

An Ayurvedic Perspective on Childhood Tuberculosis: Prevention and Management through Kaumarbhritya

Dr. Mritunjay Kumar

Email: mritunjay.chawrasia7@gmail.com

B.A.M.S. – D.A.M.C.H, Siwan

M.D. (Kaumarbhritya) – V.Y.D.S.A.M.C, Khurja

P.G. D.M.C.H – S.V.S.U, Meerut

Ex. Assistant Professor – N.A.M.C.H, Muzaffarpur
(Dept. Kaumarbhritya)

Medical Officer, Bihar Government, Jamui

Abstract

Childhood tuberculosis remains a significant health concern, particularly in developing countries. In Ayurveda, this condition resembles Balashosha, described under Rajayakshma and other wasting disorders. This paper presents an integrative approach combining Ayurvedic wisdom from Kaumarbhritya with contemporary pediatric TB management. It explores Ayurvedic concepts of Nidana (causative factors), Lakshana (clinical features), and Chikitsa (treatment) of Balashosha, highlights the role of Rasayana therapy, and discusses commonly used herbs like Guduchi, Ashwagandha, Vasa, and Haridra. A comparative understanding of Ayurvedic and modern perspectives emphasizes the potential for integrative care in managing childhood tuberculosis.

Keywords: Balashosha, Childhood Tuberculosis, Kaumarbhritya, Rasayana, Ayurveda, Immunomodulation, Pediatric TB

1. Introduction

Tuberculosis (TB) remains a leading infectious disease worldwide, particularly affecting vulnerable populations like children, whose immune systems are still developing. According to

the World Health Organization (WHO, 2023), TB caused an estimated 1.2 million new pediatric cases globally, with India contributing to a significant proportion of these due to factors such as overcrowding, poverty, undernutrition, and limited access to healthcare. Despite medical advancements, childhood TB remains underdiagnosed and undertreated, especially in rural and underserved areas. In Ayurveda, childhood TB can be equated with a condition known as Balashosha, described in detail in the classical texts of Kaumarbhritya, the branch of Ayurveda dedicated to child health. Balashosha is a type of Shosha (wasting disorder) that manifests in children as chronic weakness, weight loss, persistent cough, and respiratory distress—symptoms mirroring the clinical presentation of modern pediatric pulmonary tuberculosis. The Ayurvedic perspective offers a unique holistic model for disease prevention and treatment. It takes into account Nidana (causative factors), Dosha-Dushya involvement, Agnibala (digestive strength), and Ojas (immunity and vitality). In Kashyapa Samhita, considered the primary text on Ayurvedic pediatrics, emphasis is placed on maternal health during pregnancy, breastfeeding practices, and early child nutrition as crucial determinants of a child's immunity and susceptibility to disease (Kashyapa Samhita, Khila Sthana).

Moreover, Rajayakshma, a term used in Ayurveda to describe wasting diseases often associated with chronic cough and debility, is extensively discussed in Charaka Samhita (Chikitsa Sthana 8) and Sushruta Samhita (Uttara Tantra 54). These descriptions closely match what modern medicine now understands as tuberculosis, particularly the extra-pulmonary and wasting forms seen in children. A notable difference between the two systems lies in their approach. While modern biomedicine focuses primarily on the eradication of *Mycobacterium tuberculosis* through antimicrobial therapy (e.g., Isoniazid, Rifampicin), Ayurveda emphasizes restoring systemic balance and enhancing immunity using Rasayana (rejuvenating therapies), dietary modifications, and herbal interventions (Sharma PV, 2002; Patwardhan B, 2005). In this integrative framework, both systems can complement each other—antibiotics targeting the pathogen, and Ayurvedic protocols fortifying the host.

From a public health perspective, the National Tuberculosis Elimination Program (NTEP) in India has made progress in detecting and treating TB in children, yet adherence issues, resistance, and post-treatment debility remain serious challenges. Ayurveda can contribute in this phase by using immunomodulatory herbs like Guduchi (*Tinospora cordifolia*) and Ashwagandha (*Withania somnifera*) to assist recovery, reduce relapse, and improve quality of life (Gaurav et al., 2021). Nutritional deficiencies also play a central role in both the cause and effect of childhood TB. Ayurveda recognizes Kshaya (depletion) not only as a symptom but as a pathogenic factor that weakens tissues (Dhatus) and immunity (Ojas), making children susceptible to chronic infections. Nutritional interventions are recommended in both systems, but Ayurveda brings a deeper understanding of Ahara Rasa (nutritional essence) and prescribes individualized dietary regimens based on a child's constitution (Prakriti) and digestive strength (Agni). Recent clinical studies have started to validate these ancient insights. For instance, Anjali et al. (2020) showed that adjuvant Rasayana therapy significantly improved weight gain, energy levels, and cough control in children receiving standard anti-TB therapy. Likewise, Chyawanprash, an Ayurvedic polyherbal jam, has been found to enhance general immunity in children when administered as a preventive measure (Ministry of AYUSH, 2019).

2. Ayurvedic Perspective on Balashosha

2.1 Nidana (Etiology/Causes)

Balashosha, as described in Ayurvedic literature, is a pediatric condition associated with chronic tissue depletion and systemic weakness. It shares a striking resemblance to pediatric tuberculosis (TB) in its pathogenesis and clinical presentation. The understanding of Nidana (etiological factors) in Ayurveda involves internal, external, and hereditary contributors that weaken Agni (digestive fire), disturb dosha balance, and lead to the deterioration of dhatus (tissues). These factors create a conducive environment for diseases such as Balashosha to manifest, particularly in vulnerable pediatric populations. The following causes are most commonly cited in classical texts such as *Kashyapa Samhita*, *Charaka Samhita*, and *Ashtanga Hridaya*:

a) Dhatu-Kshaya (Tissue Depletion)

The concept of dhatu-kshaya refers to the progressive reduction in tissue integrity and strength. In Balashosha, the early depletion of Rasa, Rakta, Mamsa, and Ojas leads to the systemic weakness characteristic of this condition. This aligns closely with malnutrition-induced immune suppression seen in pediatric TB cases. Recurrent illnesses, chronic undernourishment, or improper feeding practices may result in such dhatu depletion.

Charaka Samhita (Chikitsa Sthana 8/41) explains Rajayakshma as a result of long-standing dhatu-kshaya caused by improper food habits, excessive exertion, and mental stress, which directly compromises immunity and vitality (*Charaka Samhita*, Chikitsa Sthana 8).

b) Agni-Mandya and Ama (Impaired Digestion and Toxin Accumulation)

A weak digestive fire (Agni-Mandya) is often considered a root cause of chronic diseases in Ayurveda. In children, immature or impaired digestion leads to the accumulation of Ama—a toxic, undigested metabolic byproduct. Ama vitiates the doshas and obstructs the nourishment of tissues, which is thought to contribute to the development of systemic diseases such as Balashosha.

Ashtanga Hridaya states that “Agnimandya is the root of all diseases,” particularly when it leads to ama formation and the disturbance of dosha equilibrium (*Ashtanga Hridaya*, Sutra Sthana 13).

c) Dushta Stanya (Vitiated Breast Milk)

In Ayurvedic pediatrics, breast milk quality is critically important. When the mother is affected by dosha imbalances, improper diet, or illness, her milk becomes vitiated (dushta stanya), which adversely affects the infant’s digestion and immunity. According to *Kashyapa Samhita*, improper breastfeeding or early weaning is a significant risk factor for the development of childhood diseases, including Balashosha.

The Khila Sthana of *Kashyapa Samhita* emphasizes that “Stanyadosha,” or vitiated breast milk, contributes to rogas in infants by affecting their Agni, leading to mandagni and balakshaya (*Kashyapa Samhita*, Khila Sthana).

d) Adverse Environmental Exposure

Exposure to environmental stressors such as cold air, dust, smoke, and polluted or overcrowded living conditions is known in Ayurveda to provoke Vata and Kapha dosha, leading to respiratory and systemic disturbances. These external factors are well established in modern medicine as triggers or risk factors for pediatric pulmonary TB transmission and progression.

Charaka Samhita highlights that children exposed to excessive sheeta (cold), raja (dust), and dhuma (smoke) are more prone to developing respiratory and wasting disorders (*Charaka Samhita*, Sutra Sthana 20).

e) Bija Dosha and Matruja Factors (Congenital or Maternal Imbalance)

Ayurveda attributes some pediatric disorders to hereditary defects or maternal dosha imbalances during conception and gestation. If the mother’s Rasa dhatu or dosha balance is disturbed during pregnancy, it can impact fetal development and immunity, predisposing the child to chronic illnesses like Balashosha.

Kashyapa Samhita discusses Matruja doshas and defective garbha samskara as influencing long-term health and immunity in children (*Kashyapa Samhita*, Sharira Sthana).

The causative factors of Balashosha presented in classical Ayurvedic texts show a comprehensive understanding of malnutrition, immune deficiency, and environmental exposure, which correspond with the recognized risk factors for pediatric tuberculosis in contemporary medicine. This integrative recognition underscores the potential value of Ayurvedic insights in supporting public health strategies for childhood TB.

2.2 Lakshana (Symptoms)

Lakshana, or clinical features, are crucial for the diagnosis and understanding of any disease in Ayurveda. In the case of Balashosha, classical Ayurvedic texts such as *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, and *Kashyapa Samhita* describe a cluster of symptoms that closely resemble the clinical profile of pediatric pulmonary tuberculosis. These symptoms primarily indicate dhatu kshaya (tissue depletion), ojas kshaya (loss of immunity/vital energy), and dosha dushti (vitiation of bodily humors). Balashosha is generally associated with Rajayakshma, which is characterized by chronicity, progressive wasting, and multisystem involvement.

Key Lakshana (Symptoms) as per Classical Texts:

1. Kāsa (Chronic Cough)

One of the most prominent symptoms, Kāsa or persistent cough, is a cardinal sign in both Balashosha and modern pediatric TB. In Ayurveda, this results from Kapha accumulation in the lungs due to poor digestion and weak immunity, which obstructs the respiratory channels (*pranavaha srotas*).

Sushruta Samhita states that “Kāsa arises from the vitiation of Vata and Kapha in the chest region, particularly when aggravated by dust, smoke, or weak digestion” (*Sushruta Samhita*, Uttara Tantra, Chapter 54).

2. Jvara (Intermittent Fever)

Low-grade, recurrent fever (Jvara) is a classical feature. Unlike high fever of acute infections, Rajayakshma jvara is chronic and cyclical, correlating with the evening rise in temperature commonly seen in TB patients.

Charaka Samhita notes that “fever in Rajayakshma is not continuous but waxes and wanes due to dosha fluctuation,” a description that matches the classical TB fever pattern (*Charaka Samhita*, Chikitsa Sthana 8/60).

3. Kshaya (Weight Loss/Emaciation)

Kshaya, or emaciation, is central to the diagnosis of Balashosha. The term implies the progressive reduction of mamsa (muscle), meda (fat), and ojas, which weakens the body and mirrors the cachexia (wasting) seen in children with untreated or chronic TB.

Ashtanga Hridaya lists “Sharira Kshaya” as a key lakshana of Rajayakshma and explains it as a visible result of long-standing tissue depletion due to faulty digestion and dosha imbalance (*Ashtanga Hridaya, Chikitsa Sthana 6*).

4. Daurbalya (Fatigue and Weakness)

Daurbalya refers to general debility and reduced capacity for physical activity. It arises due to pranic depletion and ojas kshaya, leading to lack of energy, irritability, and lethargy in affected children.

In *Kashyapa Samhita*, children suffering from Balashosha are described as being “alpavīrya” (having low strength) and asaktachitta (unable to focus or stay active) (*Kashyapa Samhita, Khila Sthana*).

5. Anannabhilāsha (Loss of Appetite)

A consistent symptom, Anannabhilāsha (loss of desire for food), is described as both a cause and symptom of Balashosha. This correlates well with anorexia seen in TB, especially in malnourished children.

Bhavaprakasha identifies that decreased appetite stems from Agni-mandya, which not only leads to inadequate nutrient absorption but also worsens tissue depletion (*Bhavaprakasha, Madhyama Khanda*).

6. Shvāsa (Breathing Difficulty / Dyspnea)

As the disease progresses, Shvāsa or labored breathing may develop, particularly if Kapha obstructs the airways or Vata aggravation affects lung function. This symptom aligns with moderate to advanced pulmonary TB, where respiratory distress becomes evident.

Charaka Samhita lists “kasa, jvara, shvasa, parshva shoola (chest pain)” as combined symptoms in *Rajayakshma* (*Charaka Samhita*, Chikitsa Sthana 8/70).

Clinical Correlation with Modern Pediatric TB:

Many of these classical Ayurvedic symptoms have a strong correlation with WHO-recognized symptoms of pediatric tuberculosis, including:

- Persistent cough for >2 weeks
- Unexplained weight loss or failure to thrive
- Persistent low-grade fever
- Fatigue and reduced playfulness
- Poor appetite
- Night sweats and chest congestion (in later stages)

The WHO Global TB Report (2023) confirms these symptoms as part of standard pediatric TB diagnosis, particularly in low-resource settings where diagnostic tools may be limited.

The classical Ayurvedic description of Balashosha Lakshana is remarkably aligned with the symptomatology of pediatric pulmonary TB recognized today. These detailed and systemic observations emphasize the depth of Ayurvedic diagnostics, which are based not only on isolated symptoms but also on constitutional factors, digestive capacity, and mental and behavioral signs, offering a truly holistic clinical framework.

2.3 Chikitsa (Treatment Protocol)

The Ayurvedic treatment of Balashosha, a condition closely resembling childhood tuberculosis, follows the foundational principles of Trisutra Siddhanta—Hetu (cause), Lakshana (symptoms), and Aushadha (treatment). In Ayurveda, the management of chronic wasting disorders in children emphasizes not only eradicating the causative pathology but also nourishing depleted tissues, restoring Agni (digestive strength), and rebuilding Ojas (vital immunity). This holistic strategy aligns with the modern need for integrated care in pediatric TB, particularly when children are also malnourished or immunocompromised.

1. Deepana-Pachana (Stimulating Digestion and Eliminating Toxins)

Before rejuvenation or tissue-nourishing therapies can be introduced, Ayurveda prescribes a phase of metabolic correction. This involves:

- Deepana: Herbs that kindle Agni (digestive fire), e.g., Shunthi (*Zingiber officinale*), Pippali (*Piper longum*), and Chitraka (*Plumbago zeylanica*)
- Pachana: Herbs that help eliminate Ama (toxins), e.g., Trikatu, Hingu, and Ajmoda

Ashtanga Hridaya suggests that without correcting Agni and removing Ama, Rasayana therapies are less effective or may even be counterproductive (*Ashtanga Hridaya, Chikitsa Sthana 1/27*). This phase is comparable to preparing the gut microbiome and ensuring nutritional absorption in modern clinical settings before initiating calorie or supplement therapy.

2. Rasayana Chikitsa (Rejuvenation and Immunomodulation)

Rasayana is the cornerstone of Ayurvedic treatment for chronic degenerative and immunodeficient conditions. Rasayanas rejuvenate the tissues, enhance resistance to disease, improve metabolism, and increase Bala (strength) and Ojas (immunity). In Balashosha, specific Balya Rasayanas (strength-enhancing rejuvenatives) are used.

Commonly used Rasayana formulations:

- Chyawanprash – Classical Avaleha with over 40 herbs; antioxidant, immune-boosting, and nutritive (Ministry of AYUSH, 2019)
- Ashwagandhadi Leha – For weight gain, strength, and tissue rebuilding

- Pippalyadi Ghrita – For chronic cough, low appetite, and digestion
- Swarna Prashana – Gold-based immunization described in *Kashyapa Samhita* for long-term disease prevention

A study by Gaurav et al. (2021) concluded that Rasayana therapy, when used as an adjuvant in pediatric TB, improved weight gain, reduced recurrence, and enhanced overall clinical outcomes (Journal of Ayurveda and Integrative Medicine, 2021).

3. Balya Chikitsa (Strengthening Therapy)

Ayurveda emphasizes Balya dravyas to restore strength in children suffering from chronic disorders. This includes:

- Herbs like Bala (*Sida cordifolia*), Shatavari (*Asparagus racemosus*), Yashtimadhu (*Glycyrrhiza glabra*)
- Milk-based preparations such as Bala Taila, used both internally and for Abhyanga (oil massage)
- Nutritive lehyas (herbal jams) that help in tissue nourishment (especially Mamsa and Meda Dhatus)

Charaka Samhita advises that in Yaksma roga (TB-like wasting diseases), the child should be treated with “santarpana chikitsa” (nourishing therapy) after deepana and pachana (*Charaka Samhita*, Chikitsa Sthana 8/140).

4. Use of Specific Herbal Medicines

Several Ayurvedic herbs are recommended for symptom-specific management of Balashosha:

Herb	Action
Guduchi (<i>Tinospora cordifolia</i>)	Rasayana, antipyretic, immunomodulator
Ashwagandha (<i>Withania somnifera</i>)	Adaptogen, anabolic, tissue builder

Pippali (<i>Piper longum</i>)	Bio-enhancer, expectorant
Haridra (<i>Curcuma longa</i>)	Anti-inflammatory, antimicrobial
Vasa (<i>Adhatoda vasica</i>)	Anti-tussive, bronchodilator

These herbs are often combined in classical preparations to create synergistic effects and improve bioavailability.

According to the Ayurvedic Pharmacopoeia of India, these herbs are validated for their use in conditions like chronic cough, fever, and wasting disorders (API Vol 1–6, Govt. of India).

5. Ahara and Poshana (Diet and Nutrition)

Nutrition plays a pivotal role in Ayurvedic management. Balashosha is viewed as both a disease and a nutritional syndrome. The prescribed dietary principles aim to be:

- Brimhana (bulk-increasing)
- Snigdha (unctuous and nourishing)
- Laghu (easy to digest)

Recommended Foods:

- Shashtika Shali (red rice) cooked in milk
- Go-dugdha (cow's milk) and Ghrita (ghee)
- Mudga Yusha (green gram soup) with digestive spices
- Fresh seasonal fruits and dates/dry fruits soaked in milk

Kashyapa Samhita specifically recommends milk-based preparations and snehana (oleation) therapies for post-illness rebuilding in children (*Kashyapa Samhita, Lehana Adhyaya*).

6. Sattvavajaya and Lifestyle Therapy (Vihara)

Ayurveda considers mental well-being a part of treatment, especially in chronic illnesses. Children suffering from Balashosha often exhibit signs of irritability, depression, and social withdrawal. Sattvavajaya chikitsa, or behavioral upliftment, includes:

- Emotional support from caregivers
- Gentle play and recreation
- Ensuring regular sleep and rest
- Avoidance of sensory overload (bright lights, loud noises)

Charaka notes that treatment of diseases involving ojas kshaya must also address manas (mind) through sattvic support (*Charaka Samhita*, Sutra Sthana 1).

Ayurvedic chikitsa for Balashosha is a multi-pronged therapeutic approach that encompasses metabolic correction, immune restoration, nutritional support, and mental well-being. This system does not just target the disease organism, as in modern antimicrobials, but supports the child's innate healing ability (Bala and Ojas) through herbs, food, lifestyle, and Rasayana therapy. When integrated with modern treatment protocols, these interventions may significantly improve outcomes in childhood TB cases.

3. Comparative Understanding with Modern Medicine

Aspect	Ayurveda (Balashosha)	Modern Medicine (Pediatric TB)
Cause / Etiology	<ul style="list-style-type: none"> - Dosha imbalance (mainly Vata and Kapha) - Dhatu-Kshaya (tissue depletion) - Agni-Mandya (digestive weakness) - Ama (toxin accumulation) - Dushta Stanya (vitiated breast milk) - Poor maternal health 	<ul style="list-style-type: none"> - Infection by <i>Mycobacterium tuberculosis</i> - Transmission through airborne droplets - Close contact with active TB cases - Immunosuppression (HIV, malnutrition)

Pathology / Disease Process	<ul style="list-style-type: none"> - Disturbance in Rasa-Rakta-Mamsa dhatus - Formation of Ama blocks Srotas (channels) - Depletion of Ojas (vitality/immunity) - Progressive Vata aggravation leads to degeneration 	<ul style="list-style-type: none"> - Bacilli infect lungs or extrapulmonary sites - Formation of granulomas and caseous necrosis - Host immune response causes lung damage - Wasting due to systemic inflammation and malnutrition
Terminology for the Disease	<ul style="list-style-type: none"> - Referred to as Balashosha, a type of Shosha - Also described under Rajayakshma in classical texts 	<ul style="list-style-type: none"> - Known as Pediatric Tuberculosis - Categorized as Pulmonary TB or Extrapulmonary TB
Symptoms (Lakshana)	<ul style="list-style-type: none"> - Kāsa (chronic cough) - Jvara (low-grade fever) - Kshaya (weight loss) - Daurbalya (weakness) - Anannabhilāsha (loss of appetite) - Shvāsa (breathlessness) 	<ul style="list-style-type: none"> - Cough > 2 weeks - Fever (especially evening rise) - Weight loss or failure to thrive - Fatigue, lethargy - Poor appetite - Night sweats
Diagnosis	<ul style="list-style-type: none"> - Based on Nidana (causes) and Lakshana (symptoms) - Clinical examination - Pulse diagnosis (Nadi Pariksha) - Observing Agni, Bala, and Ojas 	<ul style="list-style-type: none"> - Mantoux test (Tuberculin skin test) - Chest X-ray - Sputum microscopy / CBNAAT / GeneXpert - TB LAM test in HIV+ cases - Culture and histopathology in extrapulmonary TB
Treatment Principles	<ul style="list-style-type: none"> - Trisutra Siddhanta: Identify cause, observe symptoms, treat with suitable medicines - Enhance Agni (Deepana-Pachana) - Rejuvenate with Rasayana 	<ul style="list-style-type: none"> - DOTS Therapy: Multi-drug therapy with isoniazid, rifampicin, pyrazinamide, ethambutol - Supportive nutrition - Monitoring for

	- Use Balya (strengthening) herbs - Improve Ahara (nutrition)	drug resistance - Adherence-focused care through community health
Drugs / Medicines Used	- Guduchi, Ashwagandha, Pippali, Haridra, Vasa - Classical preparations: Chyawanprash, Pippalyadi Ghrita, Ashwagandhadi Leha	- First-line anti-TB drugs: INH, Rifampicin, Pyrazinamide, Ethambutol - Second-line for MDR-TB: fluoroquinolones, bedaquiline, etc.
Duration of Treatment	- Depends on chronicity and Agni-bala - 3–6 months typical for Rasayana therapy - May extend longer for Santarpana (nourishment) phase	- 6 months (standard) - 9–12 months in severe or drug-resistant cases - Ongoing monitoring needed post-treatment
Nutrition and Diet (Ahara)	- Brimhana Ahara : Milk, ghee, rice, green gram, dates - Emphasis on digestibility and nourishment - Use of medicated ghee (Ghrita) for tissue repair	- Calorie-dense, protein-rich diet - Supplementation with micronutrients (iron, zinc, vit A) - Ready-to-use therapeutic foods in malnourished children
Immunity Support	- Ojas-focused immunity building - Use of Swarna Prashana (gold-based immunization) - Rasayana herbs enhance resistance to recurrence	- BCG vaccination (prevention) - Immune support via nutrition - Management of comorbidities (e.g., HIV, anemia)
Prevention Strategies	- Samskaras (pre-natal and post-natal care) - Maternal health optimization - Swarna Prashana and herbal tonics	- BCG vaccine in newborns - Contact tracing and prophylaxis - Hygiene,

	for immunity	improved housing, and ventilation
Psychosocial Care	- Emphasis on Sattvavajaya Chikitsa (mental well-being) - Emotional nurturing, proper sleep, play, parental bonding	- Psychological counseling for chronic illness - School reintegration programs - Supportive group therapy in prolonged cases
Limitations / Challenges	- Lack of standardized dosing in pediatrics - Need for practitioner skill in classical methods - Limited large-scale clinical trials	- Drug side effects (e.g., hepatotoxicity) - Treatment adherence issues - Multidrug resistance and TB-HIV coinfection

Both systems recognize the importance of early diagnosis, immune strength, and nutrition.

4. Role of Rasayana in Balashosha

Rasayana therapy occupies a central role in the Ayurvedic management of chronic and degenerative diseases, particularly in children suffering from Balashosha—a condition that closely parallels childhood tuberculosis. The word *Rasayana* literally means “that which nourishes the *rasa* (plasma),” but its deeper implication is rejuvenation, immune enhancement, and restoration of tissue vitality. In the context of Kaumarbhritya (Ayurvedic pediatrics), Rasayana is not merely a treatment modality but a life-strengthening intervention that supports the body’s capacity to recover from long-term illness, resist future disease, and promote normal physical and mental development.

In classical texts such as the *Charaka Samhita* (Chikitsa Sthana 1/1–30), Rasayana therapy is described as improving Ayushya (lifespan), Medha (intellect), Bala (strength), Roganutatvam (disease resistance), and Ojas (vitality)—attributes that are critically affected in children with wasting diseases like TB. Rasayana drugs enhance the quality and quantity of dhatus, boost Agni

(digestive and metabolic function), and restore Srotas (body channels) that are often blocked by *Ama* and depleted by dosha imbalance.

Among the most effective Rasayana herbs for managing Balashosha, Guduchi (*Tinospora cordifolia*) is extensively mentioned in the *Bhavaprakasha Nighantu* for its immunomodulatory, antipyretic, and anti-inflammatory properties. Studies have validated its role in stimulating macrophage activity and reducing oxidative stress, making it beneficial in both prevention and post-treatment recovery of TB (Sharma PV, *Dravyaguna Vijnana*, Vol. 2; Gaurav et al., 2021). Ashwagandha (*Withania somnifera*) is another cornerstone Rasayana, particularly effective in enhancing muscle mass (mamsa dhatu) and promoting resilience against stress. It has shown adaptogenic and anabolic effects in children recovering from chronic illness and is often recommended for weight gain and energy restoration.

Pippali (*Piper longum*), traditionally included in Trikatu formulations, serves as a bioavailability enhancer (Yogavahi) and aids in deepana-pachana (improving digestion and eliminating toxins). In clinical studies, Pippali has also been observed to enhance the absorption of co-administered herbal and modern drugs, making it an ideal adjuvant (Patwardhan et al., 2005). Haridra (*Curcuma longa*), best known for its antibacterial, anti-inflammatory, and antioxidant properties, is useful in managing chronic lung inflammation and preventing secondary infections. Meanwhile, Vasa (*Adhatoda vasica*), referenced in *Charaka Samhita* and *Sushruta Samhita*, is a mucolytic and bronchodilator that is highly effective in relieving Kasa (cough) and Shwasa (dyspnea) associated with TB.

These Rasayana herbs are not only administered as single agents but are also included in classical formulations designed for pediatric care. Chyawanprash, a revered Avaleha (herbal jam) made from more than 40 herbs including Amla, Guduchi, and Pippali, is widely used in children to build immunity, enhance digestion, and promote convalescence. Its regular use has been recommended in the Ministry of AYUSH guidelines for immunity boosting in school-aged children (AYUSH Advisory, 2019). Other preparations like Pippalyadi Ghrita and

Ashwagandhadi Leha are employed to simultaneously manage symptoms (e.g., cough, appetite loss) and support tissue repair.

The integration of Rasayana therapy with modern anti-TB treatment protocols offers a complementary strategy. Modern antimicrobials can eradicate *Mycobacterium tuberculosis*, but they often leave the child physically and mentally depleted. Rasayanas, on the other hand, play a restorative role, helping the child regain weight, rebuild strength, and prevent recurrence. Recent studies such as those by Anjali D. et al. (2020) and Gaurav S. et al. (2021) have shown that the addition of Rasayana therapy in children receiving DOTS therapy (Directly Observed Treatment, Short-course) led to faster weight recovery, improved appetite, and lower post-treatment fatigue compared to those on allopathic treatment alone.

5. Diet and Lifestyle Support (Ahara-Vihara)

In Ayurveda, Ahāra (diet) and Vihāra (daily routine and lifestyle) are regarded as foundational pillars of health. Their importance is especially pronounced in Kaumarbhritya, the branch dealing with pediatric care, where the body and mind are still developing. In the case of Balashosha—a condition reflecting pediatric tuberculosis—diet and lifestyle interventions are not just supportive but therapeutic in nature. Ayurveda emphasizes that no medicine can act effectively if Agni (digestive fire) is weak, or if the child is exposed to incompatible food or lifestyle routines (*Viruddhāhāra-vihāra*). Therefore, restoring digestive strength, nourishing depleted tissues, and supporting Ojas (vital essence) through proper dietary and behavioral practices is critical.

Dietary Support (Ahāra)

In the Ayurvedic management of wasting disorders (Shosha roga) like Balashosha, the diet must be Brimhana (bulk-promoting), Snigdha (unctuous), Guru (nourishing) yet Laghu (easily digestible). A carefully designed diet helps rebuild the depleted dhātus, especially Māṃsa (muscle tissue) and Meda (fat tissue), while also improving Agni and preventing Ama formation.

Key dietary recommendations include:

- Go-dugdha (cow's milk) and Ghṛita (clarified butter/ghee) – These are rich in Snigdha and Brimhana qualities, which nourish tissues and enhance Ojas. As per *Charaka Samhita* (Sutra Sthana 27/232), milk and ghee are considered ideal for children and convalescents recovering from chronic illnesses.
- Śāli Śāli Dhānya (Shashtika Shāli rice) – Red rice harvested in 60 days is light, nourishing, and easy to digest. It supports Agni without aggravating doshas and is highly recommended in the convalescent diet (*Kashyapa Samhita*, Lehana Adhyaya).
- Mudga Yūṣa (green gram soup) – Light, protein-rich, and gentle on digestion, this is beneficial during recovery and can be fortified with mild spices like Jeeraka (cumin) and Pippali to enhance digestion.
- Drākṣa (raisins), Kharjūra (dates), and medicated ghee preparations (e.g., Ashwagandhadi Ghrita) may be included to increase energy, improve strength, and support Rasa and Mamsa dhātu replenishment.

The diet should avoid:

- Guru, Rūkṣa, and Śīta ahāra (heavy, dry, and cold foods), which impair digestion and contribute to Ama formation.
- Overfasting or erratic eating schedules, which can disturb Vata dosha and worsen wasting.

Charaka emphasizes that “For children recovering from chronic illnesses, a Rasāyana-based, nourishing diet is more important than even medicine” (*Charaka Samhita*, Chikitsa Sthana 1/4).

Lifestyle Support (Vihāra)

Ayurveda places equal importance on daily routines (Dinācharya) and seasonal routines (Rtucharya) to maintain harmony in the body. In children with Balashosha, lifestyle interventions aim to calm Vata, restore strength, and improve mental well-being—all of which are compromised in chronic illness.

Key recommendations include:

- **Abhyanga (Oil Massage):** Daily oil massage using Bāla Taila, Ashwagandha Taila, or Kshirabala Taila helps nourish muscles, calm the nervous system, and improve sleep. According to *Ashtanga Hridaya* (Sutra Sthana 2), Abhyanga promotes strength (*Bala*), enhances skin health, and prevents Vata aggravation.
- **Snigdha Swedana (mild fomentation)** after oil massage improves circulation and removes stiffness or respiratory congestion, especially useful in chronic cough cases.
- **Stable routine with adequate rest:** Children with Balashosha should follow a structured day with adequate sleep (7–9 hours) and minimal stress. Avoidance of loud noises, excessive screen exposure, and emotional upheaval is recommended to protect Manasika Bala (mental strength).
- **Exposure to fresh air and sunlight** (Suryanamaskar or gentle play outdoors) supports both digestion and immunity—modern research also supports the role of sunlight in vitamin D synthesis, critical in TB recovery.

Kashyapa Samhita promotes regular Anulomana (bowel regulation) and mental balance through affection, storytelling, and music therapy to build emotional strength and Sattva in recovering children (*Kashyapa Samhita*, Khila Sthana).

Integration with Modern Concepts

The Ayurvedic recommendations align well with modern nutritional rehabilitation protocols for pediatric TB. WHO and ICMR stress the need for:

- High-calorie, protein-rich diets
- Micronutrient supplementation (iron, zinc, vitamins A and D)
- Behavioral support and counseling to improve treatment adherence

By customizing Ahāra-Vihāra to the child's constitution (Prakriti), digestive strength (Agni), and disease stage, Ayurveda provides a personalized regimen that can complement biomedical treatment and improve overall outcomes.

Diet and lifestyle form the core of both preventive and therapeutic care in Ayurveda, especially for children facing chronic conditions like Balashosha. Where medicines treat the disease, Ahāra and Vihāra rebuild the child, physically, mentally, and emotionally. The inclusion of warm, nourishing foods, digestive tonics, regular oil massage, sleep regulation, and emotional stability fosters the revival of Agni, Dhātu, and Ojas, leading to complete and sustained recovery. In cases of pediatric tuberculosis, this holistic regimen may greatly enhance resilience, speed up recovery, and reduce long-term complications.

6. Discussion

The Ayurvedic understanding of Balashosha offers a comprehensive, system-oriented view of childhood tuberculosis, addressing the root causes of tissue depletion, digestive dysfunction, and immune collapse. Unlike modern medicine, which targets the *Mycobacterium tuberculosis* pathogen directly through antimicrobial drugs, Ayurveda emphasizes restoring Agni, nourishing Dhatus, and enhancing Ojas, all of which are impaired in children with TB. Classical texts such as the *Charaka Samhita*, *Ashtanga Hridaya*, and *Kashyapa Samhita* view Balashosha not as an isolated pulmonary disease but as a multi-system disorder resulting from improper diet, weak digestion, doshic imbalance, environmental exposure, and compromised maternal health. These

concepts map closely onto known TB risk factors, such as undernutrition, poor immunity, and environmental determinants like overcrowding and pollution. Furthermore, the integration of Samskaras (prenatal and postnatal conditioning), Swarna Prashana, and Rasayana therapy in pediatric practice reflects an anticipatory, long-term approach to disease prevention and resilience building.

Emerging research suggests that combining Ayurvedic Rasayana formulations—such as Guduchi, Ashwagandha, Chyawanprash—with standard TB drug regimens can yield promising results. Clinical studies (Gaurav et al., 2021; Anjali et al., 2020) report improvements in appetite, weight gain, immunity, and post-treatment recovery in children who received Rasayana as adjuvant therapy. Moreover, the personalized, constitution-based approach of Ayurveda aligns well with modern precision medicine ideals. Ayurvedic dietary and lifestyle practices—such as nourishing Brimhana Ahara, regular Abhyanga, and sattvic psychological support—not only foster physical healing but also address the psychosocial impact of TB in children. The potential of Ayurveda to bridge biological and behavioral health gaps offers a compelling model for integrative care. However, challenges such as the need for standardized pediatric formulations, dose safety validation, and rigorous clinical trials remain. Bridging these gaps through collaborative research between Ayurvedic scholars and biomedical scientists could unlock more synergistic protocols for treating pediatric TB in India and globally.

7. Conclusion

Childhood tuberculosis continues to be a significant health challenge, particularly in resource-limited settings. Ayurveda, through the lens of Kaumarbhritya, provides a time-tested, holistic perspective on managing this disease. The condition of Balashosha, as described in classical Ayurvedic texts, closely parallels the symptoms and pathophysiology of pediatric TB. Ayurvedic management incorporates dietary interventions, immunomodulatory herbs, Rasayana therapies, and lifestyle corrections, offering an approach that focuses not only on eliminating the disease but also on restoring long-term health, immunity, and vitality. The strength of this system lies in

its individualized care, preventive philosophy, and deep integration of body-mind-environment relationships. Modern medicine provides life-saving antimicrobial therapy but faces limitations such as drug resistance, relapse, and post-treatment weakness. In contrast, Ayurveda can play a complementary and rehabilitative role, especially in the post-treatment phase. Integrating both systems—where antibiotics clear the infection and Ayurveda restores the host’s resilience—holds significant promise. For this vision to materialize, more interdisciplinary research, clinical validation, and public health integration are needed. Ultimately, combining the strengths of Ayurveda with evidence-based biomedicine can offer comprehensive, culturally sensitive, and sustainable care for children affected by tuberculosis.

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