Journal of Complementary Therapies in Health
ISSN 2975-9323 | eISSN 2975-9552

Review

Diagnosis in Paediatrics according to Traditional Chinese Medicine and its Application in the Therapeutic Approach and Treatments for Autism Spectrum Disorder.

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Abstract

Objective: To explore the theoretical foundations of Traditional Chinese Medicine (TCM) Paediatrics, analyse its specific diagnostic patterns, and review the application and potential of TCM therapeutic modalities as a complementary and integrative approach for Autism Spectrum Disorder (ASD).

Background: ASD is a complex neurodevelopmental disorder with heterogeneous manifestations. While Western medicine offers various symptomatic strategies, many families seek complementary alternatives. TCM adopts a holistic, individualised approach, interpreting ASD symptoms as manifestations of core energetic imbalances, such as deficiencies of Kidney *Jing*, Spleen *Qi*, and the presence of Phlegm Clouding the Heart.

Methods: This study employed a descriptive and exploratory literature review methodology, synthesising classical TCM paediatric concepts, including the "Five Delays" (*Wǔ Chí*) syndrome, with current preclinical and clinical research concerning the application of acupuncture, herbal medicine, cupping therapy, and *Tui Na* in the context of ASD.

Results: TCM diagnoses ASD based on patterns of energetic deficiency and stagnation. The "Five Delays" syndrome directly correlates with deficiencies in the Kidneys, Spleen, and Heart, which require specific therapeutic principles (e.g., Tonifying the Kidney *Jing*, Resolving Phlegm). On the other hand, TCM interventions demonstrate potential for modulating both behavioural and neurophysiological symptoms; Acupuncture showed efficacy in activating the hypothalamic oxytocinergic system, improving social deficits and emotional regulation. Herbal Medicine (e.g., Curcumin, *Acorus calamus*) showed neuroprotective potential in animal models, improving hippocampal neurogenesis and reducing autism-like behaviours. Moreover, *Tui Na* and Cupping were associated with improvements in sensory processing, sleep quality, and the reduction of maladaptive behaviours.

Conclusion: TCM offers a valuable, personalised, and holistic framework for the management of ASD, providing diagnostic tools and complementary therapeutic strategies that consider the child's energetic individuality. The integration of TCM with conventional Western care shows promise for enhancing therapeutic outcomes, supporting emotional stability, and improving the overall quality of life for children with ASD and their families. Further controlled clinical studies are necessary to validate the efficacy of specific TCM protocols and promote their adoption in interdisciplinary clinical settings.

Keywords: Traditional Chinese Medicine; Paediatrics; Autism Spectrum Disorder; Energetic Diagnosis; Complementary Therapies.

Citation: Carreira M., Silva R.O., Montenegro R., Alves C. Diagnosis in Paediatrics according to Traditional Chinese Medicine and its Application in the Therapeutic Approach and Treatments for Autism Spectrum Disorder. Journal of Complementary Therapies in Health. 2026;4(1) 10.5281/zenodo.17829919

Academic Editor: Jorge Rodrigues

Received: 1 November 2025
Reviewed: 25 November 2025
Revised: 1 December 2025
Accepted: 2 December 2025
Published: 5 December 2025

Publisher's Note: IPTC stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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1. Introduction

ASD is a neurodevelopmental disorder characterised by deficits in social communication and restricted, repetitive behaviours. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [1],ASD presents a broad spectrum of manifestations, ranging from mild to more severe forms, significantly impacting the quality of life of individuals and their families.

The manifestation of ASD occurs early, with signs already observable in infancy. However, its evolution can be diverse, with different developmental patterns throughout life [2-4]. Furthermore, ASD is frequently associated with other medical and psychiatric conditions, such as anxiety disorders, epilepsy, and motor difficulties [2,4-10], which reinforces the need for integrative and personalised therapeutic approaches.

The aetiology of ASD is not yet fully elucidated; it is considered multifactorial, involving genetic predisposition and environmental factors [4,9]. Although Western medicine offers various therapeutic strategies to minimise the impact of symptoms, many patients and families seek complementary alternatives, such as TCM, to enhance the effects of conventional treatments.

TCM adopts a holistic view of health, considering the balance between *Yin*, *Yang*, and *Qi* as fundamental to the individual's well-being [11-13]. According to this approach, ASD may be related to energetic imbalances in specific organs and meridians, making it treatable through techniques such as acupuncture, cupping therapy, herbal medicine, and *Tui Na* massage [14-16].

Thus, this study aims to deepen the understanding of ASD from the perspective of TCM, exploring its possible therapeutic applications and its articulation with Western medicine. To this end, the theoretical foundations of TCM, its therapeutic principles, and the specific strategies used in the treatment of ASD will be presented. The challenges and potential of integrating TCM as a complementary approach in the context of conventional medical practice will also be discussed.

2. Diagnosis in Paediatrics according to TCM

According to Scott [17], the paediatric organism is still developing, with immature energetic systems and physiological functions. Although they function to meet the body's needs, it is fundamental to understand that a child is not a miniature adult, possessing their own unique physiological and pathological characteristics. The younger the child, the more immature their energetic system and the greater the difference compared to the adult organism.

From birth, the baby presents with a delicate physical constitution, a deficiency of Blood (*Xue*) and *Qi*, in addition to meridians and blood vessels still forming. Their *Shen* (Mind/Spirit) is unstable, their Defensive *Qi* (*Wei Qi*) is weak, and their Essential *Qi* (*Zheng Qi*) is not completely developed.

The *Yang* energy is insufficient, and the *Yin* energy is not fully produced. *Yang* is responsible for the functions of the *Zang-Fu* organs, while *Yin* participates in the formation of bodily elements, such as essence, blood, and organic fluids. This immaturity of both types of energy results in a material basis and energetic functions that are still fragile.

Still according to the author, the aetiology of childhood diseases is related to various factors, including climatic influences, toxicity, pathogenic agents, *tai du* (foetal toxicity), diet, and lifestyle. Children exhibit greater vulnerability to climatic changes due to the immaturity of their Defensive *Qi*, which makes them more susceptible to the effects of Cold, Heat, Wind, Dampness, and Dryness. Furthermore, exposure to medications, industrialised food, maternal toxins transmitted during gestation, and repressed emotions can overload the child's organism, manifesting as colic, reflux, or respiratory problems. A disorganised diet and inadequate consumption of milk can compromise the proper functioning of the digestive system. Additionally, the excessive use of electronic devices, combined with the absence of a balance between moments of study, play, and contact with nature, can have a negative impact on children's emotional health.

2.1. The Diagnosis

The diagnosis of children in Chinese Medicine follows the same pattern as adult diagnosis (observation, palpation, auscultation, olfaction, and interrogation), but with some adaptations [17]. The inspection of the face and the interrogation of the parents are the most important, while hearing (due to changes in the child's speech in unfamiliar environments) and palpation (due to the difficulty in examining the pulse) are less relevant. The assessment of the index finger vein, the tongue, and crying patterns are essential tools for identifying children's imbalances and determining the most appropriate treatment [17-19].

Child diagnosis is, paradoxically, both more difficult and easier than that of adults. On one hand, it is more difficult due to the scarcity of signs and symptoms, the children's difficulty in adequately describing them, and the parents' eagerness for a quick cure; on the other hand, it is easier because childhood diseases are, in general, simpler [17-19].

3. Autism Spectrum Disorder and Traditional Chinese Medicine – Diagnosis and Therapeutic Approaches

In the context of ASD, diagnosis and treatment according to TCM require a holistic approach centred on rebalancing the internal organs, with special attention to the Kidneys, Spleen, and Heart, and on correcting the deficiencies of *Qi* and *Xue*, which are fundamental for the child's harmonious growth and development [17,19].

3.1. Diagnosis of ASD - TCM

From the perspective of TCM, the origin of developmental delays in children, including manifestations associated with ASD, may be related to different patterns of energetic imbalance in the organism.

One of the frequently cited causes is Kidney *Jing* Deficiency (先天不足, *"congenital deficiency"*). This condition can result from hereditary factors or complications during gestation, compromising the basis of the child's vitality and development, as the *Jing* (Essence) stored in the Kidneys is considered fundamental for growth, maturation, and the proper functioning of the body and mind [20-23].

Another relevant cause is the insufficient *Qi* and Blood of the Spleen. The Spleen, in TCM, plays a central role in the transformation and transportation of nutrients from food, converting them into energy (*Qi*) and Blood. When this function is debilitated, the child's physical and cognitive development can be affected, manifesting, for example, as fatigue, pallor, concentration difficulties, and learning delays [23].

Finally, the presence of Heat or Phlegm clouding the Heart is also considered a possible origin of developmental disorders. In this case, the accumulation of Phlegm (a pathological by-product) or the excess of Heat in the Heart organ can compromise the child's mental clarity, communication ability, and emotional expression, directly affecting speech and social interaction [17].

The Five Delays and ASD

The Syndrome of the Five Delays (五迟, *Wǔ Chí*) is mentioned in the classical literature of TCM and is intimately related to child development. The first descriptions of this syndrome emerged in ancient TCM texts, including works attributed to Bian Que (扁鹊), a famous physician of the Zhou dynasty, and Zhang Zhongjing (张仲景), a renowned clinician of the Han dynasty, author of the *Shang Han Lun* (Treatise on Febrile Diseases) [24,25].

However, the clear and detailed systematisation of the Five Delays is generally attributed to the Jiangsu School of Medicine of the Qing dynasty, when clinical manifestations began to be organised more precisely. The syndrome is interpreted as a disorder that reflects delays in various areas of the child's physical and mental development, such as the emergence of teething, the onset of speech, motor development, among others. This approach is based on an understanding of the deficiency of *Jing* and *Qi* [26,27].

According to classical TCM texts [28], children with ASD present:

- Delay in hair growth (发迟, *Fā Chí*) – Indicates Kidney *Jing* Deficiency, as the Kidney governs the bones and marrow, and is also related to hair growth.
- Delay in tooth growth (齿迟, *Chǐ Chí*) – Related to the weakness of the Kidney, which governs the bones and teeth.
- Delay in motor development (行迟, *Xíng Chí*) – Associated with the insufficiency of the Kidney and Liver, which influences the strength of the tendons and bones.
- Delay in language (语迟, *Yǔ Chí*) – Connected to the Heart and Spleen, as the Heart governs the mind (*Shen*) and speech, while the Spleen is responsible for the transport and transformation of nutrients necessary for brain development.
- Delay in mental development (立迟, *Lì Chí*) – Also related to the Heart and Kidney, since the Heart houses the *Shen* and the Kidney influences general growth and development.

3.2. TCM Therapeutic Approaches and Treatment in ASD

The approach to ASD by TCM is based on a careful reading of the internal imbalances that affect *Qi*, *Xue*, bodily fluids (*Jin Ye*), *Shen*, and *Jing*. Although diagnosis and treatment are extensively covered by Western medicine, TCM classifies ASD as a unique clinical entity, interpreting its symptoms as manifestations of distinct energetic patterns, which may be at the root of the imbalances presented by those with the pathology [5,28]. These must be identified, differentiated, and treated individually. This holistic view dates back to classical texts like the *Huang Di Nei Jing* (黄帝内经), which already emphasised that "all diseases must be treated according to their root" (治病求本, *zhì bìng Qiú běn*) [29].

In this approach, symptoms are not seen in isolation, but as manifestations of imbalances in the body's energetic systems, such as the Kidney, Spleen, Heart, and Liver. The understanding of these patterns allows for a more personalised intervention, respecting the particularities of each child.

Table 1 summarises the main energetic patterns observed in children with ASD and the clinical indications associated with each, according to the principles of TCM [16,21,27,28].

Table 1. ASD energetic patters and clinical indications according to TCM

Energetic Pattern	Clinical Indications
Kidney *Jing* Deficiency (肾精不足)	Delay in physical and mental development, delay in speech and teething
Spleen *Qi* and Blood Deficiency (脾气血虚)	Fatigue, apathy, lack of concentration, poor digestion, pallor
Phlegm Clouding the Heart (痰蒙心神)	Cognitive disorders, confusion, incoherent speech, repetitive behaviour
Heart Fire Disturbing the *Shen* (心火扰神)	Agitation, insomnia, anxiety, irritability
Heart and Kidney *Yin* Deficiency (心肾阴虚)	Insomnia, nocturnal restlessness, delayed speech, hyperactivity
Liver *Qi* Stagnation (肝气郁结)	Irritability, sudden anger, digestive disorders, emotional outbursts

Based on the observation of the main energetic patterns frequently identified in children with ASD, it is possible to establish a direct correspondence between the clinical indications and the therapeutic principles of TCM.

- Kidney *Jing* Deficiency (肾精不足), expressed in delays in physical and mental development, as well as in speech and teething, justifies the application of the therapeutic principle of Tonifying the Kidney *Jing* (补肾填精), with the goal of strengthening the foundation of physical and neurological development.
- Spleen *Qi* and Blood Deficiency (脾气血虚), associated with fatigue, apathy, concentration difficulties, and poor digestion, is addressed therapeutically by Strengthening the Spleen and Nourishing *Qi* and Blood (健脾益气养血), aiming to optimise vital energy, digestive function, and cognitive capacities.
- In cases where there is the presence of Phlegm Clouding the Heart (痰蒙心神), reflected in cognitive disturbances, incoherent speech, and repetitive behaviours, the treatment focuses on Resolving Phlegm and Opening the Sensory Orifices (化痰开窍), promoting greater mental clarity and verbal expression.
- When the condition is dominated by Heart Fire Disturbing the *Shen* (心火扰神), manifesting as agitation, insomnia, anxiety, and irritability, the principle of Clearing Pathological Heat (清热解毒) becomes essential, helping to calm the spirit and stabilise emotions.
- Heart and Kidney *Yin* Deficiency (心肾阴虚), often associated with nocturnal restlessness, insomnia, hyperactivity, and speech delays, is treated through the approach of Calming the *Shen* and Stabilising the Mind (安神定志), promoting rest and emotional balance.
- Finally, in cases of Liver *Qi* Stagnation (肝气郁结), which translates into irritability, sudden anger, digestive disorders, and emotional outbursts, the therapeutic strategy involves Regulating the Liver and Unblocking *Qi* (疏肝理气), with the aim of softening the mood and restoring harmonious energetic flow.

Having identified the main energetic imbalances present in children with ASD and the respective applicable therapeutic principles, it becomes pertinent to explore the different clinical approaches of TCM that operationalise these principles in practice, namely acupuncture, herbal medicine, *Tui Na*, and cupping therapy.

Acupuncture

Acupuncture, as a central therapeutic technique of TCM, has as its main objective to restore the harmonious circulation of *Qi* and balance the functions of the organs and viscera (*Zang-Fu*), promoting the child's physical, emotional, and mental well-being. This ancient practice is based on the stimulation of specific energetic points along the meridians, being used in a personalised manner according to the identified pattern of imbalance [13,30].

In the case of ASD, the condition can be interpreted by TCM in light of the so-called Syndrome of the Five Delays, characterised by disturbances in motor, cognitive, speech, and teething development. This condition is associated with energetic imbalances primarily involving the Spleen-Pancreas, Kidneys, Liver, and Heart organs, which are essential for the child's harmonious growth and development.

Since children have an energetically subtle and still developing body, the acupuncture approach must be especially careful. Traditionally, in a paediatric context, needles are only placed at up to three points per session, chosen judiciously, to avoid energetic overload and respect the child's sensitivity [17,31,32].

The benefits of acupuncture in intervention with children with ASD include reduction of agitation and nocturnal enuresis, improvement in sleep quality, increased tolerance to noise, as well as a decrease in repetitive speech and stereotypies. Furthermore, acupuncture, by promoting a state of greater tranquillity, can, in conjunction with medical monitoring, aid in the gradual reduction of psychiatric medication, when clinically appropriate [33-35].

Recent research has highlighted the neurobiological mechanisms underlying the therapeutic effects of acupuncture in autism, namely the activation of the hypothalamic oxytocinergic system, which triggers the release of neurotransmitters such as oxytocin,

endocannabinoids, serotonin, and dopamine. Oxytocin has been particularly studied for its prosocial, anxiolytic, and stress-regulating role, demonstrating effectiveness in reducing the social deficits characteristic of ASD [36-38].

Studies in animal models also revealed that oxytocin enhances endocannabinoid-mediated social reward processes in the nucleus accumbens, this being a promising mechanism in the modulation of social behaviour. Serotonin and dopamine also participate in the reward response associated with oxytocin, reinforcing the positive impact of acupuncture on the core symptoms of autism [36].

These findings support the relevance of acupuncture as a complementary intervention in ASD, with growing evidence that the combination of acupuncture with behavioural therapies presents better clinical results in the treatment of children with autism than isolated interventions [39].

Herbal Medicine

Chinese herbal medicine, as a fundamental component of TCM, constitutes a complementary therapeutic approach that acts through the administration of herbal formulas with the goal of tonifying deficiencies, eliminating pathogenic factors, and restoring the body's internal balance [40-42]. In the intervention for ASD, herbal medicine offers continuous, individualised, and systematised support, capable of enhancing the effects of other therapeutic techniques and favouring the improvement of behavioural and neurophysiological symptoms [43,44]. Several substances of plant origin have been investigated in experimental models and clinical contexts, with emphasis on the following compounds:

Acorus calamus (石菖蒲 – *shí chāng pú*) The *Acorus calamus* plant, traditionally used in TCM for its action on the Heart and *Shen*, has shown neuroprotective potential. A study by Ukkirapandian *et al.* [45] used Wistar rats with valproic acid-induced autism, administering *Acorus calamus* ethanolic extract (200 mg/kg) in the postnatal period. The results indicated protection of neuronal structures in the frontal cortex and Purkinje cells in the cerebellum, with a significant reduction in neuronal degeneration compared to control groups.

Curcumin (*Curcuma longa*) (姜黄 – *jiāng huáng*) *Curcuma longa*, known in TCM for its effect of mobilising *Qi* and Blood, has been widely studied for its antioxidant and anti-inflammatory effects. Bhandari *et al.* [46] tested curcumin (50-200 mg/kg for 28 days) in a propionic acid-induced autism model. The results revealed a restoration of social behaviours, improvement in memory and mitochondrial function, reduction of oxidative stress, and modulation of inflammatory markers such as TNF-alpha and MMP-9. Complementary studies in VPA-induced models also observed improvements in hippocampal neurogenesis and behavioural structures associated with autism, reinforcing the therapeutic potential of curcumin in modulating neuronal development [47,48].

Ginkgo biloba (银杏 – *yín xìng*) in association with risperidone has been included in integrative-based studies. A randomised, double-blind clinical trial conducted by the team of Hasanzadeh *et al.* [49] evaluated the association of *Ginkgo biloba* (80–120 mg/day) with risperidone (1–3 mg/day) in children aged 4 to 12 diagnosed with ASD. After 10 weeks of treatment, no significant differences were found between the intervention group and the control group regarding the scores on the Aberrant Behavior Checklist – Community (ABC-C), nor in the occurrence of adverse effects. A subsequent systematic review reinforced the safety of using *Ginkgo biloba*, although without conclusive evidence regarding its additional clinical efficacy.

Cupping Therapy

Cupping therapy is a traditional Chinese Medicine technique that involves the application of cups (cupping glasses) to the skin, with the objective of mobilising stagnations of *Qi* and Blood, eliminating pathological Heat, and reinforcing *Zheng Qi*, promoting a general state of balance and well-being [50-52].

In the context of ASD, cupping therapy has been explored as a complementary approach, especially for its regulating action on the autonomic nervous system and its potential calming effect. A recent study [53] investigated the effects of this technique on aggressive behaviour and sleep quality in children diagnosed with ASD. Preliminary results indicated significant improvements in these areas after the application of cupping therapy, suggesting that the technique may constitute a promising therapeutic tool in supporting behavioural and emotional regulation in children with autism.

Tui Na

Tui Na, a form of therapeutic massage in TCM, uses specific manual manipulations to stimulate the meridians and energetic points of the body, with the goal of promoting the balance of *Qi* flow, regulating the function of internal organs, and favouring the child's neurological, emotional, and motor development [21,54,55].

In the context of ASD, *Tui Na* massage has shown positive effects, especially when applied as a complementary therapy to conventional care. A recent study [56], revealed statistically significant improvements in sensory processing, particularly in auditory filtering and tactile sensitivity.

Additionally, improvements in sleep disorders were observed, with a reduction in bedtime resistance and anxiety associated with falling asleep. The study also highlighted a sharp decrease in maladaptive behaviours, such as irritability and hyperactivity. These results remained stable during the three-month follow-up period, suggesting a prolonged effect of the intervention. It is important to note that no relevant adverse effects were recorded, reinforcing the safety and applicability of *Tui Na* in children with ASD.

4. Conclusions and Future Directions

The integration of TCM offers a valuable, personalised, and holistic paradigm for understanding and treating ASD, moving beyond symptomatic management to address the underlying constitutional and energetic imbalances of the child.

4.1. Core Diagnostic Value and Personalisation

The TCM diagnostic framework, particularly the lens of the "Five Delays", provides a unique and clinically relevant method for classifying ASD symptoms based on specific energetic deficits, most notably Kidney *Jing* Deficiency, Spleen *Qi*/Blood Insufficiency, and the presence of Phlegm Clouding the Heart.

This classification enables a highly individualised therapeutic strategy (e.g., Tonifying the Kidney *Jing* vs. Resolving Phlegm) that respects the heterogeneity of ASD, directly addressing the limitations of generalised Western approaches.

4.2. Evidence-Based Efficacy of Integrated Modalities

Preclinical and clinical findings support the therapeutic potential of TCM modalities, suggesting they can actively modulate the neurobiological and behavioral symptoms of ASD:

- Acupuncture: Evidence points to its mechanism in activating the hypothalamic oxytocinergic system, suggesting a direct path for reducing social deficits and improving emotional regulation. Its combination with behavioral therapies shows synergistic benefits.
- Herbal Medicine: Specific compounds like curcumin and Acorus calamus demonstrate potential in modulating neuronal development by improving hippocampal neurogenesis and protecting neuronal structures in preclinical models. This reinforces herbal medicine's role as continuous, systematised support to enhance conventional treatments.

- *Tui Na* and Cupping: These techniques offer safe, non-invasive means of regulating the nervous system, showing promise in improving sensory processing, sleep disorders, and reducing maladaptive behaviours (irritability, hyperactivity).

4.3. Implications for Integrative Care

This study confirms the feasibility and necessity of developing truly integrative care models where TCM is utilised as a complementary, evidence-informed therapeutic pillar alongside conventional Western medical and behavioural interventions.

- Shifting the Narrative: TCM offers a language that views ASD not just as a deficit, but as a state of developmental imbalance, that is potentially correctable, offering families an expanded therapeutic perspective and greater sense of agency.
- Bridging the Gap: Successful integration requires:

1. Shared Training: Developing competencies in both TCM diagnostics and neurodevelopmental science among practitioners.
2. Standardised Protocols: Creating evidence-based, adaptable protocols for TCM interventions (e.g., specific acupuncture points, *Tui Na* sequences, and herbal formulas) tied to specific ASD energetic patterns.

4.4. Future Research Priorities

To transition from promising data to established clinical practice, future research must focus on:

1. Controlled Clinical Trials: Conducting large-scale, randomised, placebo-controlled trials specifically designed to validate the efficacy of specific TCM interventions (e.g., individualised herbal formulas, specific acupuncture protocols) against placebo and conventional care, using standardised Western outcome measures (e.g., CARS, ABC-C).
2. Neurobiological Correlates: Further investigation into the neurological and biochemical mechanisms of TCM (e.g., fMRI studies during acupuncture, serum biomarker changes post-herbal treatment) to strengthen the scientific foundation supporting its impact on neurophysiological symptoms.
3. Long-term Safety and Efficacy: Studies tracking the long-term safety, sustained effects, and optimal frequency/duration of combined TCM and Western treatments in children with ASD.

In conclusion, TCM provides a powerful framework for personalised ASD care. By prioritising rigorous research and interdisciplinary professional training, the therapeutic potential of TCM can be fully realised, leading to more humanised, comprehensive, and effective interventions that profoundly improve the quality of life for children with ASD and their families.

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Author statement: Conceptualization: M.C.; Investigation: M.C.; Writing, reviewing and editing: M.C., R.O.S., R.M., C.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of Interest: The authors declare that there are no conflicts of interest.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The original contributions presented in this study are included in the article. Further inquiries can be directed to the corresponding author.

References

1. APA. Diagnostic and statistical manual of mental disorders 2013.
2. Srikantha P, Mohajeri MH. The Possible Role of the Microbiota-Gut-Brain-Axis in Autism Spectrum Disorder. International journal of molecular sciences [Internet]. 2019; 20(9). doi: https://doi.org/10.3390/ijms20092115
3. Volkmar FR. Autism and Pervasive Developmental Disorders. 2nd ed: Cambridge University Press; 2007. 356 p.
4. White SW, Mazefsky CA, Dichter GS, Chiu PH, Richey JA, Ollendick TH. Social-cognitive, physiological, and neural mechanisms underlying emotion regulation impairments: understanding anxiety in autism spectrum disorder. Int J Dev Neurosci. 2014;39:22-36. doi: https://doi.org/10.1016/j.ijdevneu.2014.05.012
5. Suarez MA. Sensory processing in children with autism spectrum disorders and impact on functioning. Pediatr Clin North Am. 2012;59(1):203-14, xii-xiii. doi: https://doi.org/10.1016/j.pcl.2011.10.012
6. Tomchek SD, Dunn W. Sensory processing in children with and without autism: a comparative study using the short sensory profile. Am J Occup Ther. 2007;61(2):190-200. doi: https://doi.org/10.5014/ajot.61.2.190
7. Xu G, Snetselaar LG, Jing J, Liu B, Strathearn L, Bao W. Association of Food Allergy and Other Allergic Conditions With Autism Spectrum Disorder in Children. JAMA Netw Open. 2018;1(2):e180279. doi: https://doi.org/10.1001/jamanetworkopen.2018.0279
8. Yang XL, Liang S, Zou MY, Sun CH, Han PP, Jiang XT, et al. Are gastrointestinal and sleep problems associated with behavioral symptoms of autism spectrum disorder? Psychiatry Res. 2018;259:229-35. doi: https://doi.org/10.1016/j.psychres.2017.10.040
9. Zeidan J, Fombonne E, Scorah J, Ibrahim A, Durkin MS, Saxena S, et al. Global prevalence of autism: A systematic review update. Autism Res. 2022;15(5):778-90. doi: https://doi.org/10.1002/aur.2696
10. Madra M, Ringel R, Margolis KG. Gastrointestinal Issues and Autism Spectrum Disorder. Child Adolesc Psychiatr Clin N Am. 2020;29(3):501-13. doi: https://doi.org/10.1016/j.chc.2020.02.005
11. Greten HJ. Understanding TCM, The Fundamentals of Chinese Medicine, Part I. Heidelberg School Editions, Heidelberg. 2013:223.
12. Liu Z. Essentials of Chinese medicine: Springer; 2009.
13. Maciocia G. The Foundations of Chinese Medicine: A Comprehensive Text for Acupuncturists and Herbalists: Elsevier Churchill Livingstone; 2005. 9780443074899.
14. Brondino N, Fusar-Poli L, Rocchetti M, Provenzani U, Barale F, Politi P. Complementary and Alternative Therapies for Autism Spectrum Disorder. Evidence-based complementary and alternative medicine : eCAM. 2015;2015:258589. doi: https://doi.org/10.1155/2015/258589
15. Chan AS, Sze SL, Siu NY, Lau EM, Cheung MC. A chinese mind-body exercise improves self-control of children with autism: a randomized controlled trial. PloS one. 2013;8(7):e68184. doi: https://doi.org/10.1371/journal.pone.0068184
16. Cignolini A, Silva L. Qigong Massage for Your Child with Autism: A Home Program from Chinese Medicine: Jessica Kingsley Publishers; 2011. 9780857010414.
17. Scott J. Acupuntura no tratamento da criança. São Paulo: Roca. 1997.
18. Flaws B. Keeping Your Child Healthy with Chinese Medicine: A Parent's Guide to the Care and Prevention of Common Childhood Diseases: Blue Poppy Press; 1996. 9780936185712.
19. Cline K. Chinese Pediatric Massage: A Practitioner's Guide: Inner Traditions/Bear; 2000. 9781594775321.
20. Rodrigues J, Mestre M, Matos LC, Machado JP. Effects of taijiquan and qigong practice over behavioural disorders in school-age children: A pilot study. J Bodyw Mov Ther. 2019;23(1):11-5. doi: https://doi.org/10.1016/j.jbmt.2018.01.019

21. Rodrigues JM, Mestre M, Fredes LI. Qigong in the treatment of children with autism spectrum disorder: A systematic review. J Integr Med. 2019;17(4):250-60. doi: https://doi.org/10.1016/j.joim.2019.04.003
22. Rodrigues JM, Lopes L, Goncalves M, Machado JP. Taijiquan and qigong as a mindfulness cognitive-behavioural based therapy on the treatment of cothymia in school-age children - A preliminary study. J Bodyw Mov Ther. 2021;26:329-38. doi: https://doi.org/10.1016/j.jbmt.2020.12.024
23. Wang S, Qiao-Wong JM, Zhao X. Pediatrics in Chinese Medicine: PMPH-USA; 2012. 7117147253.
24. M MJLAMSO, LAc ZBSPD. Dr. Zhong'S Pediatric Essentials: A Clinical Guide for Treating Children in the Traditional Chinese Medicine Clinic: iUniverse; 2016. 9781491797037.
25. 俞馨媛，楊成湛．兒童發育遲緩中醫治療顯效案例．中醫藥研究論叢．2020;23(1):185-96. doi: https://doi.org/10.6516/TJTCM.202003_23(1).0015
26. 胡楠楠, 王雪峰. 五迟, 五软, 五硬与脑性瘫痪. 中国中西医结合儿科学. 2019;1(2):153-5.
27. Gu XC, Deng Y, Chen S, Gao JF, Fu WB. Professor FU Wen-bin's experience in treating "five delays and five weaknesses" in children with yang-oriented approach. Zhongguo zhen jiu = Chinese acupuncture & moxibustion. 2023;43(11):1307-10. doi: https://doi.org/10.13703/j.0255-2930.20230327-k0004
28. Scott J. Autism and Acupuncture: For Parent and Practitioner: Portway Press, Limited; 2017. 9781999801106.
29. Huang Di. Huang Di Nei Jing Su Wen.
30. Maciocia S. The Practice of Chinese Medicine: The Treatment of Diseases with Acupuncture and Chinese Herbs: Elsevier Health Sciences; 2021. 9780702079207.
31. Jindal V, Ge A, Mansky PJ. Safety and efficacy of acupuncture in children: a review of the evidence. J Pediatr Hematol Oncol. 2008;30(6):431-42. doi: https://doi.org/10.1097/MPH.0b013e318165b2cc
32. Kemper KJ, Sarah R, Silver-Highfield E, Xiarhos E, Barnes L, Berde C. On pins and needles? Pediatric pain patients' experience with acupuncture. Pediatrics. 2000;105(4 Pt 2):941-7.
33. Aung SKH. Pediatric Acupuncture: A Spiritual Perspective. Medical acupuncture. 2019;31(6):334-8. doi: https://doi.org/10.1089/acu.2019.1396
34. Gold JI, Nicolaou CD, Belmont KA, Katz AR, Benaron DM, Yu W. Pediatric acupuncture: a review of clinical research. Evidence-based complementary and alternative medicine : eCAM. 2009;6(4):429-39. doi: https://doi.org/10.1093/ecam/nem181
35. Golianu B, Yeh AM, Brooks M. Acupuncture for Pediatric Pain. Children [Internet]. 2014; 1(2):[134-48 pp.]. doi: https://doi.org/10.3390/children1020134
36. Su T, Pei L. Acupuncture and oxytocinergic system: The promising treatment for autism. Transl Neurosci. 2021;12(1):96-102. doi: https://doi.org/10.1515/tnsci-2021-0011
37. Chen S, Huang L, Liu G, Kang J, Qian Q, Wang J, et al. Acupuncture Ameliorated Behavioral Abnormalities in the Autism Rat Model via Pathways for Hippocampal Serotonin. Neuropsychiatr Dis Treat. 2023;19:951-72. doi: https://doi.org/10.2147/NDT.S398321
38. Li LY, Jiang N, Zhao Y. Could acupuncture have a role in the treatment of autism spectrum disorder via modulation of BDNF expression and activation? Acupuncture in medicine : journal of the British Medical Acupuncture Society. 2014;32(6):503-5. doi: https://doi.org/10.1136/acupmed-2014-010602
39. Ma RL, Yuan Q, Rui J. [Effect of acupuncture combined behavior intervention on children with autism]. Zhongguo Zhong Xi Yi Jie He Za Zhi. 2006;26(5):419-22.
40. Aguiar R, Gehlen S, Oliveira R, Rodrigues JM. Recent advances in Chinese phytopharmacology for female infertility: A systematic review of high-quality randomized controlled trials. Pharmacological Research - Modern Chinese Medicine. 2024;13:100539. doi: https://doi.org/10.1016/j.prmcm.2024.100539

41. Cardiga C, Constantino A, Fonseca C, Silva D, Teixeira I, Rodrigues JM. Chinese phytopharmacology for gastritis - A systematic review of high-quality randomized controlled trials. Pharmacological Research - Modern Chinese Medicine. 2025;15:100631. doi: https://doi.org/10.1016/j.prmcm.2025.100631
42. Rodrigues JM, Santos C, Ribeiro V, Alvarenga A, Santos RV. Chinese Phytopharmacology in dermatology - A Systematic Review. Pharmacological Research - Modern Chinese Medicine. 2023;7:100255. doi: https://doi.org/10.1016/j.prmcm.2023.100255
43. Lee JH, Jo HG, Min SY. East Asian Herbal Medicine Combined with Conventional Therapy for Children with Autism Spectrum Disorder: A Systematic Review and Meta-analysis. Explore (NY). 2022;18(6):646-56. doi: https://doi.org/10.1016/j.explore.2022.02.001
44. Lee B, Park S, Kwon HJ, Hwang GS, Kim M. Integrative treatment program for the treatment of children with autism spectrum disorder: A prospective observational case series. Frontiers in neurology. 2022;13:1017005. doi: https://doi.org/10.3389/fneur.2022.1017005
45. Ukkirapandian K, E K, Udaykumar KP, Kandhi S, R M. The Neuroprotective Role of Acorus calamus in Developmental and Histopathological Changes in Autism-Induced Wistar Rats. Cureus. 2022;14(9):e29717. doi: https://doi.org/10.7759/cureus.29717
46. Bhandari R, Kuhad A. Neuropsychopharmacotherapeutic efficacy of curcumin in experimental paradigm of autism spectrum disorders. Life Sci. 2015;141:156-69. doi: https://doi.org/10.1016/j.lfs.2015.09.012
47. Al-Askar M, Bhat RS, Selim M, Al-Ayadhi L, El-Ansary A. Postnatal treatment using curcumin supplements to amend the damage in VPA-induced rodent models of autism. BMC complementary and alternative medicine. 2017;17(1):259. doi: https://doi.org/10.1186/s12906-017-1763-7
48. Zhong H, Xiao R, Ruan R, Liu H, Li X, Cai Y, et al. Neonatal curcumin treatment restores hippocampal neurogenesis and improves autism-related behaviors in a mouse model of autism. Psychopharmacology (Berl). 2020;237(12):3539-52. doi: https://doi.org/10.1007/s00213-020-05634-5
49. Hasanzadeh E, Mohammadi MR, Ghanizadeh A, Rezazadeh SA, Tabrizi M, Rezaei F, et al. A double-blind placebo controlled trial of Ginkgo biloba added to risperidone in patients with autistic disorders. Child Psychiatry Hum Dev. 2012;43(5):674-82. doi: https://doi.org/10.1007/s10578-012-0292-3
50. Sousa CS, Teixeira AT, Azevedo RS, Cardiga Nunes V, de Caravalho AL, Serra EM, et al. Effectiveness and Methodology of Wet-cupping for Low Back Pain – A Preliminary Systematic Review of Randomized Controlled Trials. Journal of Complementary Therapies in Health. 2025;3(2). doi: https://doi.org/10.5281/zenodo.15657740
51. Kouser VH, Nayab M, Ansari AN, Mir MA, Anwar M. Efficacy of wet cupping in the pain management of cervical spondylosis - A randomized, controlled, open -label, parallel-group clinical trial. J Bodyw Mov Ther. 2024;39:126-31. doi: https://doi.org/10.1016/j.jbmt.2024.02.044
52. Wang L, Cai Z, Li X, Zhu A. Efficacy of cupping therapy on pain outcomes: an evidence-mapping study. Frontiers in neurology. 2023;14:1266712. doi: https://doi.org/10.3389/fneur.2023.1266712
53. Sutysna H, Jannah M, Sitorus AR. The Effect of Cupping Therapy Towards Aggressive Behavior and Sleep Quality among Autism Spectrum Disorder (ASD) Patients. Indonesian Journal of Global Health Research. 2024;6(6):175-84. doi: https://doi.org/10.37287/ijghr.v6iS6.4755
54. Lu T, Yin L, Chen R, Zhang H, Cai J, Li M, et al. Chinese pediatric Tuina on children with acute diarrhea: a randomized sham-controlled trial. Health Qual Life Outcomes. 2021;19(1):4. doi: https://doi.org/10.1186/s12955-020-01636-1
55. Chen SC, Lo KC, Li H, Wong PM, Pang LY, Qin J, et al. Parental Experiences of Administering Pediatric Tuina for Sleep and Appetite in Early School-Aged Children With Attention-Deficit/Hyperactivity Disorder: Qualitative Study in Hong Kong. JMIR Pediatr Parent. 2025;8:e65471. doi: https://doi.org/10.2196/65471
56. Mursyid F, Chia L, Anwar K, Putri I, Alma B. The Impact of Tuina Massage Therapy on Sensory Processing, Sleep Disturbances, and Maladaptive Behaviors in Young Children with Autism Spectrum Disorder in Jakarta, Indonesia: A Controlled Clinical Study. Scientia Psychiatrica. 2025;6(2):748-65.