



Review Article

## A Literature Review On Developmental Delay In Children Through The Insights Of Ayurveda

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Received: 21-08-2025

Accepted: 22-09-2025

Available online: 30-09-2025

### ABSTRACT

**INTRODUCTION:** Any type of delay in achieving the expected milestones of growth and development of a child is termed as developmental delay in medical language. Early identification of children with developmental delay has important implications for their treatment and future disabilities. From the perspective of Ayurveda, child development is a holistic process influenced by multiple number of factors such as Garbha Samskara (prenatal care), Beeja-Bhava (genetic and parental factors), Rasa (nutrition), and the balanced functioning of Doshas and Dhatus. Ayurvedic texts give importance of early childhood care (Bala Roga Chikitsa). When seen through Ayurvedic insight, imbalances of Vata dosha, improper nutrition, or defective Beeja (genetic factors) lead to improper findings in the natural unfolding of milestones. It is very important to begin intervention as early as possible in order to help child to reach his or her full potential. Acting early can make a real difference.

**Aim of the study:** The aim of the study is to assess the causes of suspected developmental delay and identify some ayurvedic principle of treatment and prevention.

#### Objective of the study-

1. To identify children at risk for developmental delay relating to the emotional, social and mental well being from age group of below 7 years and rule out their causes.
2. To provide evidence based therapies of ayurveda, supports and all possible options available for giving a positive outcome for the child going through developmental delay in the stages of life.

**Material and methods:** For this review, literary materials related to developmental delay of child, normal growth has been compiled, screened and critically analyzed from Charaka Samhita, Sushruta Samhita, Kashyap Samhita, Ashtanga Sangraha, Ashtanga Hridaya, and also from the commentaries of these texts and other Ayurvedic textbooks. Knowledge from Modern medical textbooks, research articles published in peer-reviewed journals, reputed magazines, PubMed, Google scholar etc are also included.

**CONCLUSION** Ayurveda offers a comprehensive and natural building blocks for requirement of normal development and factors responsible for delays in children. By coordinating the researches of classical Ayurvedic knowledge with contemporary pediatric research, an approach can be developed to improve child health outcomes and ensure balanced growth of body, mind, and intellect. Although Ayurvedic texts provide a comprehensive understanding of child development and its delays, there remains vast potential for further exploration in this field.

**Keywords:** Ayurveda, Developmental Delay, Child Development, Vata Imbalance

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Medical and Pharmaceutical Research

### INTRODUCTION

Any type of delay in achieving the expected milestones of growth and development of a child is termed as developmental delay in medical language. Early identification of children with developmental delay has important implications for their

treatment and future disabilities. From the perspective of Ayurveda, child development is a holistic process influenced by multiple number of factors such as Garbha Samskara (prenatal care), Beeja-Bhava (genetic and parental factors), Rasa (nutrition), and the balanced functioning of Doshas and Dhatus. Ayurvedic texts give importance of early childhood care (Bala Roga Chikitsa). When seen through Ayurvedic insight, imbalances of Vata dosha, improper nutrition, or defective Beeja (genetic factors) lead to improper findings in the natural unfolding of milestones. It is very important to begin intervention as early as possible in order to help child to reach his or her full potential. Acting early can make a real difference.

Developmental surveillance and screening performed at every well child visit improves early identification of developmental concerns. Sensory experiences, stimulation, language exposure during first 3 years determine synaptogenesis, myelination and neuronal connectivity. Developmental surveillance and screening performed at every well child visit improves early identification of developmental concerns.

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### MATERIAL AND METHODS

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### Review of Literature

Classical Ayurvedic texts, there is not specific chapters or sections dedicated exclusively to "developmental delay" as it is understood in modern medical terms. However, Ayurvedic texts do contain information related to various aspects of child health and development, and you can find relevant insights in chapters or sections addressing pediatrics, child care, and related topics. Here are some chapters or sections in Ayurvedic text-

#### Charaka Samhita:-

The Charaka Samhita is one of the foundational texts of Ayurveda, and it does provide insights into various aspects of health, including childhood development. However, it's important to note that the Charaka Samhita is an ancient text, and its teachings and recommendations should be understood in the context of its time. Here are some relevant passages from the Charaka Samhita regarding child development and potential causes of developmental delay.

**Balopacaraniya Adhyaya (Chapter on Care of the Infant):** This section of the Charaka Samhita discusses the care of infants and children. It emphasizes the importance of proper nourishment, hygiene, and a loving environment for children to ensure their healthy growth and development.

**Rogabala Pratishedha Adhyaya (Chapter on the Suppression of Diseases of Children):** This chapter addresses the prevention and treatment of diseases in children. It provides guidance on how to identify and manage diseases that may affect a child's growth and development.

**Garbhini Vyakarana Adhyaya (Chapter on the Formation of the Fetus):** This chapter discusses the development of the fetus during pregnancy, which can have a significant impact on a child's health and development. It provides information on maintaining the health of the mother during pregnancy.

The Charaka Samhita primarily focuses on the balance of doshas, proper diet, and lifestyle as essential components of health and development. It may not directly address modern concepts of developmental delay or specific medical interventions, as these are relatively recent developments in the field of medicine.

#### Ashtanga Hridaya:

The Ashtanga Hridaya, written by Vagbhata, is another important Ayurvedic text that covers pediatric care and general principles for maintaining the health of children. It offers guidance on nutrition, behavior, and therapies for children's well-being.

### **Balopachar (Pediatrics):**

This branch of Ayurveda specifically deals with the care and management of children. Various Ayurvedic texts may have sections or chapters dedicated to Balopachar, which encompass a wide range of topics related to child health, growth, and development. Kashyap Samhita is one of the classical texts of Ayurveda, but it primarily focuses on various aspects of medical treatments and remedies. While it does contain information about pediatrics and child care, it may not provide extensive details on developmental delay in children. Developmental delay is a complex topic that involves various factors, including physical, cognitive, and social development.

### **Nighantu and Other Ayurvedic Lexicons:**

Ayurvedic lexicons like the Dhanvantari Nighantu, Madanapala Nighantu, and Rajanighantu contain references to herbs and substances that are believed to be beneficial for children's health and development. These texts can be a valuable resource for Ayurvedic practitioners.

Ayurveda, the traditional system of medicine from India, does not use the term "developmental delay" as commonly understood in Western medicine. However, Ayurveda does recognize the importance of balanced growth and development in children and provides insights into factors that can influence a child's physical and mental development. In Ayurveda, a child's development is seen as a holistic process that is influenced by various factors, including the child's constitution (Prakriti), the mother's health during pregnancy, and the quality of care and nutrition provided to the child. Ayurvedic texts emphasize the importance of balancing the child's Doshas (Vata, Pitta, and Kapha) and ensuring that their Agni (digestive fire) is functioning optimally. An imbalance in these factors can potentially affect a child's growth and development. If a child is not developing as expected, Ayurveda would look for underlying imbalances in their Doshas, Agni, and overall health. Ayurvedic remedies might involve dietary changes, lifestyle modifications, and the use of specific herbs or treatments to restore balance and support the child's development. Ayurvedic treatments for developmental delay may include dietary changes, herbal remedies, and lifestyle modifications based on the child's unique constitution (prakriti) and the imbalance of doshas (Vata, Pitta, and Kapha).

Here are some of the factors that Ayurvedic practitioners might consider when evaluating developmental concerns:

1. **Prakriti (Constitution):** Ayurveda categorizes individuals into three primary Dosha constitutions—Vata, Pitta, and Kapha. Understanding a child's constitution helps determine their inherent tendencies and potential imbalances that may be affecting their development.
2. **Agni (Digestive Fire):** The strength and efficiency of a child's Agni (digestive fire) are important in Ayurveda. Poor digestion can lead to malnourishment and affect a child's growth and development.
3. **Srotas (Channels):** Ayurveda recognizes the importance of healthy channels in the body for the proper flow of nutrients and energy. Blockages or imbalances in these channels can impact a child's development.
4. **Dhatu (Tissue) Health:** The quality of the body's tissues is assessed, as they play a vital role in a child's growth and development.
5. **Diet and Nutrition:** Ayurveda recommends a balanced diet that suits an individual's Dosha constitution and supports cognitive health. Foods rich in nutrients, antioxidants, and Omega-3 fatty acids are often recommended to enhance brain function. Ayurveda emphasizes the importance of proper nutrition. Dietary recommendations may be made based on a child's constitution and any imbalances that are identified.
6. **Environmental Factors:** Ayurveda also takes into account the child's environment and exposure to potential toxins or stressors that could impact their development. pregnancy, prenatal exposure, postnatal exposure, to toxins referring to outcome: neurodevelopment, neurobehavior, psychomotor development, behavioral problems, cognitive development, mental health, s, learning disabilities. The results from the presented studies suggest that there are strong and rather consistent indications that the developing nervous system is particularly vulnerable to insult from low levels of exposure to widespread environmental contaminants.
7. **Stress Management:** Stress is recognized as a significant factor in cognitive health. Ayurveda offers stress-reduction techniques, including yoga, meditation, and Pranayama (breathing exercises), to promote mental relaxation.
8. **Mental and Emotional Balance:** Ayurveda emphasizes the importance of maintaining emotional balance and mental well-being. Practices such as Ayurvedic massage (Abhyanga) and herbal remedies may be used to support this balance.
9. **Herbal Support:** Ayurveda has a rich tradition of using specific herbs and herbal formulations known as Medhya Rasayanas to enhance cognitive function. According to "Ayurveda", the Indian traditional system of medicine, "medhyarasayanas" represent herbal therapeutics that boost memory, restore cognitive deficits and improve mental function. Ayurvedic system, the herbs used for medicinal purposes are classed as brain tonics or rejuvenators. Among the plants most often used in Ayurveda are (a) Ashwagandha, (b) Brahmi, (c) Jatamansi, (d) Jyotishmati, (e) Mandukparni, (f) Shankhapushpi, and (g) Vacha.

To know the roles of Bacopa monnieri, or Brahmi extract in neurological disorders and memory-related diseases, it is necessary to understand its active phytochemical constituents and their molecular mechanisms. Several clinical studies suggested that it has neuroprotective effects, making it worth revising a notable herb.

*Kaumrabhritya*, a branch of Ayurveda which deals in child and adolescent health care, has a unique concept of *Swarna Prashana* (SP) to promote generalized immunity and intellect. Administration of processed gold in children is a unique practice mentioned in Ayurveda as "Swarnaprashana" by Acharya Kashyapa thousands of years back.

SP is commonly recommended to children between 0 and 12 years of age and given as a general health promoter to improve intellect, digestion, strength, immunity, longevity, and complexion.

**Lifestyle Factors:** Daily routines (*Dinacharya*) and seasonal routines (*Ritucharya*) are considered vital in Ayurveda for maintaining cognitive health. Proper sleep, exercise, and adherence to a daily schedule are believed to benefit mental clarity. The child's daily routine and lifestyle habits, such as sleep patterns and exercise, are evaluated.

**Detoxification (Panchakarma):** Ayurvedic detoxification procedures can help remove toxins and impurities that may affect mental function.

In Ayurveda, the concept of developmental delay in children is understood through the lens of Dosha imbalances, Agni (digestive fire) disturbances, and the overall state of health. Here is an overview of the Ayurvedic perspective on the mechanism of developmental delay in children:

**Imbalance of Doshas:** Ayurveda identifies three primary Doshas—Vata, Pitta, and Kapha—representing different combinations of the five elements (earth, water, fire, air, and ether). The mechanism of developmental delay in children according to Ayurveda involves recognizing imbalances in the Tridoshas. These imbalances can manifest in various ways, affecting the child's physical and mental development. Ayurvedic interventions for addressing developmental delays often focus on restoring the balance of the Doshas

#### **Vata Imbalance: Vata Dosha and Developmental Delay:**

- **Role in Development:** Vata represents the elements of air and ether and is responsible for movement and transformation. It governs the nervous system and is involved in cognitive and motor development.
- **Imbalance Implications:** An excess or aggravated Vata can lead to instability, restlessness, and hyperactivity. In children, this can manifest as fidgeting, inability to focus, and difficulty in gaining and maintaining body weight, potentially leading to developmental delays.
- **Effects on Nervous System:** Vata imbalance can affect the child's nervous system, leading to delays in fine and gross motor skills, speech development, and cognitive functions.

**Pitta Imbalance:** Pitta Dosha and Developmental Delay: Excessive Pitta can cause inflammation and heat-related issues, possibly impacting digestion and absorption of nutrients

**Role in Development:** Pitta represents the elements of fire and water and is responsible for digestion, metabolism, and transformation. It governs intellectual development and the assimilation of nutrients.

**Imbalance Implications:** An excess or aggravated Pitta can lead to hyperacidity, inflammation, and overheating. In children, this may manifest as digestive issues, irritability, and difficulty in absorbing and utilizing nutrients. This can result in developmental delays due to malnutrition.

**Effects on Digestive System:** Pitta imbalance can lead to poor digestion, which affects the child's ability to gain weight and develop properly.

**Kapha Imbalance:** Kapha Dosha and Developmental Delay: An overabundance of Kapha may result in excessive mucus production, which can hinder proper growth and development

- **Role in Development:** Kapha represents the elements of water and earth and is responsible for structure, stability, and nourishment. It governs physical growth and strength.
- **Imbalance Implications:** An excess or aggravated Kapha can lead to excessive mucus production, sluggishness, and lethargy. In children, this may result in poor appetite, excessive weight gain, and an overall lack of motivation to engage in developmental activities.
- **Effects on Growth:** Kapha imbalance can hinder physical growth and can lead to a lack of interest in activities necessary for development.

Ayurveda believes that an individual's cognitive function is influenced by their unique constitution (*Prakriti*) and the balance of Doshas. The three Doshas are associated with specific cognitive traits:

1. **Vata:** Vata Dosha is closely related to mental functions, creativity, and communication. When in balance, it promotes mental clarity and agility. However, excess Vata can lead to anxiety, restlessness, and cognitive imbalances.
2. **Pitta:** Pitta Dosha is associated with intellect, decision-making, and problem-solving. Balanced Pitta contributes to sharp intellect, while an excess can lead to irritability and excessive critical thinking.
3. **Kapha:** Kapha Dosha is connected to memory and retention. A balanced Kapha supports stable memory, but an excess can result in lethargy and mental fog.

**Agni (Digestive Fire) Dysfunction:** Ayurveda places a strong emphasis on the strength and proper functioning of Agni, the digestive fire. If a child's Agni is weak, it can lead to inadequate digestion and assimilation of nutrients from food. Poor digestion can result in malnourishment and delayed growth. Ayurveda highlights the relationship between the strength of Agni and cognitive function. Proper digestion and assimilation of nutrients are essential for nourishing the brain and maintaining mental clarity.

**Impaired Elimination (Malas):** Ayurveda also considers the proper elimination of waste products (malas) as a crucial factor in child development. If there are issues with the elimination of waste, it can negatively impact the body's ability to metabolize nutrients and maintain health.

**Dhatu (Tissue) Health:** According to Ayurveda, the body's tissues (dhatus) play a pivotal role in growth and development. An imbalance in the Dhatus can hinder the formation and nourishment of tissues, affecting a child's physical and mental development.

It's important to assess the specific Dosha imbalances and develop a tailored plan to support a child's development while taking into account Ayurvedic principles. Additionally, collaboration with Western medical professionals is often recommended for a comprehensive approach to addressing developmental delay in children.

## DISCUSSION

Developmental delay in children through the lenses of Ayurveda is a multifactorial condition influenced by genetic, nutritional, environmental etc. Ayurveda advised to focus the problem through the concepts of Sharira (body), Manas (mind), Atma (soul) and their balanced development. While Modern medicine, emphasizes neurodevelopmental scales and genetic/neurological evaluation, Ayurveda views delayed development as a consequence of Dosha imbalance (Vata predominance), Dhatu kshaya (tissue deficiency), Agnimandya (digestive/metabolic impairment), and Beeja dushti (defects in germinal factors).

The classical Ayurvedic literature described the importance of Garbha Sanskara (prenatal care), Matru Ahara-Vihara (maternal diet and lifestyle), and Bala Samskara (child rearing practices) in ensuring normal physical, cognitive, and behavioral development of the child. Disturbances in these early stages can predispose to developmental delays. Medhya Rasayanas (herbs like Brahmi, Shankhapushpi, Ashwagandha), Abhyanga (oil massage), Panchakarma (biopurification), and Ahara Vidhi (dietary practices) have been highlighted as beneficial for improving growth, cognition, immunity in children, memory, learning ability, speech development, and motor coordination.

A key observation from the reviewed literature is that Ayurveda always speaks about preventive and promotive care more strongly than curative management. This aligns well with current pediatric approaches that advocate for early intervention in developmental disorders. However, the absence of standardized diagnostic criteria in Ayurvedic practice makes it challenging to directly correlate with modern developmental scales. Overall, the review indicates that Ayurvedic approaches hold promise in holistic management of developmental delay, particularly in preventive and supportive domains. However, more scientifically designed clinical trials, standardization of Ayurvedic interventions, and integration with modern developmental assessment tools are needed to validate these traditional insights and make them globally acceptable.

## CONCLUSION

Ayurveda offers a comprehensive and natural building blocks for requirement of normal development and factors responsible for delays in children. By coordinating the researches of classical Ayurvedic knowledge with contemporary pediatric research, an approach can be developed to improve child health outcomes and ensure balanced growth of body, mind, and intellect. Although Ayurvedic texts provide a comprehensive understanding of child development and its delays, there remains vast potential for further exploration in this field.

Pharmacological Studies of actions of herbs like Brahmi, Shankhapushpi, Ashwagandha, and Mandukaparni for their role in neurodevelopment and cognition.

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