



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 8.4
IJAR 2023; 9(6): 447-450
www.allresearchjournal.com
Received: 07-04-2023
Accepted: 18-05-2023

Yogesh
Department of Physical
Education (Yoga Science),
Maharshi Dayanand
University, Rohtak, Haryana,
India

Effects of yoga and pranayama on attention-deficit/hyperactivity disorder (ADHD) patients

Yogesh

DOI: <https://doi.org/10.22271/allresearch.2023.v9.i6f.11120>

Abstract

Yoga and Pranayam connects the mind and body through a series of poses, breathing exercises, and meditation to help achieve balanced health. Regular practice can increase flexibility and strength, improve posture, and improve mood and focus. Today, more than 16 million Americans practice yoga and pranayam regularly. Over the past decade, multiple scientific studies have confirmed the therapeutic benefits of yoga and pranayam practice. As a result, yoga and pranayam has emerged as a potentially integrative modality for the treatment of several common ailments. The National Center for Complementary and Alternative Medicine (NCCAM) is currently supporting research into the benefits of yoga and pranayam on diabetes risk factors, HIV, immune function, arthritis, menopausal symptoms, multiple sclerosis, PTSD, and smoking cessation. This NCCAM research program aims to build evidence data on the therapeutic effects of yoga. yoga and pranayam has been shown to reduce symptoms associated with attention-deficit/hyperactivity disorder (ADHD) inattention and hyperactive impulsiveness. The purpose of this article is to review current research investigating mind-body therapies used to treat children diagnosed with ADHD. Literature review addressing the effectiveness of exercise-based and mindfulness/meditation-based therapies for ADHD.

Keywords: Yoga, Pranayam, ADHD, mental disease, therapy

Introduction

Attention-deficit/hyperactivity disorder (ADHD) is a widespread chronic disorder that affects children's health and success in life. The historical understanding of ADHD has changed over the years. In 1987, the Diagnostic and Statistical Manual of Mental Disorders (DSM)-III-R defined ADHD as a disorder with a specific diagnostic checklist and three subtypes: primary inattention, primary hyperactivity and hybrid. With a global prevalence of 5.3%, ADHD is the most common psychiatric disorder among children. Diagnoses of ADHD have been on the rise in developed countries in recent years. Prescribing of medications for this condition has also increased significantly. ADHD is the most common neurobiological disorder among children and adolescents in the United States, according to the American Academy of Pediatrics. Medications are very effective in treating ADHD. Literature from the PubMed database examining the efficacy of yoga and pranayam for ADHD supports the research hypothesis that a structured yoga and pranayam training regimen can improve symptoms associated with the inattentive and hyperactive-impulsive forms of ADHD and that, therefore, yoga and pranayam recommended as a management technique for ADHD patients.

Attention-deficit/hyperactivity disorder (ADHD) is a neurological disorder characterized by difficulty concentrating, hyperactivity, or controlling behaviour that is inappropriate for age. ADHD is diagnosed and assessed using the DSM-V criteria and questionnaires such as the National Institute for Children's Health Quality (NICHQ) Vanderbilt Assessment Scale completed by parents and teachers. Symptoms of ADHD are usually managed with medication and/or Behavioural therapy. Although pharmacological therapies such as stimulant medications can be effective in treating ADHD symptoms, there are potential side effects that may influence a parent's decision to choose an alternative treatment. Furthermore, it is unclear whether Behavioural therapies targeting behaviours in specific settings can be used effectively in different situations.

Corresponding Author:
Yogesh
Department of Physical
Education (Yoga Science),
Maharshi Dayanand
University, Rohtak, Haryana,
India

ADHD is typically diagnosed in approximately 3% to 7% of school-aged children. The 2016 US National Survey of Children's Health (NSCH) estimated that a total of 6.1 million children aged 2 to 17 were diagnosed with ADHD [4]. It is important to note that this figure does not reflect the number of children who go undiagnosed each year. In addition, not all children diagnosed with ADHD receive treatment for a variety of reasons, including socioeconomic status or refusal of medication. In light of the recent COVID-19 pandemic, changes to children's routines and access to formal and informal support can have significant detrimental effects on children with neurodevelopmental disorders such as ADHD. Increased screen time, decreased physical activity, and changes in sleep and eating patterns have been found to lead to worsening symptoms and health outcomes, as well as increased stress levels. With video conferencing technology like Zoom, online yoga and pranayam classes could be very beneficial and doable for people with ADHD to manage their symptoms during the pandemic.

One area of mind-body medicine is the practice of pranayam. Pranayam is an assistive breathing exercise derived from the Sanskrit word "Pran" which means "life" and refers to the unity of body, mind and spirit. yoga and pranayam teaches people to master certain postures and breathing techniques that promote self-control, attention, awareness, and adaptive skills. yoga and pranayam has been used as a form of exercise and meditation. It is currently being studied as a treatment for stress, chronic pain, asthma, irritable bowel syndrome, and ADHD. Yoga and pranayam has multiple components to unify body, mind and spirit. It consists of asana (body posture), pranayama (Breathing technique) and concentration/dhyana (Meditative practice). The goal of these components is to connect breath, thought, emotion and body to create awareness of the present moment. Rosen *et al.* explored conditions affected by yoga. Including emotional, mental and Behavioural health. The studies reviewed showed that children who practiced yoga and pranayam showed significant decreases in various indicators such as: Negative stress response behaviours, overall mood disturbance, negative affect, anger, resilience, and fatigue/inertia. Few studies have shown that yoga and pranayam affect heart rate variability and autonomic function, but more rigorous studies are needed to report any firm conclusions.

The effects of yoga and pranayam were measured by child self-ratings and parental ratings of ADHD symptoms, self-esteem, and parent-child relationship quality before and after assessments. The findings showed that parents reported significant improvements in ADHD symptoms, with an average reduction of 35%. The researchers also compared the scores of six children who did not receive the drug with those who received the drug and found no significant difference in symptoms, suggesting that the changes may not have been caused by the drug treatment. Additionally, 11 of 20 children who received medication were able to reduce their medication dose throughout the yoga and pranayam session. In addition to improved symptoms, parents reported improved self-esteem and relationships, less stress, and a better ability to deal with their child's behaviour. The children self-reported better sleep patterns, less anxiety, better ability to pay attention at school, and less conflict. However, the study's reliance on uniform parental ratings and lack of a control group makes it difficult to

extrapolate that Sahaja yoga and pranayam may be an effective adjunctive therapy for ADHD. Sahaja yoga has been reported to increase grey matter volume associated with sustained attention, self-control, compassion, and interoception in older adults. Additionally, yoga and pranayam as a form of stress reduction for parents of children with ADHD is a valid topic for future research to explore.

Yoga is a mind-body therapy that can benefit health by regulating focus, reducing psychological stress, and self-regulation. By using body posture (ASANA), breathing exercises (Pranayama), and meditation techniques, individuals can improve their musculoskeletal, cardiovascular, and nervous system function, which can impact their emotional well-being. yoga and pranayam has been shown to improve a variety of physical functions and improve cognitive domains such as executive function, focus, intelligence, memory and concentration. Yoga and pranayam can help reduce symptoms of various conditions such as irritable bowel syndrome, chronic pain, neurodegenerative diseases, depression and post-traumatic stress disorder (PTSD). Notably, mental illnesses such as depression are common comorbidities with ADHD, suggesting yoga and pranayam has potential benefits for an individual's overall health. yoga and pranayam help people with ADHD by reducing hyperactivity and distraction, thereby improving cognitive function and academic performance. Pranayama, or yogic breathing techniques, are especially effective in reducing hyperactivity and distraction in people with ADHD, allowing them to calm down and follow directions. There is also evidence that vagal control during meditation is associated with differential activation of brain regions that mediate threat assessment, interoception, emotion regulation, and promote greater flexibility in coping with challenges. Pranayama is also very easy to learn and perform, making it ideal for people with ADHD to start yoga and pranayam therapy. Once people with ADHD can master the breathwork, more complex yoga and pranayam moves are taught. Parents can also do yoga and pranayam with their children as a form of family therapy, in the form of Sahaja yoga meditation, which allows parents to relieve stress, help manage their children's behaviour, and improve parent-child relationships.

Another study by Beart and Lessing explored the effects of yoga and pranayam on the attention and behaviour of 10 people with attention deficit hyperactivity disorder (ADHD), as assessed by parents and teachers. Using yoga and pranayam to reduce typical ADHD behaviours, such as aggression, anxiety, and low self-esteem, was examined in this study. Semi-structured interviews with parents, teachers, and ADHD patients were conducted to assess each patient's level of typical ADHD behaviours before and after yoga and pranayam treatment. All patients were 9- or 10-year-old children diagnosed with ADHD in preschool. At the time of the study, eight out of 10 patients were taking medication to manage their ADHD symptoms. Overall, parents and teachers felt that yoga and pranayam had a positive effect on the behaviour of most ADHD patients, suggesting a potential benefit of using yoga and pranayam to reduce ADHD symptoms (Such as inattention, inattention). Aggression and anxiety, and improved self-esteem.

The next study by Harrison *et al.* investigated the efficacy of Sahaja yoga meditation for the treatment of ADHD in

children. Forty-eight children participated in the study, most of whom were treated with drugs such as Ritalin and dextroamphetamine. Parents and children attend regular meditation sessions twice a week for six weeks. Treatment effects were assessed by parental ratings of children's ADHD symptoms, self-esteem, and parent-child relationship quality before and after yoga and pranayam treatment. This information was obtained from three sources: children's self-report questionnaires and the Conners Parent and Teacher Questionnaire. Assessments were made at three checkpoints: at the beginning of the first week of the meditation program, during the third week of the program, and at the end of the sixth week of the program. Conner's test scores showed that ADHD symptom severity decreased after the yoga and pranayam treatment, from 22.33 to 14.50 in the no-medication group and from 22.6 to 14.65 in the medicated group. Self-report questionnaires showed that study participants felt improvements in their behaviour, self-esteem, and relationship quality. They described benefits at home, such as improved sleep patterns and reduced anxiety, and improvements at school, including improved concentration and reduced conflict.

In a recent study, yoga and pranayam was evaluated as a first-line Behavioural therapy for ADHD symptoms in preschool children aged 3 to 5 years. This mixed-methods randomized controlled trial assessed participants using parent and teacher ratings on the ADHD RS-IV preschool version and the Strengths and Difficulties Questionnaire (SDQ). In addition, attention was objectively measured by the Kinder Attention Performance Test (KiTAP), while heart rate variability (HRV) was used to measure each participant's self-regulation ability. Twenty-three preschoolers participated in a six-week yoga and pranayam intervention at home and at school, with 12 participants (Group 1) completing the intervention during the first six weeks and 11 participants (Group 2) completing The intervention was completed by week 6. Week 12. Children were assessed using the above measures at baseline, when there were no significant differences between the groups, at the 6-week point, at the 12-week point, and at 3 months after completion of the 12-week intervention period. The study concluded that ADHD symptoms improved slightly. In particular, they noted a significant reduction in inattention and syndrome after practicing yoga.

Conclusion

Most people practice yoga and pranayam to improve their physical health and fitness, relieve stress and improve their quality of life. However, yoga and pranayam is increasingly recognized as an important complementary therapeutic modality in disease states. Doctors are increasingly combining posture, breathing exercises and meditation to treat patients' health ailments. In addition to the conditions mentioned in this brief review, there are at least 35 other common medical conditions that may have therapeutic value. yoga and pranayam is readily available, easy to practice, costs nothing, and has a low churn rate. Although generally safe, some yoga and pranayam poses are recommended to be modified or avoided by people with uncontrolled blood pressure, glaucoma, or sciatica, as well as pregnant women. Years of human experience have shown that regular yoga and pranayam practice is an excellent way to maintain overall health and prevent disease. Emerging evidence-based research is now proving that, when used in

conjunction with traditional treatments, it can not only help relieve symptoms, but is effective in controlling and even reversing many disease processes.

In conclusion, yoga and pranayam is recommended as a complementary therapy to medication so that doses can be reduced or eliminated. Our case study demonstrates the effectiveness of using yoga and pranayam as an independent treatment for ADHD, as improvements in ADHD and performance scores were observed in individuals. Further research should be done on the effectiveness of each asana for individuals with ADHD to create an ideal yoga and pranayam routine to manage their symptoms. Studies with more participants should also be done to compare the effectiveness of yoga and pranayam in people with ADHD who take medication and who don't. What's more, research on ADHD should continue because we still don't have a clear understanding of the nature of the disorder. Additionally, as mental health improves due to the pandemic, yoga and pranayam could be further explored for its benefits in reducing stress and improving focus and concentration in remote learning and work settings.

References

1. Lipton L. Using yoga to treat disease: an evidence-based review. *JAAPA*. 2008 Feb;21(2):34-6, 38, 41.
2. Beart K, Lessing A. The perception of parents and teachers of the influence of yoga on the concentration and co-existing behaviour of learners with attention deficit hyperactivity disorder (ADHD). *J Transdiscipl Res Southern Africa*. 2013;9:13. 10.4102/td.v9i1.217
3. Rigoni M, Blevins LZ, Rettew DC, Kasehagen L. Symptom level associations between attention-deficit hyperactivity disorder and school performance. *Clin Pediatr (Phila)*. 2020;59:874-84. DOI: 10.1177/0009922820924692
4. Chimiklis AL, Dahl V, Spears AP, Goss K, Fogarty K, Chacko A. Yoga, mindfulness, and meditation interventions for youth with ADHD: Systematic review and meta-analysis. *J Child Family Stud*. 2018;27:3155-68. DOI: 10.1007/s10826-018-1148-7
5. Danielson ML, Bitsko RH, Ghandour RM, Holbrook JR, Kogan MD, Blumberg SJ. Prevalence of parent-reported ADHD diagnosis and associated treatment among U.S. children and adolescents, 2016. *J Clin Child Adolesc Psychol*. 2018;47:199-212. DOI: 10.1080/15374416.2017.1417860
6. Masi A, Mendoza Diaz A, Tully L, Azim SI, Woolfenden S, Efron D, *et al*. Impact of the COVID-19 pandemic on the well-being of children with neurodevelopmental disabilities and their parents. *J Paediatr Child Health*. 2021;57:631-6. DOI: 10.1111/jpc.15285
7. Sullivan MB, Erb M, Schmalzl L, Moonaz S, Noggle Taylor J, Porges SW. Yoga therapy and polyvagal theory: The convergence of traditional wisdom and contemporary neuroscience for self-regulation and resilience. *Front Hum Neurosci*. 2018;12:67. DOI: 10.3389/fnhum.2018.00067
8. Mehta S, Mehta V, Mehta S, *et al*. Multimodal behaviour program for ADHD incorporating yoga and implemented by high school volunteers: A pilot study. *ISRN Pediatric*. 2011;2011:780745. DOI: 10.5402/2011/780745

9. Harrison LJ, Manocha R, Rubia K. Sahaja Yoga meditation as a family treatment programme for children with attention deficit-hyperactivity disorder. *Clinic Child Psychol Psychiatry*. 2004;9:479-97. DOI: 10.1177/1359104504046155
10. Hariprasad VR, Arasappa R, Varambally S, Srinath S, Gangadhar BN. Feasibility and efficacy of yoga as an add-on intervention in attention deficit-hyperactivity disorder: An exploratory study. *Indian J Psychiatry*. 2013;55:S379-84. 10.4103/0019-5545.116317
11. Cohen SC, Harvey DJ, Shields RH, *et al*. Effects of yoga on attention, impulsivity, and hyperactivity in preschool-aged children with attention-deficit hyperactivity disorder symptoms. *J Dev Behav Pediatr*. 2018;39:200-9. DOI: 10.1097/DBP.0000000000000552
12. McClafferty H. Complementary, holistic and integrative medicine. *Pediatrics Rev. Cross Ref, Pub Med*. 2011;32:201-203.
13. Kaunhoven RJ, Dorjee D. How does mindfulness modulate self-regulation in pre-adolescent children? An integrative neurocognitive review. *Neurosci. Biobehav. Rev. Cross Ref, Pub Med*. 2017;74:163-184.
14. Rosen L, French A, Sullivan G. Complementary, holistic, and integrative medicine: Yoga. *Pediatrics Rev. Cross Ref, Pub Med*. 2015;36:468-474.
15. Tyagi A, Cohen M. Yoga and heart rate variability: A comprehensive review of the literature. *Int. J Yoga. Pub Med*. 2016;9:97-113.
16. Hariprasad VR, Arasappa R, Varambally S, Srinath S, Gangadhar BN. Feasibility and efficacy of yoga as an add-on intervention in attention deficit-hyperactivity disorder: An exploratory study. *Indian J Psychiatry. Pub Med*. 2013;55:S379-S384.
17. Harrison LJ, Manocha R, Rubia K. Sahaja yoga meditation as a family treatment programme for children with attention deficits-hyperactivity disorder. *Clin. Child Psychol. Psychiatry. Cross Ref*. 2004;9:479-497.
18. Hernández SE, Suero J, Barros A, González-Mora JL, Rubia K. Increased grey matter associated with long-term Sahaja yoga meditation: A voxel-based morphometry study. *PLoS ONE. Cross Ref, Pub Med*. 2016;11:1-16.
19. Ross A, Thomas S. The health benefits of yoga and exercise: A review of comparison studies. *J Altern Complement Med*. 2010 Jan;16(1):3-12.