

Review Article



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"AYURVEDIC PERSPECTIVE ON ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN: A NARRATIVE REVIEW"

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ABSTRACT:

Background: Attention deficit hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders of childhood, affecting about 5% of children worldwide. Stimulant and non-stimulant medicines are effective, but many families seek complementary approaches, including Ayurveda. Classical Ayurveda does not describe ADHD as a single disease, but its concepts of mental constitution, Vata imbalance, Medhya Rasayana and child care (Kaumarabhritya) offer a framework for understanding and supportive management. **Objective:** To describe how ADHD can be understood within Ayurvedic concepts and to review the evidence for Ayurvedic and related interventions in children with attention and hyperactivity problems. **Methods:** Narrative review of classical texts on child health and mental function, and of systematic reviews, randomised trials and observational studies of Bacopa-based formulations, compound herbal preparations, dietary and mind-body interventions. **Results:** ADHD symptoms can be interpreted in Ayurveda as features of Vata and Rajas aggravation affecting Manovaha Srotas, with impairment of Dhi, Dhriti and Smriti. Systematic reviews of Bacopa monnieri and Bacopa-dominant polyherbal formulas in children report improvements in attention, impulsivity and some aspects of hyperactivity, but evidence is modest and studies are heterogeneous. A randomised trial of a compound herbal preparation containing Ayurvedic herbs reported improved attention scores in children with ADHD, but dropout was much higher in the placebo group. Evidence for dietary and meditation-based interventions is mixed. Higher digital media use has been associated with subsequent ADHD symptoms in adolescents. **Conclusion:** Ayurveda may contribute supportive approaches for children with ADHD, especially in routine, diet, sleep and screen-time management and possibly Medhya herbs. Current evidence does not support Ayurvedic treatment as a replacement for evidence-based care. Rigorous paediatric trials with careful safety monitoring are needed.

Keywords: ADHD; children; Ayurveda; Kaumarabhritya; Medhya Rasayana; Bacopa monnieri; Brahmi; screen time

INTRODUCTION:

ADHD is characterised by persistent inattention, hyperactivity and impulsivity that are inconsistent with developmental level and impair functioning at home, at school or with peers^[1,2]. A widely cited systematic review estimated a worldwide childhood prevalence of about 5%^[3]. ADHD is associated with academic difficulties, accidents, conflict with family and peers, and in many cases persists into adulthood^[1,2].

Effective treatments exist. Guidelines recommend parent training and behavioural approaches, particularly for younger children, and medicines for children with moderate to severe symptoms^[4]. A network meta-analysis confirmed that methylphenidate in children and amphetamines in adults were the preferred first-choice medicines on the basis of efficacy and tolerability^[5]. Nevertheless, concerns about side effects, stigma, cost and access lead many families to seek alternatives, and in India Ayurvedic practitioners are often consulted for children with behavioural and learning difficulties.

This review describes how ADHD may be understood in Ayurvedic terms and summarises the evidence for Ayurvedic and related interventions. It is intended to support responsible, evidence-informed practice and to guide research.

METHODS:

Classical sources included Kashyapa Samhita (the main classical text on child health) and Charaka Samhita^[6,7]. Modern literature was identified through PubMed and Google Scholar using ADHD, attention, hyperactivity, children, Ayurveda, Bacopa, Brahmi, herbal, diet, meditation, yoga and screen time, with priority to systematic reviews and randomised trials. This is a narrative review.

UNDERSTANDING ADHD IN AYURVEDA:

No single classical equivalent

Classical texts do not describe a condition that matches ADHD exactly. Ayurveda scholars have related its features to several concepts rather than to a single disease. This is consistent with the modern view of ADHD as a dimensional condition rather

than a discrete disease entity.

Mental constitution and Rajas

The three mental qualities, Sattva, Rajas and Tamas, shape behaviour. Rajas is associated with restlessness, activity, impulsiveness and distractibility^[7]. A child with prominent Rajas would be expected to show many features of hyperactivity and impulsivity, while prominent Tamas would be associated with inattention, sluggishness and poor motivation. These correspond loosely to the hyperactive-impulsive and inattentive presentations of ADHD.

Vata and the mind

Vata, especially Prana Vata, governs the mind, the senses and movement. Its qualities are mobility, lightness, dryness and irregularity. Aggravated Vata produces restlessness, excessive speech, inability to sit still, irregular attention and poor sleep. Ayurvedic practitioners commonly describe children with ADHD symptoms as having Vata aggravation.

Dhi, Dhriti and Smriti

Charaka describes the faculties of understanding (Dhi), restraint (Dhriti) and recall (Smriti)^[7]. Impairment of Dhriti, the ability to hold the mind back from distracting objects, corresponds closely to impulsivity and poor inhibitory control, which are central to modern models of ADHD. Impairment of Dhi and Smriti corresponds to difficulties in attention and working memory.

Childhood and development

Ayurveda considers childhood (Balyavastha) a stage of Kapha predominance, growth and developing Dhatus, and pays close attention to the child's diet, routine and environment. Kashyapa Samhita describes practices to promote intellect, memory, digestion and immunity in children, including Suvarnaprashana (administration of processed gold with ghee and honey) and other Lehana preparations^[6]. These practices reflect the classical view that mental faculties can be strengthened during development.

Summary of correspondences

Table 1: ADHD features and their Ayurvedic interpretation

ADHD feature	Ayurvedic interpretation
Hyperactivity, restlessness	Aggravated Vata (Prana, Vyana), excess Rajas
Impulsivity	Impaired Dhriti (restraint), Rajas
Inattention, distractibility	Impaired Dhi and Smriti; Vata (irregular) or Tamas (dull)
Poor sleep	Vata aggravation, Anidra
Emotional dysregulation	Rajas, Pitta involvement
Variable performance	Irregularity characteristic of Vata

AYURVEDIC APPROACHES TO MANAGEMENT:

Ayurvedic management of children with these features generally includes:

- Routine (Dinacharya): regular times for sleep, meals, study and play, which pacify Vata.
- Diet: warm, freshly cooked, nourishing and regular meals; avoidance of excessive processed foods, stimulants and irregular eating.

- Sleep: adequate sleep with a calm bedtime routine; oil massage of the head and feet.
- Medhya Rasayana: Brahmi, Mandukaparni, Shankhapushpi, Vacha (in small doses), Yashtimadhu and Ashwagandha, often in formulations such as Brahmi Ghrita or Saraswatarishta (with attention to alcohol content in children).
- External therapies: Abhyanga, Shiro Abhyanga and in some

cases Shirodhara or Pratimarsha Nasya.

- Sattvavajaya and parent guidance: counselling for parents on structure, positive attention and consistent limits.
- Yoga and breathing: age-appropriate yoga, games involving balance and focus, and simple breathing practices.

Many of these measures overlap with behavioural and lifestyle advice in mainstream ADHD care.

EVIDENCE FOR HERBAL INTERVENTIONS:

Bacopa monnieri

A systematic review of Bacopa monnieri in children and adolescents reported improvements in language, memory and behavioural measures, including hyperactivity and attention, though the studies were few and varied in quality^[8]. A later systematic overview of Bacopa-dominant polyherbal formulas in children and adolescents identified nine trials^[9]. Attention improved in three studies (not in one), impulsivity improved in three (not in one), and hyperactivity showed significant improvements on some sub-tests in two of four studies. The authors described the evidence as modest, noted inconsistent statistical designs and poor reporting of safety data in nearly half the studies, and pointed out that the contribution of Bacopa could not be separated from that of the other herbs^[9].

A randomised trial of Bacopa in children with ADHD has been registered in the Clinical Trials Registry of India^[10]. Its results will be important because few paediatric trials of standardised Bacopa extract in diagnosed ADHD have been completed.

Compound herbal preparation

In a randomised, double-blind, placebo-controlled trial, 120 children newly diagnosed with ADHD received either a compound herbal preparation (containing herbs used in Ayurveda and other traditions) or placebo for four months^[11]. The herbal group improved significantly on a computerised test of attention (TOVA), while the placebo group did not. However,

91% of children completed the study in the herbal group compared with only 48% in the placebo group. This unbalanced dropout makes the results difficult to interpret, even though the authors reported that the findings held in an intention-to-treat analysis.

EVIDENCE FOR DIET, MEDITATION AND LIFESTYLE:

Diet

A major systematic review and meta-analysis of non-pharmacological interventions for ADHD found that restriction of artificial food colours and supplementation with free fatty acids produced small but significant effects on ADHD symptoms when assessed by raters who were probably blinded to treatment^[12]. Evidence for restricted elimination diets was promising but less certain. These findings support attention to diet but not exaggerated claims.

Meditation and yoga

A Cochrane review of meditation therapies for ADHD found too few randomised trials, with too much risk of bias, to draw conclusions about effectiveness^[13]. Yoga and mindfulness programmes for children are popular and generally safe, but better trials are needed.

Digital media

Concerns about screen time are common among parents. In a prospective cohort of adolescents without significant ADHD symptoms at baseline, higher frequency of digital media use was associated with a modest but significant increase in the odds of subsequent ADHD symptoms over two years^[14]. Causality is not established, but this finding supports the Ayurvedic emphasis on limiting excessive sensory stimulation (Atiyoga of Indriyas) and maintaining a calm routine.

SUMMARY OF EVIDENCE:

Table 2: Summary of evidence for herbal, dietary and lifestyle interventions in ADHD

Intervention	Evidence	Main finding	Certainty (authors' judgement)
Bacopa (single extract)	Systematic review ^[8] ; trial registered ^[10]	Possible improvement in attention and behaviour	Low
Bacopa-dominant polyherbal formulas	Systematic overview of 9 trials ^[9]	Improved attention and impulsivity in some studies	Low
Compound herbal preparation	RCT with unbalanced dropout ^[11]	Improved attention test scores	Low
Dietary changes	Meta-analyses ^[12]	Small effects for colour restriction and fatty acids	Low to moderate
Meditation	Cochrane review ^[13]	Insufficient evidence	Very low
Reduced screen time	Prospective cohort association ^[14]	Higher use linked to later symptoms	Low (observational)

SAFETY AND ETHICAL CONSIDERATIONS:

Children are a vulnerable group, and safety standards for treating

them must be high. Several points are important:

- Diagnosis: ADHD should be diagnosed by a qualified

professional using established criteria, after considering other explanations such as hearing or vision problems, learning disorders, sleep problems, anxiety, family stress and developmental conditions^[4].

- Evidence-based care first: parent training, school support and, where indicated, medicines have strong evidence. Ayurvedic measures can be offered as complementary support, not as a reason to delay or avoid effective treatment.
- Dosing: herbal doses for children must be carefully adjusted for age and weight. Products designed for adults should not be given to children without appropriate dose adjustment.
- Product quality: some Ayurvedic products have been found to contain heavy metals. Mineral and metal preparations, including some gold preparations, should be used only when quality testing is assured.
- Alcohol content: Arishtas contain self-generated alcohol and may not be appropriate for children.
- Monitoring: growth, sleep, appetite, liver function where indicated, and any behavioural changes should be monitored.
- Interactions: families should inform all practitioners about the medicines and herbal products the child is taking.

A PRACTICAL INTEGRATIVE PATHWAY:

For an Ayurveda clinic that sees children with attention and behaviour problems, a responsible pathway might include the following steps.

1. Screening and referral: use a validated parent and teacher rating scale; refer for paediatric or child psychiatric assessment to confirm the diagnosis and identify co-occurring conditions such as learning disorders, anxiety or autism.
2. Shared plan: agree with the family and the treating doctor on the roles of conventional and Ayurvedic care, so that the child receives evidence-based treatment and the family does not receive conflicting advice.
3. Lifestyle foundation: establish regular sleep and wake times, regular meals, daily outdoor physical activity and limits on recreational screen time, especially in the evening.
4. Diet: encourage freshly cooked, regular meals with adequate protein and healthy fats, and reduce processed foods and drinks with artificial colours.
5. Calming practices: introduce brief daily Abhyanga or foot massage at bedtime and age-appropriate breathing or yoga games.
6. Parent guidance: support parents in using clear routines, positive attention and consistent limits, which is the core of evidence-based parent training.
7. Medhya herbs (optional): if used, choose a quality-tested product with an appropriate paediatric dose, document it, and review progress after 8 to 12 weeks using the same rating scales.
8. Review and safety: monitor sleep, appetite, growth and any adverse effects, and adjust or stop treatments that are not helping.

THE ROLE OF FAMILY AND SCHOOL:

Ayurveda gives great importance to the environment in which a child grows. Kashyapa and Charaka describe the duties of parents and caregivers in providing proper diet, routine, cleanliness, affection and good company^[6,7]. Modern ADHD

care similarly emphasises the family and school environment. Children with ADHD often experience criticism and conflict, which can worsen behaviour and self-esteem. Ayurvedic counselling that helps parents understand the child's constitution and needs, rather than labelling the child as naughty, can reduce blame and support a calmer household.

Schools can help through structured routines, short tasks, movement breaks and positive reinforcement. Ayurvedic practitioners who work with schools or parent groups can promote these strategies alongside culturally familiar health practices.

ADOLESCENTS AND TRANSITION:

ADHD often continues into adolescence and adulthood, when risks such as substance use, accidents and academic failure increase^[1,2]. Adolescents may be more receptive to lifestyle approaches framed in terms of performance, sleep and energy, and Ayurvedic concepts of routine and constitution can be used to engage them. Screen-time management becomes more difficult but more important in this age group^[14].

DISCUSSION:

Ayurveda offers a coherent way of understanding the behavioural features of ADHD through the concepts of Vata, Rajas and impaired Dhi, Dhriti and Smriti. Its emphasis on routine, diet, sleep, calm environment and parental guidance is consistent with good practice in modern ADHD care, and may help families who prefer a holistic approach to engage in lifestyle changes.

The evidence for Ayurvedic herbs in ADHD is limited. Bacopa and Bacopa-containing formulations have some supportive data, but studies are small, heterogeneous and often poorly reported, particularly regarding safety. The best-designed trial of a compound herbal preparation was weakened by high dropout in the placebo group. Dietary interventions have small effects. Meditation has not been adequately tested.

Future research should include: randomised, placebo-controlled trials of standardised Bacopa extract in children with diagnosed ADHD, using validated parent and teacher rating scales and objective attention measures; trials of Ayurvedic lifestyle programmes (Dinacharya, diet, sleep and screen-time management) as add-on to standard care; careful safety reporting; and studies examining whether Ayurvedic constitutional assessment predicts response to particular interventions. Ethical approval, parental consent and child assent are essential.

CONCLUSION:

ADHD has no exact classical equivalent in Ayurveda, but its features can be understood through Vata and Rajas imbalance and impaired restraint and attention. Ayurveda can contribute supportive measures, especially in routine, diet, sleep and screen-time management, and Medhya herbs such as Bacopa show modest promise. Evidence does not support Ayurvedic treatment as a substitute for evidence-based care. Well-designed paediatric trials with strong safety monitoring are needed.

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