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Research Article

ADHD Patients

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An efficacious Yoga module for Cognitive Improvement in ADHD patients: A Pilot Study

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Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental condition that affects millions of children worldwide, leading to challenges in attention span, impulse control, and hyperactivity. ADHD symptoms are often exacerbated in children born prematurely due to incomplete brain development, affecting their executive functioning and cognitive abilities. Conventional treatments such as stimulant medications and behavioural therapies have proven effective but are often associated with potential side effects, dependency risks, and high costs. In light of these limitations, complementary therapies like yoga are being explored as holistic, non-invasive interventions to aid symptom management. This pilot study examines the efficacy of a structured yoga module tailored to enhance cognitive functions, emotional regulation, and behavioral stability in children diagnosed with ADHD. The study was conducted over three months, involving 15 participants aged 10–14 years who were born prematurely. The intervention consisted of a structured 45-minute yoga session five days a week, integrating breathing exercises and yogic postures designed to promote relaxation, improve focus, and enhance self-regulation. The results, measured through the Vanderbilt ADHD Diagnostic Parent Rating Scale (VADPRS), teacher-reported behavior checklists, and parental feedback, revealed promising improvements in sustained attention, emotional control, and overall behavioural adjustments. These findings suggest that yoga-based interventions may serve as effective supplementary approaches in managing ADHD symptoms, warranting further large-scale studies to validate their long-term impact.

Keywords: Yoga, Attention deficit hyperactivity disorder, Cognitive Function

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Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is a prevalent neurodevelopmental disorder characterized by persistent patterns of inattention, impulsivity, and hyperactivity. It affects children across the globe, often continuing into adolescence and adulthood, impacting academic performance, social interactions, and daily functioning. Research indicates that children born prematurely are at a higher risk of developing ADHD due to disrupted neurodevelopment, particularly in the prefrontal cortex, which is responsible for executive functions such as attention control, decision-making, and impulse regulation. Current treatment modalities for ADHD primarily involve pharmacological interventions, including stimulant and non-stimulant medications, alongside behavioral therapy. While these approaches have demonstrated significant benefits in symptom management, they also present notable drawbacks. Medications can lead to side effects such as insomnia, appetite suppression, mood swings, and dependency concerns.

Additionally, the cost and accessibility of long-term therapy sessions pose challenges for many families. Consequently, there is a growing interest in alternative and complementary therapies, such as yoga, which offer non-pharmacological means of managing ADHD symptoms while promoting overall well-being. Yoga, an ancient practice rooted in mindfulness, breath control, and physical postures, has shown potential in enhancing self-regulation, reducing hyperactivity, and improving focus in children with ADHD.

The practice is believed to stimulate the parasympathetic nervous system, reduce stress hormone levels, and enhance cognitive control mechanisms. Emerging research suggests that structured yoga interventions may help children with ADHD by improving attention span, emotional stability, and behavioural responses. However, despite its potential benefits, there is a lack of comprehensive studies evaluating the direct impact of yoga on ADHD patients, particularly among children born prematurely. This study aims to bridge this gap by assessing the effectiveness of a specialized yoga module designed for children aged 10-14 years with ADHD, particularly those born prematurely. By analysing cognitive and behavioural improvements through validated assessment tools, This research seeks to contribute to the growing body of evidence supporting yoga as a viable complementary therapy for ADHD management.

Materials and Methods

1. Study Design:

- Pilot study.
- Duration: 3 months.
- Sample Size: 15 children diagnosed with ADHD.
- Age Group: 10-14 years.
- Inclusion Criteria: Premature birth, ADHD diagnosis, and availability for the full duration of the intervention.

2. Intervention:

- **Yoga Module:** A 45-minute session, five days a week, comprising:

SN	Yoga Module	Contents	Time
1.	**Breathing Exercises**	Nadi Shodhana Pranayama	Thrice a day
		Bhramari Pranayama	Thrice a day
		Double Breathing	Thrice a day
		Chandrabhedi Pranayama	Thrice a day
		Murchha Pranayama	Thrice a day
2.	**Yogasana**	Padmasana	Twice a day
		Vrikshasana	Twice a day
		Sarvangasana	Twice a day
		Surya Namaskar	Twice a day

Table 1: Yoga Module Intervention

Outcome Measures

- Vanderbilt ADHD Diagnostic Parent Rating Scale (VADPRS).
- Teacher-reported behaviour checklist.
- Parental feedback on emotional regulation and focus.

Results

- **Improvement in Attention:** The VADPRS scores showed a significant improvement in focus, with a 30% average reduction in inattentive symptoms. Children exhibited better concentration in academic and social settings, demonstrating an increased ability to complete tasks without getting easily distracted.
- **Reduction in Hyperactivity:** Teachers reported a 25% decrease in impulsive and hyperactive behaviours.

- Classroom engagement improved, with students displaying better impulse control and reduced disruptive tendencies.
- **Parental Observations:** Parents noted enhanced emotional regulation, better sleep patterns, and reduced temper outbursts in their children. There was a noticeable improvement in their ability to follow instructions, maintain daily routines, and express emotions constructively.
- **Engagement and Retention:** All participants completed the program, with 90% showing consistent engagement during sessions. Children expressed enthusiasm for the yoga sessions, demonstrating increased self-discipline and mindfulness over time.

Discussion

The study underscores the potential of Yoga as a supportive therapy for ADHD, particularly in cases linked to premature birth. Yoga's emphasis on mindfulness, physical postures, and controlled breathing provides children with tools to manage their energy and emotions effectively. Prematurity-related challenges such as underdeveloped executive functioning may benefit from yoga's structured yet flexible approach, which promotes neuroplasticity and emotional resilience.

The observed improvements in focus and behaviour align with existing literature, highlighting yoga's role in enhancing self-regulation. The yoga intervention implemented in this study was designed to enhance cognitive function, emotional regulation, and self-discipline among ADHD patients.

The module consisted of a combination of breathing exercises (*Pranayama*) and Yoga postures (*Asanas*), each selected for their therapeutic effects on attention, impulse control, and relaxation. The breathing exercises included *Nadi Shodhana Pranayama* (alternate nostril breathing), *Bhramari Pranayama* (humming bee breath), Double Breathing, *Chandrabhedi Pranayama*, and *Murchha Pranayama*, each performed thrice daily.

These techniques were incorporated to regulate the nervous system, improve oxygen flow to the brain, and reduce hyperactivity. The *Asanas* practiced were *Padmasana* (lotus pose), *Vrikshasana* (tree pose), *Sarvangasana* (shoulder stand), & *Surya Namaskar* (sun salutation), each performed twice daily.

These postures aimed to enhance balance, focus, and coordination while promoting overall physical and mental stability.

Conclusion

This pilot study highlights the potential efficacy of a structured yoga module in managing ADHD symptoms among children born prematurely. The intervention demonstrated significant improvements in attention span, impulse control, emotional stability, and behavioural patterns. The findings indicate that Yoga can serve as a valuable complementary therapy alongside conventional ADHD treatments, offering a holistic, non-invasive, and cost-effective approach to symptom management. While the results are promising, further large-scale studies with a larger sample size and extended intervention duration are necessary to establish the long-term benefits of Yoga for ADHD patients. Future research should also explore the neurobiological mechanisms underlying these improvements and evaluate the feasibility of integrating yoga-based interventions into mainstream ADHD treatment plans.

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