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Evidence-based Medicine and CAM: A Review



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Abstract

A review of supporting evidence for various levels of research regarding complementary and alternative medicine that have randomized clinical trials (RCTs) available and information from the Cochrane Reviews are presented. The complementary and alternative medicine (CAM) areas reviewed include acupuncture, chiropractic care, various diets, and the use of supplements; as well as, aromatherapy and several other non-allopathic therapeutic interventions.

Overall, many CAM interventions do not have RCTs that support their use, and even those RCTs that are available often have study design and other research related problems as noted by the Cochrane Reviews. Some critics also note however that there are no randomized, controlled trials in support of the belief that evidence-based research is beneficial. They also note that these trials often exhibit severe limitations of scope and that our patients bring with them a great deal of heterogeneity. If we had such research available to us, however, this would at least begin the process of discovering which CAM therapies can be used for patients most likely to benefit from these alternative approaches to health care.

The use of evidence-based medicine to support the approaches we use for patient care is considered the *Gold Standard* by which all diagnostic and therapeutic interventions are judged. However, even medicine has misgivings about only using evidenced-based medicine when helping patients achieve their health outcomes. David Hunter, MD, PhD, in his article, *Do We*

Need Evidence for Everything?, stated, “There is no randomized, controlled trial supporting the contention that evidence-based research is beneficial... Systemic reviews have severe limitations of scope and reach... real patients bring with them an abundance of messy heterogeneityⁱ.”

Medicine will sometimes selectively support evidence-based medicine when it fits its belief systems and discount the research when it does notⁱⁱ. Medicine also frequently uses interventions that do not have clear, unambiguous evidence-based support to aid their patientsⁱⁱⁱ.

A review of the supporting evidence for various levels of research regarding complementary and alternative medicine that uses randomized clinical trials (RCTs) and the Cochrane Reviews is presented. The Cochrane Collaboration offers “...systematic reviews of primary research in human health care and health policy, and are internationally recognized as the highest standard in evidence-based health care. They investigate the effects of interventions for prevention, treatment and rehabilitation. They also assess the accuracy of a diagnostic test for a given condition in a specific patient group and setting^{iv}.” As you might expect, the evidenced based medicine supporting the use of both conventional and complementary and alternative medicine varies.

Acupuncture

Acupuncture has been used to relieve any number of human ailments and has been practiced in various Asian countries for millennia. Few unwanted side effects have been reported. It does require implementation by qualified practitioners. A systematic review of four randomized controlled trials was completed. These studies had low methodological quality and had many dissimilar variables and outcome measures. Because of the small number of studies available for review and their low methodological quality, no conclusions could be drawn regarding efficacy and safety^v. There is little evidenced based research to support the use of acupuncture for attention deficit hyperactivity disorder^{vi}, glaucoma^{vii} and stroke rehabilitation^{viii}.

Acupuncture does seem somewhat effective for low back pain,^{ix} smoking cessation^x, migraine prevention^{xi}, chronic neck pain^{xii}, and tension headaches^{xiii}. A randomized controlled trial of patching vs. acupuncture for anisometropic amblyopia in children from seven to 12 years of age found that acupuncture was just as effective for anisometropic amblyopia when compared to patching and was statistically superior^{xiv}.

Chiropractic

Chiropractic interventions showed slightly improved pain and disability outcomes in the short term and pain in the medium term for acute and sub-acute low-back pain^{xv}. There is also some low quality evidence that neck manipulation provides more pain relief for those with acute/chronic neck pain^{xvi}.

Diet

Research supporting gluten and/or casein free diets as an effective intervention for persons with autism are lacking. There is also little research concerning the possible unwanted side effects of such diets^{xvii}.

Supplements

Supplementation with antioxidants and zinc may be of benefit for those with AMD^{xviii}. Creatine use has shown an increase in muscle strength in muscular dystrophies with activities of daily living improving as well^{xix}. Ginseng appears to have beneficial effects on cognition, behavior and ones quality of life^{xx}. The use of melatonin can be effective for dementia-related psychopathologic behavior problems^{xxi} while vitamin D₃ appears to decrease mortality in elderly women who are in institutions and require dependent care^{xxii}. DHEA supplementation has not been shown to retard aging and/or age-associated cognitive impairment, however^{xxiii}.

The use of vitamin B6 for improving autistic behaviors is not supported^{xxiv} nor is the use of folate acid to improve the psychological or learning capabilities, behavior or social performance of those with Fragile X syndrome^{xxv, xxvi}. Vitamin B12 does appear to improve cognitive function^{xxvii}.

Other CAM

An aroma therapy clinical trial showed a significant effect on measures of agitation and neuropsychiatric symptoms^{xxviii}. Although the trials were small and of poor quality, a Chinese herbal mixture, Zemaphyte, improved erythema, surface damage to the skin, sleep disturbance and itching^{xxix}. Light therapy appears to have a modest positive effect for non-seasonal depression^{xxx}.

Research concerning massage therapy used to promote growth and development in pre-term babies showed that the children gained more weight each day, spent less time in the hospital, had slightly better scores on developmental tests and fewer postnatal complications^{xxxi}. While the use of probiotics added to infant meals appeared to prevent infant eczema, with at least one study suggesting the benefit could persist up to four years of age^{xxxii}.

It has been found that music therapy reduced pain by up to 50% in some patients and decreased the need for morphine-like analgesics^{xxxiii}. It also appears to improve walking skills of those with acquired brain injury, was superior to placebo therapy for improving verbal and gestural communicative skills of those with autism and may be of use for the treatment of depression, as well^{xxxiv, xxxv, xxxvi}. According to at least one Cochrane review, however, listening therapies such as auditory integration continues to be practiced despite evidence that shows it to be an experimental treatment at best^{xxxvii}.

The use of Omega-3 fish oils have been recommended for the treatment of several health problems or for their prevention. Some research suggests that risk of Alzheimer's disease is significantly reduced among those with higher levels of fish and Omega 3 PUFA consumption. Unfortunately, these studies were not randomized clinical trials^{xxxviii}. Individuals with cystic fibrosis^{xxxix} demonstrated positive outcomes. The use of Omega-3s did not appear to be affective for treating individuals with Crohn's disease^{xl}, the maintenance of remission in ulcerative colitis^{xli}, or with cardiovascular disease^{xlii}.

St. John's wort has been used for centuries for the treatment of depression. Cochrane states that extracts tested in clinical trials were superior to placebo, similarly effective as standard antidepressants, and had fewer side effects than these antidepressants. Unfortunately, it was also noted that St. John's Wort could compromise other medications taken by patients, so caution should always be used^{xliii}. There appears to be little to no evidence that cannabinoids use has any affect on the symptoms/behaviors associated with dementia^{xliv}, Tourette syndrome^{xlv}, or schizophrenia^{xlvi}.

Homeopathy does not appear to be effective for the treatment of the symptoms associated with attention deficit hyperactivity disorder^{xlvii}. There appears to be little evidence that light therapy is effective for managing cognitive, sleep, functional, behavioral, or psychiatric disturbances associated with dementia^{xlviii}. Trials that support the use of meditation therapy for those with attention issues or anxiety-related conditions appear to be inadequate at this time as well^{xlix, l}.

Conclusion

CAM therapies are just now being considered for validation using evidenced based medicine criteria. Bias on both sides of the questions involving CAM therapy by clinicians, researchers, editors, publishers and authors must be considered when reviewing the value of any published research^{li}. Only by maintaining an open but skeptical approach to all aspects of patient diagnosis and treatment do we ensure the very best for the patients under our care. Pragmatically,

however, it is also important to recognize the importance of the clinician's insights and experience to supplement this research based approach.

If we wait for the publication of clinical trials before we institute therapeutic interventions for our patients, our patients may not be able to benefit and even worse, suffer needless pain and loss of function. We must use all the tools within our treatment toolbox that are appropriate. We must use our clinical intuition and insights, as well as science, when making the lives of our patients better. First and foremost, as Hippocratesⁱⁱⁱ noted: "*Primum non nocerum*" or we should do no harm.

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ⁱⁱ Maino D, Mistakes were made (Yes by you!). *Optom Vis Dev* 2011;42(2):66-69. Available from http://www.covd.org/Portals/0/OVD/42-2/OVD%2042-2%20Journal_MainoEditorial_we.pdf. Last accessed 8/11

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^{iv} The Cochrane Collaboration available at <http://www.cochrane.org/cochrane-reviews> accessed 8/11

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- 1.) The Gold Standard of Evidenced Based Practice is the
 - a. Consistent Retrospective Cohort, Exploratory Cohort, Ecological Study, Outcomes Research, case-control study
 - b. Randomised Controlled Clinical Trial
 - c. Case-series study
 - d. Expert opinion

- 2.) There are no randomized, controlled trials supporting the contention that evidence-based research is beneficial... Systemic reviews have severe limitations of scope and reach... real patients bring with them an abundance of messy heterogeneity
 - a. True
 - b. False

- 3.) Acupuncture has been shown to be effective for
 - a. attention deficit hyperactivity disorder
 - b. glaucoma
 - c. stroke rehabilitation
 - d. amblyopia

- 4.) Chiropractic has been shown to be at least slightly effective for
 - a. Low back pain
 - b. Acute neck pain
 - c. Chronic neck pain
 - d. All of the above

- 5.) Various gluten and/or casein free diets are an effective intervention for persons with autism.
 - a. True
 - b. False

- 6.) Aroma therapy has been shown to be affective for reducing
 - a. Agitation
 - b. Stroke symptoms
 - c. Cardiac stress
 - d. Hypertension

- 7.) Research on massage therapy for pre-term babies showed that
 - a. children gained more weight each day
 - b. spent less time in the hospital
 - c. had slightly better scores on developmental tests and fewer postnatal complications
 - d. All of the above

- 8.) The use of probiotics added to infant meals
 - a. decreased colic
 - b. prevented infant eczema
 - c. improved sleep habits
 - d. decreased crying

- 9.) Music therapy
 - a. Reduced pain
 - b. Improved walking skills of those with acquired brain injury
 - c. Improved verbal and gestural communicative skills of those with autism
 - d. All of the above

- 10.) Light therapy is effective for
 - a. managing cognitive disturbances associated with dementia
 - b. managing sleep disturbances associated with dementia
 - c. managing behavioral, or psychiatric disturbances associated with dementia
 - d. none of the above

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