, sugar, chocolate, preservatives, and food coloring are beneficial and prerequisite to benefit from other interventions.(20)

Anti fungal therapy: Autistic symptoms are made worse by the over growth of *Candida albicans*, a yeast -like fungus present everywhere. Overgrowth is made possible by dysfunctional immune system. Gastrointestinal improvement rests on controlling *Candida* and other parasites, and using probiotic bacteria and nutrients to correct dysbiosis and decrease gut permeability. (20) The antifungal activity of a crude extract from *Yucca gloriosa* L. (Agavaceae) flowers, named alexin, Neem (*azadiracta indica*),Garlic was investigated in vitro against a panel of human pathogenic fungi and yeasts, as well as dermatophytes and filamentous species. It was also active against several clinical *Candida* isolates known to be resistant to the usual antifungal agents.(21)

Massage therapy: Massage therapy reduces anxiety and stress hormones. In one scientific study (2001), parents of children with autism aged 3 to 6 massaged their kids for 15 minutes before bedtime for a month, after being trained by a massage therapist. Result suggested that the children's exhibited less stereotypic behavior and showed more on task and social relatedness behavior during play observations at school, and the experienced fewer sleep problems at home .Touch in the form of massage was shown to decrease touch aversion, improve sleep pattern, increase attentiveness in a classroom situation and reduce stereotypic behaviors such as rocking. (22)

Occupational therapy: According to the American Occupational Therapy Association, occupational therapy is 'skill' treatment that helps individual's archives independences in all facts of their lives. Occupational therapy assist autistic children in developing the skills for the job of living necessary for independent and satisfying lives. In the past, for example an occupational therapist might have worked with autistic children to develop skills for handwriting, shirt buttoning, shoe tying and so forth. But today's occupational therapies specializing in autism may also be experts in sensory integrating or may work with their clients on play skills, social skills and more. In a scientific research in 1999 Case - Smith and Miller investigated the practice of Occupational therapy's with children with ASD. They found where Occupational therapy's provided direct services using holist approaches which include applying sensory integration and environmental modification approaches more improvement was seen in the child sensory processing. They also reported that where child-centered play was used frequently and completely that there was improvement in the child's sensory integration and play skills.(23,24)

Speech therapy: Almost all children with autism have problems with speech and language. The goal of speech therapy is to improve all aspects of communication. This includes: comprehension, expression, sound production, and social use of language.(25) Any speech therapy program should include practice in many different places with many different people. In order for speech therapy to be most successful, caregivers should practice speech exercises during normal daily routines in the home, school, and community.(25-27) Many scientific studies demonstrate that speech therapy is able to improve the communication skills of children with autism. The most

successful approaches to speech therapy include components of early identification, family involvement, and individualized treatment.(28)

Auditory Integration training (AIT): Auditory integration training was developed as a technique for improving abnormal sound sensitivity in individuals with behavioral disorders including autism. The goal of Auditory integration training (AIT) is to ameliorate auditory processing deficits and improve concentration.(29) Auditory Integration Training was designed to normalize hearing and the ways in which the brain processes auditory information. Different methods of AIT include listening through headphones to electronically modified music, voice or sounds in an effort to improve function, eg. an individual's hearing is asymmetrical (significantly different between the two ears). When the right and left ears perceive sounds in an extremely different way, problems with sound discrimination can occur. Again, AIT works to normalize the hearing of both ears. As per American Academy of Pediatrics, that AIT should be considered an experimental treatment until evidence based trials support its use.(30,31)

Music therapy: Music therapy uses the elements of music to let people express their feelings and communication.(32) Music therapy is careful planned, carried out, and evaluated to suit the specific needs of each patient. Music therapy can include any of the following musical activities-

- I) listening to music
- II) Playing any musical instrument
- III) Moving to music
- IV) Singing.

Music therapy involving singing helps develop the child speech and language skill. Research shows that any music intervention effectively reduces symptoms for children and adolescents with autism.(33)

Chelation therapy: Based on the speculation that heavy metal poisoning may trigger the symptoms of autism, particularly in small subsets of individuals who cannot excrete toxins effectively, some parents have turned to alternative medicine practitioners who provide detoxification treatments via chelation therapy. Chelation is the process of administering either DMPS (2, 3-dimercaptopropane-1-sulfonate) or DMSA (2,3-dimercaptosuccinic acid) to bind heavy metals such as mercury and facilitate elimination from the body.(1) No scientific data supports the claim that the mercury in the vaccine preservative thiomersal causes autism or its symptoms and there is no scientific support for chelation therapy as a treatment for autism.(34-36)

Hyperbaric oxygen therapy: Hyperbaric Oxygen Therapy (HBOT) is used also in conventional practice to treat carbon monoxide poisoning, to enhance wound healing and for pressure equalization after diving injuries.(37,38) Hyperbaric oxygen therapy (HBOT) can compensate for decreased blood flow by increasing the oxygen content in the body. It has been postulated that HBOT might relieve some of the core symptoms of autism. HBOT provides pressurized oxygen at pressures greater than or equal to 2 atm. HBOT is generally considered to have few side effects other than a potential for exacerbation of ear pain or seizures, but little data is available. A small 2009 double-blind study of autistic children found that 40 hourly treatments of 24% oxygen at 1.3 atmospheres provided significant improvement in the children's behavior immediately after treatment sessions. The study has not been independently confirmed; further studies are planned or in progress.(1,39)

Ayurveda and Herbal medicines: Herbal medicines are used to restore the proper order and function in the body of an autistic patient. These natural remedies aim to maintain and re-

store the harmony in one's body, as well as the balance in one's brain and nervous system. The use of herbal medicines in aiding treatment of autism is essential. Its actions of restoration of endocrine activity, repair of mucosa and dysbiosis, antibacterial and antifungal properties, elimination of toxins and digestive functions, can be practiced in one prescription without harmful side effects. Bitter constituents of herbs act on the receptors in the mouth and gut to improve digestion by acting on receptors initially in the mouth and through to the gut to secrete pancreatic juices and bile. Bitter, Cholagogues herbs e.g. Gentian, Globe artichoke, Dandelion root stimulate the release of bile from the gallbladder and choleric actions of herbs stimulate the production of bile in the liver. Herbs like Meadowsweet, Calendula, Chamomile and Marshmallow root, slippery elm, can use for anti inflammatory and protective effects on the gut wall. Even mainstream drug manufacturers now look at herbal remedies as the best alternative to some of medications available today.(40)

Homeopathy medicines: Homeopathic medicines are known to have deep effect on human economy and have been found effective in various psychological and developmental disorders. The focus of homeopathy is not to treat the isolated symptoms of Autism but to treat the child as a whole. Homeopathy practitioners use substances from nature that have the ability to cause a group of symptoms in a healthy person, but cure the same symptoms in a sick person by stimulating the body's own ability to heal itself. This approach follows the Law of Similars, where like cures like, whereas traditional or allopathic medicine uses the Law of Opposites. (41) Homeopathic practitioners believe that disease manifests itself first on the outside and then moves to internal organs. Thus when a baby has diaper rash or eczema and it disappears, it is thought to go deeper into the digestive and respiratory tracts. It is very common for constipation, diarrhea and asthma to precede the onset of hyperactivity and other autistic-like symptoms in children on the autistic spectrum. A homeopathic practitioner may conceptualize all of these problems as having the same cause, and treat the patient accordingly. Homeopathic treatment shows positively affected behavior, with a decrease in aberrant behavior and better social and familiar integration.(41-43) The practices are not evidence based and hence require further studies.

Vision therapy (VT): Visual problems are very common in individuals with autism. Visual symptoms of autism can include lack of eye contact, staring at spinning objects or light, fleeting peripheral glances, side viewing and difficulty attending visually. Because some sensory dysfunction is present in all individuals with autism, and because vision problems are more common in individuals with sensory impairments, it would benefit parents of children with autism greatly to become more knowledgeable about vision impairments and possible remedies, because visual problems accompany many learning difficulties/disabilities, VT is increasingly used in these cases. Eye exercises may be useful for treating certain vision problems such as strabismus (difficulty coordinating the movements of the two eyes to work together) convergence insufficiency (difficulty turning eyes inward to focus on a nearby object). Depending on the results of testing, lenses to compensate for nearsightedness, farsightedness, and astigmatism (with or without prism) may be prescribed. Vision Therapy activities can be used to stimulate general visual arousal, eye movements, and the central visual system.(44,45) Very few scientific studies substantiate for the efficacy of eye exercises (Vision Therapy) or the use of special tinted lenses in the remediation symptoms for Autism Spectrum Disorders but the goals of treatment may be to help the autistic patient.

Discussion;

According to the Autism Society of America, "as there is no one symptom or behavior that identifies individuals with ASD, there is no single treatment that will be effective for all people on the spectrum. Individuals can learn to function within the confines of ASD and use the positive aspects of their condition to their benefit, but treatment must begin as early as possible and be tailored to the child's unique strengths, weaknesses and needs." On completion of our review study we found that, part of the reason for the increase in acceptance of alternative medicine is the recognition of the power of mind over body, many people believed that CAM therapies such as Yoga, herbal medicine, physical activity – can improve overall well being, healthy people often use alternate medicine to try to prevent illness or ensure a healthier lifestyle. There is increasing evidence that a patient's attitude can sometimes shape the physical response, and this in part helps to illustrate why alternative medicine is better received than it used to be. Specific CAM therapies for treating ASD were vitamin A, essential fatty acid, oligoantigenic diet and herbal medication (Meadowsweet, Calendula, Chamomile, Marshmallow root, *Ginkgo biloba*, *Melissa officinalis*). Additionally, specific physically-based therapies used to treat ASD include neuro therapy, yoga, massage therapy, physical activity therapy, behavioral therapy, occupational therapy, speech therapy, and utilization of school based environmental green outdoor settings.(46) Autistic spectrum disorders are no longer the domain of psychiatrists and special educators, but should incorporate a holistic approach with nutritional dysfunction being addressed. Autism remains a challenging condition for individuals and their families, but the outlook is much better than it was a generation ago. Today, with appropriate therapy, clinician can help reduce many of the autism.(47) With increasing access to health information and societal pressure for families to actively participate in their health management, continued growth of interest in CAM can be anticipated. Clinicians must remember that parents may have different beliefs regarding the effectiveness of treatment and different tolerance for treatment risks. Practitioners must keep avenues of communication open, remain open-minded, and not assume a "don't ask, don't tell" posture in the context of providing a medical home to the increasing number of children diagnosed with autism. In addition to asking patients about CAM use, physicians can address CAM use through education. Ideally, physicians with high-quality CAM knowledge can assist families in understanding both the potential risks and benefits of CAM treatments.(48,49) Most important are the efforts of parents to try and commit themselves to diet and lifestyle changes because the commitment for a few months, even years is the immense reward of a functional disorder being corrected and the possibility for a child to grow up and become an independent happy and healthy adult.

Limitation

Although CAM does have some proven benefits, like anything, it has its limitations. Experts haven't researched many CAM techniques enough to tell how effective they are as treatments. Although not direct effects of CAM practices, undesired side-effects may relate to the delay or discontinuation of otherwise effective treatments. Some of these CAM (complementary and alternative medicine) treatments may alleviate problems associated with autism, such as behavioral problems, sleep disorders and gastrointestinal problems, but the treatments are unlikely to resolve core symptoms of the disorder.(1,50) Some people may not feel it's worth investing a lot of time or money in treatments that haven't been proven effective. Insurance policies rarely cover CAM treatments, so people have to pay for them out of their own pockets with no reimbursement.

Conclusions:

It is important to discuss alternative therapies for autism openly and compassionately. Some CAM therapies are supported by scientific evidence, but for some there are still questions, this does not mean these therapies do not work, it just mean that experts have not studied them enough to know for sure that they do-and if so, how?

For children with autism, the combination of standard medical therapies, CAM therapies and the complex healthcare system requires a significant level of engagement by primary care physician. As physicians increase their knowledge base around CAM, ask their patients about CAM, and as we further explore the current barriers around managing CAM in general medical practices, primary care for children with autism will become more comprehensive, coordinated and family centered. Physicians need access to balanced education that will inform their own recommendations for specific CAM therapies and adequate information to care for families who elect their use.(48)

Since the awareness is less it is obvious that positive testimonials are fewer. However this does not stop people from trying alternative medicine. This can be justified by two reasons, firstly parents feel an urgency and responsibility to provide the best they can for their children. Secondly since the effectiveness of conventional medicines for autism is not wholly conclusive, parents are willing to try alternate medicine. At modern times, certain alternative medicine theories have actually acquired mainstream status and are even combined with customary medication. With increased interest in CAM on the part of the consumer and the provider, asking all patients about CAM, an infrastructure to monitor CAM use and the development of CAM education are important goals.

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