

# Analysis of Different Treatment Methods for Autism

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**Abstract.** Autism, the full name of autism spectrum disorder, is a type of inborn, congenital, or onset in infancy, characterized by social communication difficulties, narrow interests, repetitive stereotyped behaviors, and sensory perception. In recent decades, the incidence of autism has been increasing worldwide. It is estimated that the average prevalence of autism worldwide is about 1%. Therefore, there is no doubt that autism has become a public health issue that has attracted great attention and attention from societies and governments around the world. It is also one of the key topics in neuro-medical research today, although many researchers have conducted corresponding clinical experiments on treatments for autism. However, there are still some unresolved problems in the treatment of autism in Chinese medicine. As a result, this article uses literature review and survey research methods, mainly studies and summarizes traditional Chinese and Western medicine in the treatment of autism and compares the shortcomings of traditional Chinese medicine in the treatment of patients with autism. And the treatment and popularization of autism still need to continue to be researched and promoted.

**Keywords:** Autism; Treatment; Chinese medicine; Western medicine.

## 1. Introduction

The word autism was first coined and used in 1911, which is used to describe childhood mental disorders [1]. A key feature of schizophrenia is a progressive loss of mental contact with the outside world. Later, in the 1920s, Russian child psychiatrist Grunya Sukhareva wrote the first magazine articles about autistic children. Twenty years later, around the 1950s, Leo Kanner, who worked at Johns Hopkins Hospital, published a report describing eleven children with mental disorders, which was the first application of autism in the modern sense. As autism is now widely known, his contributions have been profound in the history of autism research. The feature of autism spectrum disorders (ASDs) can be classified into three characteristics, including social interaction barriers, narrow interests, and repetitive stereotyped behaviors, represented by the verbal and non-verbal anxiety disorders, which are the significant manifestation of ASDs. ASDs has become one of the most common mental diseases worldwide, and it has been recognized by the world as a mental disability. According to data cited on World Autism Day, the prevalence of ASDs among children in the United States was 2.24%, 1 out of 45 children. In 2016, the number soared to 2.76%, namely every 36 children have one effect in ASDs. And China totally has more than 14 million ASDs patients. Especially the kids, the common reason is they are always easily affected by the ASDs because they have weak immune systems which means they have less resistance when the virus attacks their nervous central system.

There are many pathologies of autism, including the most important genetic inheritance and mutation, the mutations of autism-related genes are very diverse, from single-gene mutations to multi-gene mutations. According to the characteristics of mutations, the paper lists three main types. The first type is de novo mutations, that is, mutations originated during meiosis of germ cells or during the development of fertilized eggs, and first appear in family members. The results show that neonatal mutations account for about 30% of autism cases. Nonverbal IQ is lower among autistic individuals with neonatal mutations than those without nonverbal mutations. The second type is Rare Inherited Variants, which is low in individuals with spontaneous autism. And these variants account for up to 30% of family inheritance. The third is Common Polygenic Risk. Based on genome-wide association

studies (GWASs), it is estimated to explain 17% to 52% of the heritability of AD by common SNPs. The findings of a new study show that a child's chances of developing autism are also very high, including family influences from parents and siblings. If a sibling has autism, the risk of developing the disorder in a sibling is also much higher. The study found that of 78 sets of twins, 64 had both children diagnosed with autism. However, the severity of autism varies greatly between twins.

For example, in a pair of twins, one boy is largely silent, while the other has excellent language skills. And the existing research shows that it's almost impossible to believe that identical twins could be so different. In addition, the environment a child is exposed to in daily life also affects a child's mental health, such as being abused or bullied by other students at school. In addition, there are unexpected reasons of ASDs have been found, such as the feeding patterns of infants, it can affect the composition of an infant's gut flora. In the process of breastfeeding, the fetus can get some symbiotic bacteria in the mother through the sucking of the nipple, and these have a great impact on the structure of the fetal intestinal flora. It was found that the  $\alpha$  diversity of microbial communities in the gut of breastfed infants was higher than that of formula-fed infants, and the main bacterial groups in the gut were actinomycetes, among which Proteobacteria and Bacteroidetes were dominant. The proportion of firmicutes and actinomycetes in the intestinal tract of infants fed with formula milk powder was equal, and the remaining bacteria were mainly Proteobacteria. Gut microbes can influence the brain and behavior through the blood, endocrine, and nervous systems [2].

In the modern medical field, there are several treatment methods for ASDs. For instance, the most well-known method, box-court therapy known as sand play therapy, is based on overcoming the speech barriers of autistic children to create self-reliance and self-control ability, stimulates their imagination and creativity, and expands their fields of interest based on the principle of natural teaching, thus providing the possibility for the rehabilitation of autistic children [3]. In addition to psychotherapy, in Western medicine, medicine often plays a therapeutic role in stabilizing patients' nervous systems. However, in traditional Chinese medicine, there are different approaches to the treatment of ASDs from Western medicine. For example, in traditional Chinese medicine, it is not recommended that autistic patients take Western medicine, the researchers always ask patients to do more exercises and to take Chinese medicine to promote their sleep and mental and physical development [4].

## **2. Analysis of different treatment methods**

### **2.1. Jin San-acupuncture therapy**

Chinese traditional medicine always has its own treatment method and understanding of the ASDs. They recognize autism as a social disorder (avoidance of communication, avoidance of social interaction, isolation and self-isolation), language agent speech development disorder, special performance behavior, and other different degrees of performance disorders. At the same time, there are several possibilities in the performance of the human body, such as liver fire reflected in the liver's abnormal drainage function, less than the drainage and Qi stasis of the performance of depression, chest or abdominal distension pain, emotional depression or irritability, good breath, or see pharyngeal foreign body sensation, or neck gall tumor, or hypoechoic mass. Other examples are dry eyes, mouth disease, sore limbs, skin problems or kidney deficiency, frequent urination, and other symptoms. These symptoms above out of their body will be a representation of the symptoms inner their body. At the same time, the wrong family environment or teaching method will also stimulate children's symptoms.

One TCM treatment is called Jin San-acupuncture therapy, which selects the four divine needles, calming needles, temporal three needles, temporal three needles, brain three needles, wisdom three needles, and awakening as the main acupoints divine needle, hand wisdom needle, foot wisdom needle, and tongue three needles [5]. All the needles could be used in this therapy, and those researchers and doctors will evaluate and assess acupuncture points, and use the method of acupoint

matching and needling they need, according to patients' conditions. Leave a needle for 45 minutes, twist the needle once every 5-10 minutes, needle once a day, 6 times a week, and treat for 4 months as a course of treatment. At the same time, those doctors use the Autism Rating Form of Children (ars, which was made by the Tao Guotai, from Psychiatry for Children and Adolescents) to check about the curative effect. They have 202 patients for 4 months of treatment and divide them into groups which are treat groups and control groups.

Select the four divine needles, calming needles, temporal three needles, temporal three needles, brain three needles, wisdom three needles, and awakening as the main acupoints. Divine needle, hand wisdom needle, foot wisdom needle, tongue three needles, and acupoints should be matched according to the condition of the patient; 84 cases in the control group received special education and training. Both groups receive daily treatment, six times a week, with one course of treatment lasting four months.

After treatment, the efficacy was evaluated using the Children's Autism Rating Scale (ARS). Total treatment group, the effective rate was 88.1%, while the control group was 65.5%. The therapeutic effect of the treatment group was better than that of the control group. Using total efficacy as the dependent variable, group, and syndrome type. Age was used as the independent variable for logistic regression analysis, and the therapeutic effect of the treatment group was better than that of the control group. After stratification according to traditional Chinese medicine syndrome types, the efficacy and ars between groups. The treatment group showed better therapeutic effects in the three types of liver depression and qi stagnation, heart-liver fire hyperactivity, phlegm confusion, and mind-opening [6].

After Jin San-acupuncture therapy passed the clinical trial, the comparison of curative effect grade between the two groups showed that the curative effect of the treatment group on children's internal body problems was obviously better than that of the control group. Among them, the problems of liver and upper fire have been effectively improved, while the kidney deficiency has not been effectively treated. In our clinical observation, we found that the treatment and improvement of deficiency syndrome are slower than the empirical evidence, the need for a long course of treatment and a large amount of treatment. Therefore, after the completion of the first course of treatment, there was no significant difference between the two groups in the efficacy of kidney essence deficiency type, which was consistent with the clinical reality and the theory of traditional Chinese medicine. It is easy to cure if the catharsis method of invigorating qi and channeling is adopted. Kidney essence deficiency is a deficiency syndrome deficiency syndrome of multiple diseases, the treatment should be fuzheng, treatment should be slow, not quick victory, so the treatment of deficiency syndrome should be extended.

These therapies compare curation effects and ages, and they find that liver fire, impatient, and phlegm confuses the heart orifices will have significant curative effects. However, according to ars data, there is no significant therapeutic effect for kidney deficiency. Among the 202 patients, liver deficiency and excessive liver fire accounted for 35.64% and 29.70%. Therefore, the liver plays a significant role in the etiology of autism. Children's regulation of liver function and understanding of the environment are always different from adult people, so they are easier to affect with the ASDs. According to the research results, experts have shown that kidney deficiency will improve slowly during the treatment process, and a longer period of treatment is required to have a more significant effect. The treatment of these internal organs of the body results in significant improvements in children's language function, body movement expression, and behavioral continuity. The reason is considered to be that the cerebral cortex is stimulated by acupuncture stimulation to specific acupoints during the treatment, thereby improving the child's clinical performance. Mostly, doctors should strengthen children's conceptual education, which improves their curation.

## **2.2. The flavored treatment of Wendan decoction**

The flavored Wendan decoction designed by Yan Yufen and Lei Faqing combined with teaching and training correction methods to treat 25 cases of autistic children has achieved remarkable results.

They are divided into severe hyperactivity, moderate hyperactivity and mild hyperactivity according to different levels of symptoms; as well as varying degrees of inattention, sleep disorders, unprovoked self-injury, shaking head and screaming and other behavioral disorders. They randomly divided 37 sick children who had conform to the evaluation of American CARS evaluation forms, into a treatment group of 25 and a control group of 12. These sick children all have problems with physical or language expression. During the treatment process, the control group used ABA behavioral training methods and some rehabilitation training to help children.

On the basis of the rehabilitation training of the control group, the treatment group additionally took Modified Wendan Decoction for treatment: Juhong 5g, Pinellia 6g, Poria 6g, Licorice 2g, Zhuru 1g, Citrus aurantium 4g, Dang 6g, Shichangpu 5g, Yizhiren 5g, 2 slices of polygala root, jujube kernel and ginger. 1 dose per day, decocted in water, 2 times a day [7]. At the same time, according to the symptoms of the child, the medicines to be taken that day are prepared. For liver deficiency, add dogwood, dodder, and cistanches; for spleen deficiency, add atractylodes and fried lentils. For indigestion, add Divine Comedy and fried malt. For unstable sleep, add polygala and jujube seeds. By analogy, different drugs are added to different symptoms.

The final treatment results are as follows: 25 cases in the treatment group, the total effective rate was 84%; 12 cases in the control group, the total effective rate was 41.7%. An effective treatment result means that the symptoms shown by the patient have improved, such as reduced agitation, stable sleep, and reduced giggles. The child is at a stage of development and growth, and they always need to have a more comprehensive diet, however, because of ADSs, those students always have a partial eclipse. It can lead to spleen deficiency, which allows phlegm to form in the body and lead to sleep disorders, screaming, self-injury, and other behaviors. Therefore, this prescription is mainly used to remove damp phlegm in children's bodies.

### **2.3. Music intervention therapy**

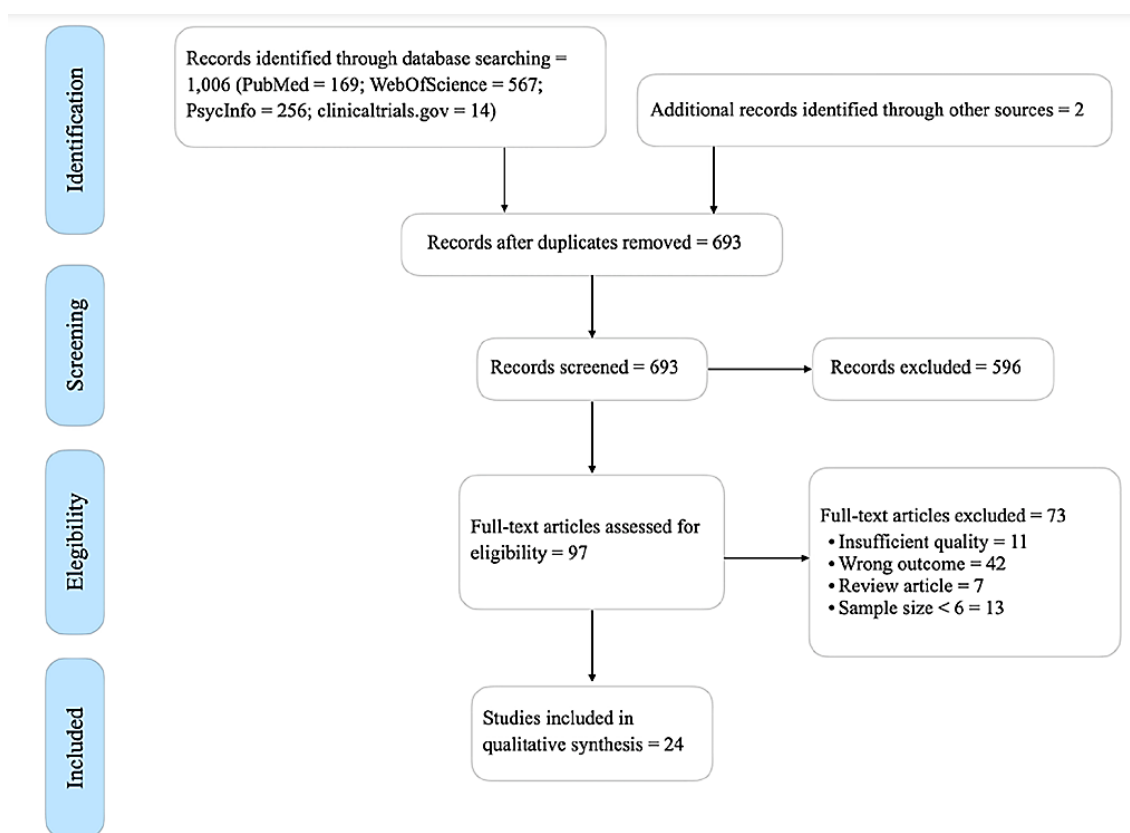
The final Chinese medicine is to applied music therapy to help ADSs children recover [8]. There is already evidence from the United Kingdom and the United States that music intervention methods and other restorative training have significant curative effects on clinical experiments. However, Chian currently lacks relevant clinical trials. Therefore, based on the lack of those researchers' background, Hao Li conducted music intervention therapy for the rehabilitation of Chinese autistic children one.

In this case, they choose ten children who are in the ages between 5 to 9 years olds to have 15 weeks treatment period with the comprehensive music therapy (DCTM) [9]. The research process is divided into 3 stages. In the first stage, occupational music therapists conducted 5 weeks of comprehensive music technology intervention treatment on 10 autistic children. In the second stage, 10 autistic children participated in the treatment by the special education center/teachers in the rehabilitation institution used music comprehensive intervention technology to conduct intervention treatment (5 weeks). In the third phase, 10 autistic children who received music comprehensive technology intervention were given the final 5 weeks of intervention treatment.

In her experiments, she mentioned typical patients called Xiaoqi. In her first class of treatment, she always remained silent, and nervous, and kept her head down when facing the music therapist. The music therapist tried to use very soft chords and said hello gently while playing on the piano. As the assistant teacher's body swayed, she also began to sway slightly until she and the music therapist made a very soft sound with a smile on her face. This was undoubtedly a big breakthrough. Likewise, the music therapist responded with a smile of encouragement [10]. During the 15-week intervention, language, migration of body expression, and call-response technology had a better curative influence on the development of verbal and non-verbal expressions and the communication of Xiaoqi was getting better in this period [11]. They are also recognizing the significance of acceptance and attitude towards music comprehensive intervention technology, which helps this therapy in their daily

teaching and learning. Let the unique practicality and application functions of this treatment method better meet the needs of children, and benefit more and more special families and children.

Autistic children not only lack language skills but are often accompanied by problems such as inability to concentrate and impairment in physical expression [12]. By using different kinds of instruments to create diverse kinds of sounds provides a more suitable environment for those children, and make them become more outgoing, communicates with teachers and doctors, improves their skills of physical and mental expressions. Compare this method to traditional rehabilitation therapy, this can simultaneously let doctors and patients perceive the changes, which provide deeper insights into the development and strengthen the establishment of 1:1 interactive relationship. Thus, they can analyze patients' feedback through researchers' self-feedback, a video of the treatment period, musical moment assessment form, which explores children's verbal and non-verbal expressions. Using the instantaneous music elements corresponds to the special response of those patients. Other types of treatment methods have also been widely used to treat autism through systematic reviews and meta-analysis, as shown in Fig. 1 [13].



**Figure 1.** Flow chart of data retrieval system [13].

### 3. Conclusion and outlook

#### 3.1. Conclusion

This research summarized different treatment methods for autism, it was found that traditional Chinese medicine has made great progress in researching the treatment of autism, which is also divided into several aspects, including acupuncture, traditional Chinese medicine and dietary therapy, and other special behavioral guidance therapies. While they are proposing ideas, they are also constantly conducting clinical experiments. At the same time, different people have different focuses on the research of these therapies, which has also laid a good foundation for autism treatment in China. The disadvantage is that there are often some deficiencies in traditional Chinese medicine therapy. For example, Jin San-acupuncture therapy lacks some treatment methods for kidney deficiency, which proves that further research is needed on acupuncture and moxibustion at fixed points, so that

Chinese medicine can treat autism. Therapy is more comprehensive and more practical for different etiologies of autism.

### 3.2. Future outlook

Autism is a verbal and non-verbal social disorder that is often accompanied by depression, irritability, and hyperactivity. Because children's brains are underdeveloped and guided by poor family education, the incidence of children is usually higher than that of adults, because they do not have correct values and their development is immature, making them more susceptible to their own emotions and the external environment. They have no way to deal with these influences properly, which undoubtedly aggravates the damage of autism to them.

Although the treatment of autism has been widely studied and popularized by many people, there are still many children in the world who are still suffering from autism. The prevalence of autism is also increasing, and there are various causes of autism in children. Therefore, research on autism treatment methods cannot pause and needs to continue to advance on this basis. In addition, what is more important for autism therapy research is the popularity of autism and parents' widespread recognition of autism, as well as their supportive attitude towards the treatment of children's autism. In some areas, the reason why autism has not been treated in time is probably that people do not understand the etiology and concept of autism, which leads to their wrong understanding of autism. Therefore, we should conduct extensive publicity on autism based on the above research so that more parents can accept autism. Especially in the comprehensive instant therapy of music, it is more important for music teachers that parents' guide their children in daily life training, strengthen their self-understanding and gradually become more cheerful. On the other hand, the state should also support medical research on autism, establish an autism protection association, formulate relevant autism protection regulations, and strengthen care for autistic children, which will also help autism rehabilitation of sick patients. And investing in autism researchers can effectively increase the research efficiency of autism therapy. Finally, traditional Chinese medicine and Western medicine can be combined to make up for each other's weaknesses, so that patients with autism can recover faster.

### References

- [1] Evans B. How autism became autism: The radical transformation of a central concept of child development in Britain. *Hist Human Sci.*, 2013, 26 (3): 3 - 31.
- [2] Duan Yunfeng, Wu Xiaoli, Jin Feng. Research progress on the causes and treatment of autism. *Science in China: Life Sciences*, 2015, 45: 820 - 844.
- [3] Chen Shunsen. The principle and operation of box court therapy in the treatment of autism. *China Special Education*, 2010, 3: 42 - 47.
- [4] Chen S S, Bai X J, & Zhang R S. Symptoms, diagnosis and intervention of autism spectrum disorders. *Advances in Psychological Science*, 2011, 19 (1): 60 - 72.
- [5] Yuan Qing, Wu Zhifeng, Wang Ruichao, Liu Gang, Bao Xiaojuan, & Lang Jianying. Analysis of the efficacy of Jin's three needles in treating different TCM syndrome types in children with autism. *Journal of Guangzhou University of Traditional Chinese Medicine*, 2009, 26 (3): 5.
- [6] Yuan Qing, Wu Zhifeng, Wang Ruichao, Liu Gang, Bao Xiaojuan, & Lang Jianying. Analysis on the curative effect of Jin Sanpin on different TCM syndromes of autism in children. *Journal of Guangzhou University of Traditional Chinese Medicine*, 2009, 26 (3).
- [7] Yan Yufen, Lei Faqing. 25 cases of modified Wendan decoction combined with teaching and training to correct abnormal behaviors of autistic children. *Journal of Traditional Chinese Medicine*, 2007, 48 (3): 244 - 244.
- [8] Yu Xueqin. Research progress on the mechanism of music therapy for disabled children. *Chinese Journal of Rehabilitation Medicine*, 2016, 31 (11): 1285.
- [9] Brusica KE. *Defining music therapy*. Gilsum, NH: Barcelona Publishers, 1998, 8 - 41.
- [10] Hao Li, Music Therapy Teaching and Research Section, Department of Music Technology, Shenyang Conservatory of Music, Research Progress of Music Therapy in the Rehabilitation of Autistic Children, 15YJCZH0561.

- [11] Zhang Qian, Zhang Xueling, Wang Haijing, et al. Observation on the clinical efficacy of music combined with language training in the treatment of language communication disorder in children with autism. *Heart Physician*, 2017, 23 (31): 40 - 41.
- [12] Ingersoll B. The Social Role of Imitation in Autism Development. *Infant and Young Children*, 2008, 21 (2): 107 - 119.
- [13] Jiménez-Muñoz L, Peñuelas-Calvo I, Calvo-Rivera P, et al. Video games for the treatment of autism spectrum disorder: A systematic review. *Journal of Autism and Developmental Disorders*, 2022: 1 - 20.