

Analyzing Children's Simple Obesity based on "Spleen Centralized Earth Irrigation in the Surrounding Viscera Four Sides, and Spleen Qi is Unimpeded"

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Abstract: Guided by the theory of "centralized earth of the spleen", childhood simple obesity was elaborated from the perspective of the relationship between the spleen. Accordingly, it is believed that spleen dysfunction is the core pathogenesis of childhood simple obesity, and it is elaborated from the aspects of weak spleen qi, weak propulsion; phlegm-dampness accumulation, and water-liquid internal stagnation. The integrated treatment mode of "one medicine, two pressure and three activities" is proposed to treat childhood simple obesity, to explore the development of this disease and the dialectical treatment idea, and to provide theoretical basis for the clinic.

Keywords: Centralized earth of the spleen, Spleen irrigates the surrounding viscera, Simple obesity in children, Pathogenesis, Treatment.

1. Introduction

Simple obesity (SO) in children is a nutritional disorder characterized by excessive fat accumulation and body weight exceeding reference ranges due to sustained energy intake exceeding energy expenditure [1]. SO is a chronic disease caused by multiple factors, arising from a combination of genetic predisposition, environmental influences, and an imbalance between energy intake and expenditure [2]. It is estimated that by 2025, the global prevalence of childhood overweight will rise from 7% in 2012 to 11%. However, overweight or obese children face significantly higher risks of serious health complications [3]. Obesity is emerging as a global health burden and a major public health challenge [4]. Obesity has clearly reached epidemic proportions, affecting over 1.9 billion overweight and obese individuals worldwide. Adolescents face increased risks of cardiovascular disease, type 2 diabetes, and osteoarthritis, severely impacting their physical and mental health [5]. In Western medicine, treatment primarily focuses on exercise and dietary adjustments, supplemented by drug interventions and surgical procedures. However, these approaches yield slow results, making adherence difficult for many patients. Additionally, drug interventions often show limited efficacy and are associated with numerous reported adverse reactions [6, 7]. Consequently, patients increasingly prefer Traditional Chinese Medicine (TCM) treatment guided by holistic syndrome differentiation principles.

Based on the clinical manifestations of childhood obesity, it can be categorized under diseases of the spleen and stomach system in Traditional Chinese Medicine (TCM). As early as the Huangdi Neijing (The Yellow Emperor's Classic of Internal Medicine), TCM documented terms such as "obese individuals," "greasy individuals," and "phlegm syndrome," providing guidance for subsequent generations of physicians studying obesity. This paper posits that the key pathogenesis of this condition lies in impaired spleen function and stagnant

spleen qi, leading to pathological manifestations of deficiency and phlegm. Based on this, the study explores the spleen's role in organ movement, meridian qi, blood, and body fluids from the perspective of the spleen as the central earth. By examining pediatric SO through the lens of the "central earth nourishing the periphery" theory, the paper aims to leverage the diagnostic and therapeutic strengths of traditional Chinese medicine.

2. Theoretical Origins of the Central Earth Theory of the Spleen

The term "Central Earth" first appears in the Seven Keys of the Cloud Scroll: "The spleen occupies the central earth position, hence it is said to be ever-present—it is the palace of the Yellow Court." The Four Sages' Heart Source: Explanation of Heaven and Man states: "The central qi is the pivotal axis of yin and yang's ascent and descent—it is what is called earth." "Earth is the mother of the four elements." This underscores the vital and foundational role of spleen-stomach qi in the human body. The concept of the spleen as Central Earth stems from Traditional Chinese Medicine's Five Elements model, where Earth occupies the central position, nurturing all things through its generative power—the principle of "Earth gives birth to all things." As Guoyu: Zhengyu states: "Earth combines with metal, wood, water, and fire to form all things." Based on the Central Earth Five Elements model, traditional Chinese medicine assigns the spleen among the five zang organs to the central earth element. It holds that the spleen governs the four seasons, nurtures and regulates the liver, heart, lungs, and kidneys. Positioned centrally, the spleen earth exerts a vital coordinating influence over the wood, fire, metal, and water elements residing in the four cardinal directions of east, south, west, and north. As the Suwen: Taiyin Yangming Lun states: "The spleen is earth, governing the center. It nurtures the four zang organs through the four seasons, each receiving its care for eighteen days. It cannot alone govern all four seasons." The Central Earth Five

Elements model establishes the spleen as a solitary zang organ, governing the four seasons, nourishing the surrounding organs, and serving as the pivot for the ascending and descending movements of zang-qi [8]. The Central Earth Five Elements Model is a concept developed through research on the central earth element, grounded in the functions of the zang-fu organs and qi mechanisms, and integrated with the spleen's anatomical structure and physiological characteristics. As the central earth, the spleen's qi and the refined substances it generates support the physiological functions of the heart, liver, lungs, and kidneys. It exercises a commanding influence over all zang-fu organs, and the spleen qi circulating within it affects every zang-fu organ, qi, blood, body fluids, and more throughout the body.

3. Spleen Irrigates the Surrounding Viscera

The Essentials of Ling Shu and Su Wen with Brief Annotations states: "The spleen, as the central earth, irrigates the four peripheries." This indicates that the spleen, as the central earth, occupies a central position, performing the functions of irrigating the entire body, nourishing other zang-fu organs and the limbs, and sustaining all bodily structures. The transportation and transformation of the essence of water and grains depend on the spleen, and the normal functioning of the five zang organs and six fu organs all rely on the spleen's regulation [9]. Zhang Jingyue asserted: "One who excels in treating the spleen can harmonize the five zang organs." Through its vital functions of nourishing the periphery, participating in the body's permeation, and circulating qi, blood, and body fluids, the spleen ensures unimpeded qi movement throughout the body, enabling each organ to perform its specific role. The Suwen: Great Treatise on Yin-Yang Correspondences states: The essence of grains communicates with the spleen." The Suwen: Treatise on the Distinct Meridians further explains: "Food qi enters the stomach, dispersing essence to the liver... Turbid qi returns to the heart, excess essence accumulating in the vessels... Liquids enter the stomach, their essence and qi overflowing upward to the spleen. Spleen qi disperses essence, returning upward to the lungs." This demonstrates that the spleen's functions of transporting and dispersing essence are crucial for the digestion and absorption of food. Traditional Chinese medicine holds that the spleen represents the central earth, nourishing all surrounding organs. When spleen qi is abundant and its transporting and transforming functions are normal, qi and blood are plentiful, vital energy is robust, spirit is vigorous, and illness is less likely to occur. The central earth of the spleen primarily nourishes and irrigates the entire body, while qi mechanism ensures the smooth circulation of qi, blood, and body fluids. Zhang Zhongjing proposed that "the spleen thrives in all seasons and remains impervious to pathogens." Spleen qi reflects the strength of vital energy. Within the Five Elements model of central earth, "the spleen thrives in all seasons and remains impervious to pathogens" embodies holistic principles while emphasizing the physiological functions of other organs, with the spleen playing a coordinating and governing role [10]. The central earth of the spleen nourishes the periphery through mutual interaction with qi dynamics. They mutually permeate and nourish each other in qi and blood, jointly participating in the circulation of qi, blood, and body fluids throughout the body, dispersing them to all parts.

4. Smooth Flow of Qi

Qi is the subtle substance present within the human body, serving as the material foundation for life activities. The spleen and stomach belong to the earth element and are located at the center of the body. Spleen qi ascends while stomach qi descends; the interaction between spleen qi and stomach qi enables spleen qi to transport and distribute the essence of food and drink throughout the body, while stomach qi descends to transmit digested food and eliminate waste. As stated in Clinical Guidelines: Medical Cases, Spleen and Stomach Section: "The spleen thrives on ascension, and the stomach thrives on descent. The ascending movement of kidney qi and liver qi relies on the ascending spleen qi; the descending movement of heart qi and lung qi depends on the descending stomach qi. Thus, the spleen and stomach are termed "the pivotal point for the ascending and descending movements of the zang-fu organs' qi mechanisms" [11]. Impaired qi movement in the spleen and stomach disrupts the ascending and descending functions of the zang-fu organs: Firstly, it affects the qi movement of other zang-fu organs. For instance, disrupted qi movement in the liver (left) and lung (right) leads to imbalance between water and fire. When the liver fails to regulate and the lung fails to diffuse and descend, fluid retention occurs, manifesting as obesity. Second, the transformation and transportation of fluids and grains also affect spleen-stomach function. When the stomach fails to receive and digest food, the spleen cannot transform it into essence and transport it. Accumulated food and fluids stagnate in the middle jiao, causing impaired middle jiao function, internal phlegm-turbidity production, and obstruction throughout the body, ultimately manifesting as obesity.

The spleen governs transformation and transportation, and its physiological function of ascending qi can be regarded as an expression of its qi mechanism being unimpeded and free-flowing. The qi of the spleen and stomach serves as the source of qi for all zang-fu organs, and the qi of the spleen permeates the qi of all five zang organs. The spleen and stomach regulate qi mechanisms and the qi of related zang-fu organs to fulfill their functions of nurturing all things and governing the four seasons. The essence extracted from food and drink nourishes the zang-fu organs, sensory orifices, limbs, and meridians. The generated qi mechanism regulates the body's overall qi movement, ensuring the normal circulation of blood and body fluids to achieve coordination among the five zang organs [9]. As the pivotal hub of the body's qi mechanism, disruption in spleen-stomach qi function impairs the distribution of water-grain essence, leading to the manifestation of obesity.

5. Etiology and Pathogenesis of Pediatric SO

The causes of childhood spleen deficiency (SO) involve both external and internal factors. External factors include irregular diet, insufficient exercise, and prolonged sitting, lying, or dwelling in damp environments. Internal factors stem from congenital deficiency and emotional distress. The key pathogenesis lies in spleen qi deficiency, resulting in inadequate propulsive force; phlegm-damp accumulation leads to fluid retention. The Treatise on the Origins of Miscellaneous Diseases states: "The spleen governs the four

zang organs; when diseased, it inevitably affects them..." This underscores the spleen's pivotal role in the human body. The spleen exercises a coordinating influence over the four zang organs. Dysfunction in the spleen can disrupt the physiological functions of other zang-fu organs, while disorders in these organs can also impair spleen function.

During childhood growth and development, the spleen serves as the foundation of acquired constitution and the source of qi and blood production. If obesity remains unaddressed, prolonged neglect may lead to "excessive form with deficient qi" — spleen qi deficiency manifesting as flabby obesity — creating a vicious cycle that triggers other disorders [13]. When spleen deficiency impairs its transporting and transforming functions, symptoms emerge: epigastric distension, heavy limbs, poor vitality, shortness of breath, reluctance to speak, and lack of exercise. This leads to stagnation of spleen qi in the middle jiao, accumulation of turbidity, and transformation into phlegm-fluid retention. Zhou Shenzhai asserted that "the spleen is the source of phlegm production." The spleen governs the transformation and transportation of fluids and grains. When spleen function is impaired, its capacity to process fluids and grains diminishes, and the upward movement of spleen qi becomes disrupted. This leads to qi stagnation and obstruction within the body. Over time, this stagnation transforms into turbidity, which further transforms into phlegm. This creates the pathological manifestations of deficiency and phlegm, ultimately manifesting as obesity.

5.1 Spleen Qi Deficiency with Insufficient Propulsive Force

The Wan Family's Secret of Infant Care states: "The spleen is often deficient." During childhood, the delicate spleen is easily disrupted by irregular eating habits, leading to imbalances in hunger and fullness that impair spleen function and cause obesity [14]. Obesity is intrinsically linked to spleen and stomach dysfunction, primarily characterized by spleen deficiency and impaired transformation. As The Plain Questions: Treatise on Bi Syndrome states: "When food intake doubles, the intestines and stomach become injured." Spleen deficiency impairs the transformation of food and fluids, disrupting the distribution of body fluids. These fluids accumulate and transform into fatty deposits, which can settle anywhere in the body and become pathological factors contributing to obesity. Spleen deficiency also leads to muscle weakness in the limbs. Combined with the retention of dampness and phlegm, this causes generalized heaviness and fatigue, creating a vicious cycle. The Treatise on the Origins of Miscellaneous Diseases states: "Those who are obese must have deficient qi." When dietary intake exceeds the spleen and stomach's transformative capacity, surplus accumulates in the middle jiao, obstructing the ascending and descending movements of qi. This cycle perpetuates spleen-stomach weakness, impaired transformation, and metabolic dysfunction, hindering the expulsion of dampness, phlegm, and fluid retention. This leads to the formation of greasy turbidity. Over time, this stagnant greasy turbidity develops into obesity [15]. Traditional Chinese medicine holds that "movement generates yang." Spleen deficiency manifesting as impaired transport and transformation results in flaccid, weak limbs and muscles. Fluids accumulate throughout the

body, obstructing qi circulation and causing limb fatigue and lassitude. Over time, this impairs the spleen's physiological transport and transformation functions, gradually leading to obesity.

5.2 Phlegm-dampness Accumulation with Fluid Retention

Danxi's Essentials of Therapeutic Methods first proposed that "obese and fair-skinned individuals often suffer from phlegm-dampness." The Ling Shu: Five Types of Urinary Disorders and Body Fluids states: "The essence of the five grains harmonizes to form greasy substances," indicating that human body fluids contain fatty substances. The Classic of Difficulties: Treatise on Cold Extremities states: "The spleen governs the stomach in transporting fluids." After the stomach receives water and grains, it relies on the spleen to transport their essence to other organs and body parts. Phlegm-dampness constitution arises when abnormal fluid functions cause stagnation within the body, producing pathological byproducts of phlegm and dampness that intermingle. This manifests as abdominal fat accumulation, bloating, greasy perspiration, and a sticky tongue coating. Prolonged or excessive consumption of rich, greasy foods, coupled with prolonged exposure to damp environments, damages spleen function and disrupts fluid metabolism. Traditional Chinese medicine holds that the spleen's transformative and transportative functions are crucial—it generates qi, blood, and fluids from food and drink while playing a vital role in fluid metabolism [16]. As recorded in Yu Chuan's Medical Orthodoxy: Sores and Ulcers: "Obesity generally stems from qi deficiency accompanied by phlegm." Children often have constitutional spleen deficiency. Combined with poor diet, lack of exercise, and spleen dysfunction, this impairs absorption of nutrients and fluid metabolism. Accumulated dampness and fluid then congeal into phlegm-turbidity and greasy substances, leading to obesity. Spleen qi deficiency impairs the transformation and transportation of nutrients, causing stagnation within the body. The accumulation of greasy substances and phlegm-dampness manifests as obesity [14]. Thus, the pathological foundation of obesity lies in the excessive accumulation of phlegm-dampness, which is the primary cause of childhood obesity.

6. Integrated Treatment Model for Pediatric Spinal Curvature: "One Medication, Two Pressures, Three Exercises"

6.1 "One Medication" Focuses on Regulating the Spleen and Qi, Eliminating Dampness and Transforming Turbidity.

The Wen Dan Decoction mentioned in the Song Dynasty text San Yin Ji: Treatise on Diseases, Syndromes, and Formulas primarily consists of Pinellia, Bamboo Shavings, Zhi Shi, Chen Pi, Licorice, and Ginger [17]. Pinellia, used as the principal herb in the formula, possesses pungent and warm properties to dry dampness and phlegm, harmonize the stomach, and stop vomiting. Bamboo Shavings, sweet and slightly cold, clear the gallbladder, drain dampness, clear phlegm-heat, harmonize the stomach, and stop vomiting. Zhi Shi assists by descending qi, transforming phlegm, eliminating fullness, and guiding stagnation. Chen Pi

regulates qi, strengthens the spleen, dries dampness, and transforms phlegm—both aiding Zhi Shi in qi regulation and enhancing Pinellia's phlegm-resolving action. Poria fortifies the spleen, drains dampness, promotes diuresis, and calms the heart. Ginger and jujube tonify the middle and boost qi, stabilizing the spleen earth element to prevent dampness accumulation and stagnation, serving as auxiliary herbs. Fried licorice root benefits qi, harmonizes the middle, and moderates the actions of all herbs. Thus, this formula provides warm tonification without dryness, promotes circulation without stagnation, perfectly suited to children's delicate constitution that cannot tolerate extreme cold or heat. Thus, Wendan Decoction demonstrates efficacy in fortifying the spleen and boosting qi, draining dampness and resolving phlegm, and stabilizing the spleen earth element within the Five Elements system. Furthermore, research indicates that bioactive compounds in Chinese herbs can reduce patients' blood lipids and adipose thickness by regulating gut microbiota distribution. They enhance metabolic production of SCFAs (short-chain fatty acids), mitigate inflammatory damage, and improve energy metabolism, thereby alleviating obesity [18].

TCM can treat obesity by regulating adenosine monophosphate-activated protein kinase (AMPK), the autonomic nervous system, or β -adrenergic receptors to enhance lipid breakdown. Activated AMPK coordinates metabolic pathways by phosphorylating key metabolic proteins and transcription factors, thereby promoting catabolism and inhibiting lipid synthesis [7]. TCM holds distinct advantages in obesity treatment. When addressing childhood obesity, TCM employs holistic principles and syndrome differentiation, integrating the Five Elements theory with qi dynamics and combining internal and external therapies. By fortifying, transporting, and transforming the spleen-stomach functions, it centers on regulating qi dynamics to harmonize ying-wei qi, strengthen the spleen, support the body's vital energy, restore the ascending and descending movements of qi, and reinstate normal physiological functions across organs and digestive capacity.

6.2 “Double Pressure” to Clear Meridians and Regulate the Spleen and Stomach

Pressure on ear acupuncture points is known as ear acupressure. Traditional Chinese medicine theory posits that the body's meridians converge in the auricle, with meridians and internal organs connected to specific ear points [19]. Stimulating the vagus nerve in the ear transmits signals to the central nervous system, increasing satiety and reducing appetite [20]. Stimulating reflex points on the outer ear transmits energy to corresponding internal organs to exert therapeutic effects [21]. Ji Jinwei [22] observed changes in body measurements before and after treatment in 31 patients, including weight, waist circumference, hip circumference, BMI (body mass index), and WHR (waist-to-hip ratio). Ear points selected included Sympathetic, Large Intestine, Stomach, Spleen, Hunger Point, Triple Energizer, and Endocrine. Among the 31 patients, 27 responded effectively and 4 did not respond, with an overall success rate of 87.10%, indicating significant efficacy of auricular acupressure in treating SO. Auricular acupressure involves applying smooth, spherical pellets affixed with adhesive tape to ear points,

exerting pressure to stimulate them therapeutically. Compared to acupuncture, it is better tolerated by children due to reduced pain perception [23]. Ear acupressure pellets offer clinical advantages including low production costs, affordability, non-invasive nature, and ease of application, enabling widespread clinical use. Stimulating corresponding ear points with pellets regulates organ function and balances yin-yang energy.

The second pressure technique involves meridian point pressing and massage manipulation. Through techniques like pressing, pushing, grasping, and pressing, force is evenly and persistently transmitted into body tissues to achieve therapeutic goals [24]. Modern medicine recognizes that pressing and kneading effectively stimulate superficial muscles, thereby enhancing metabolic capacity by activating the circulatory and metabolic systems to burn excess body fat. This technique employs “meridian unblocking” and “qi and blood regulation” to harmonize qi and blood throughout the body, treating diseases by clearing meridians and activating acupoints [25]. Wei Qinglin [26] primarily selected the Spleen Meridian, Stomach Meridian, Conception Vessel, and Bladder Meridian for treatment, focusing on pressing and kneading Zhongwan (CV12), Tianshu, Qihai, Zusanli, Fenglong, and Sanyinjiao, along with pressing and kneading the Spleen Shu, Stomach Shu, Large Intestine Shu, and Qihai Shu points. Post-treatment measurements showed significant reductions in body mass, BMI, and weight, demonstrating that meridian-based acupressure massage is effective in treating childhood SO. By stimulating acupoints and meridians through acupressure and massage during SO treatment, this approach coordinates the five zang organs and six fu organs, unblocks meridians, promotes the metabolism of qi, blood, and body fluids, and achieves the effects of regulating the spleen, harmonizing qi, dispelling dampness, and transforming turbidity.

6.3 The Three Activities Harmonize Yin and Yang and Promote the circulation of Qi and Blood

Engaging in appropriate exercise can help control weight and strengthen the body. Under long-term moderate-intensity aerobic exercise, fat burning and energy intake remain in a sustained negative growth phase, thereby achieving weight control [27]. Obese children often have low activity levels and poor physical abilities, making it difficult to maintain exercise routines. Therefore, when designing exercise prescriptions, it is essential to consider not only weight loss effectiveness but also the enjoyment of the activities [28]. Traditional Chinese medicine holds that “movement generates yang energy.” Physical activity promotes the rise of yang energy within the body, regulates qi flow, balances mental and emotional states, and ensures the normal circulation of qi, blood, and body fluids.

Activity 1: School Recess Exercises Tang Yanping [29] divided 60 overweight children into a control group and an experimental group. The control group participated in traditional recess activities, while the experimental group underwent a semester-long exercise intervention. Each group comprised 30 children. Comparative analysis of physical morphology indicators revealed significant decreases in BMI for both boys and girls ($P < 0.05$). boys showed significant

increases in height and weight ($P < 0.05$), while girls exhibited a marked downward trend in weight ($P < 0.01$). Scientifically designed large-scale recess exercises can effectively mitigate obesity.

Second activity: Outdoor activities. For children, prioritize engaging, movement-based recreational sports such as long-distance running, walking, swimming, skipping rope, soccer, and relay races. For adolescents, moderately intense activities like rowing, mountain climbing, or cycling are suitable [30]. Outdoor activities provide fresh air, combine movement with relaxation, regulate mental state, accelerate metabolism, enhance fat breakdown, reduce fat accumulation, and aid in fat and weight reduction.

The third activity refers to psychological engagement. Beyond excessive food consumption, psychological factors may also influence obesity progression. Research indicates that psychomotor therapy and psychotherapy can serve as valuable supplements to traditional obesity treatments [31]. Obese children often experience impaired psychological functioning, making them more susceptible to body image-related issues such as depression, anxiety, low self-esteem, and negative emotions. Psychological approaches like cognitive behavioral therapy have been identified as evidence-based weight loss treatments [32].

Based on the above discussion, we propose that healthy psychological counseling should be provided to obese children, as proper psychological guidance facilitates the treatment of childhood obesity. Traditional Chinese Medicine classifies psychological activities as emotional activities, which also influence spleen function, liver qi dispersion, and the circulation of qi, blood, and body fluids. Normal emotional activities promote liver qi dispersion, fluid metabolism, and phlegm-fluid resolution, thereby improving obesity.

7. Conclusion

Childhood SO severely impacts the physical and mental health of affected children during their developmental years. Traditional Chinese Medicine posits that the onset of this condition is linked to the central earth of the spleen, while the smooth flow of spleen qi plays a crucial role throughout the entire course of childhood SO. Based on this, the aforementioned article analyzes the fundamental pathogenesis of pediatric SO—"spleen dysfunction and stagnation of spleen qi"—from the perspectives of the spleen's central earth and spleen qi. This leads to the formation of deficiency and phlegm pathological factors. It proposes an integrated treatment model of "one medication, two pressures, and three activities" for managing pediatric SO.

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