

**A REVIEW OF CHRONIC AND PERSISTENT DIARRHOEA IN CHILDREN WITH ITS
MANAGEMENT THROUGH AYURVEDA****Dr. Anurag Tripathi* and Dr. Ramesh Kumar Gautam****

*PG Scholar, Dept. of Kaumarbhritya, State Ayurvedic College and Hospital, Lucknow (U.P.).

**Reader, PG Dept. of Kaumarbhritya, State Ayurvedic College and Hospital, Lucknow (U.P.).

***Corresponding Author: Dr. Anurag Tripathi**

PG Scholar, Dept. of Kaumarbhritya, State Ayurvedic College and Hospital, Lucknow (U.P.).

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ABSTRACT

Diarrhoea is a leading cause of morbidity and mortality among children under five years of age in developing countries, resulting in over 2 million deaths annually, with 80% of these deaths occurring in the first two years of life due to complications from diarrhoea. Diarrhoea is defined as the passage of three or more loose or watery stools in a 24-hour period. Prolonged acute diarrhoea lasting more than 14 days, associated with weight loss, is termed persistent diarrhoea (PD), primarily caused by persistent infection with one or more enteric pathogens. Chronic diarrhoea, defined as diarrhoea lasting at least two weeks or three attacks within three months, is non-infectious and often associated with celiac disease, tropical sprue, cystic fibrosis, and metabolic disorders. Evaluation of persistent and chronic diarrhoea involves clinical history, physical examination, sweat chloride tests, endoscopic studies, and hormonal studies. In Ayurveda, diarrhoea is described as "Atisara," characterized by excessive flow of watery stool through the anus. Treatment in children is planned based on the sama and nirama avastha of the dosha, with Deepana, Pachana, and Langhana advised in Amavastha and Stambhana drugs in Niramavastha. Traditional Ayurvedic formulations and single-drug remedies have shown beneficial effects in chronic and persistent diarrhoea.

KEYWORDS: Chronic Diarrhoea, Persistent Diarrhoea, Herbal Formulation, Ayurveda.**INTRODUCTION**

Diarrhoea is the third leading cause of childhood mortality in India, accounting for 13% of all deaths per year in children under 5 years of age. Globally, diarrhoea is responsible for 5-8 million deaths annually, primarily affecting children under 5 years old in developing countries.^[1] Diarrhoea poses a significant health burden, leading to malnutrition, premature mortality, and financial strain on families.^[2] Most of the diarrheal episodes occur during the first two years of life, with the highest incidence between 6-11 months of age. Diarrhoea is a major health concern across all age groups, causing significant morbidity and mortality in developing and third-world countries. It can be classified into two categories: infectious and non-infectious.^[3]

Infectious diarrhoea is primarily caused by bacteria, viruses, fungi, protozoa, and parasites, which spread through poor hygiene, contaminated food, and water.^[4] Non-infectious diarrhoea, on the other hand, is often associated with antibiotic use, chronic diarrhoea, toxins, and malabsorption.^[5] Acute diarrheal episodes typically subside within 7 days. However, persistent diarrhoea and chronic diarrhoea are defined as episodes lasting more than two weeks. Malnourished children are

particularly susceptible to persistent diarrhoea following an episode of acute diarrhoea.

Persistent Diarrhoea in Children

Prolongation of acute diarrhoea or dysentery for more than 14 days, accompanied by weight loss, is defined as persistent diarrhoea. This condition is likely of infectious origin. When the onset occurs before 3 months of age, it is often referred to as intractable diarrhoea of infancy. Community studies reveal that approximately 7% of children under 4 years old are affected by persistent diarrhoea annually.^[6] Notably, 60% of persistent diarrhoea cases occur before 6 months of age, and 90% occur before 1 year of age.^[7] Furthermore, a study reported that 23% of children with Shigella infection developed persistent diarrhoea.

Risk Factors of Persistent Diarrhoea

The major risk factors for persistent diarrhoea include:

- Younger age
- Early introduction of animal milk
- Previous gastrointestinal infection
- Unreasonable usage of antibiotics
- Non-existence or lack of breastfeeding

These factors contribute to the increased likelihood of developing persistent diarrhoea in children.

Causes of Persistent Diarrhoea

The most important causes of persistent diarrhoea are:

1. Persistent infection with one or more enteric pathogens
2. Secondary malabsorption of carbohydrates and fats
3. Infrequent protein allergy or dietary intolerance

Clinical Presentation

Persistent diarrhoea presents in three clinical forms:

1. Mild Form

- Characterized by several motions per day
- Without significant weight loss and dehydration

2. Moderate Form

- Characterized by several motions per day
- With marginal weight loss, without dehydration
- Non-tolerance to milk and milk products

3. Severe Form

- Heralded by dehydration and weight loss
- Non-tolerance to milk and cereals
- Secondary infection often coexists with this category

Diagnosis of Persistent Diarrhea

The diagnosis of persistent diarrhoea involves assessing emergency risk factors such as dehydration, malnutrition, and infection. Stool examination, including culture and reducing sugar tests, with pH analysis, aids in diagnosis.

Chronic Diarrhoea in Children

Chronic diarrhoea is defined as diarrhoea lasting at least 2 weeks or recurring in three episodes over the last 3 months, typically with a non-infectious cause and associated with malabsorption. This condition is often linked to specific underlying conditions, including:

- Celiac disease
- Tropical sprue
- Cystic fibrosis
- Congenital biochemical or metabolic disorders^[9]

A study of 137 children with chronic diarrhoea found:

- 26% had celiac disease
- 9% had parasitic infections
- 5% had tuberculosis.

Causes of Chronic Diarrhoea

The common causes of chronic diarrhoea vary according to the age of children and can be categorized as follows:

Infancy (0-1 year)

- Protein-energy malnutrition (PEM)
- Cow milk intolerance/ protein intolerance
- Post-gastroenteritis malabsorption syndrome
- Primary/Secondary carbohydrate deficiency
- Cystic fibrosis

Childhood (1-12 years)

- Cystic fibrosis
- Intestinal parasites (Giardia and E. Histolytica)
- Excessive intake of carbonated fluids like cold drinks, soda, energy drinks etc.
- Intestinal infection (M. tuberculosis)
- Secondary carbohydrate deficiency
- Post-gastroenteritis malabsorption syndrome
- Celiac disease

Adolescence (12+ years)

- Lactose intolerance/ Lactose malabsorption
- Irritable bowel syndrome (IBS)
- Inflammatory bowel disease like Crohn's disease, Ulcerative colitis
- Giardiasis

Evaluation of Patients with Chronic Diarrhoea

The evaluation of chronic diarrhoea is conducted in four phases:

Phase I

- ❖ Haematology:
 - CBC (Complete Blood Count)
 - ESR (Erythrocyte Sedimentation Rate)
 - Serum electrolytes
 - Serum urea and creatinine
- ❖ Clinical history with history of specific amount of fluids ingested per day
- ❖ Physical examination
- ❖ Nutritional assessment
- ❖ Laboratory tests:
 - a. Stool examination for pH, reducing substances, and smear for parasites
 - b. Stool culture

Phase II

- ❖ Additional tests:
 - a. Sweat chloride test
 - b. 72-hour stool collection for fat determination
- ❖ Stool tests for:
 - a. Phenolphthalein
 - b. Magnesium sulphate

Phase III

Advanced diagnostic tests:

- ❖ Barium studies
- ❖ Endoscopic studies
- ❖ Small bowel biopsy
- ❖ Sigmoidoscopy or colonoscopy

Phase IV

Hormonal studies:

- ❖ Intestinal polypeptide
- ❖ Gastrin
- ❖ Secretin
- ❖ Other relevant hormone tests

Diarrhoea in Ayurveda

Diarrhoea is described in Ayurvedic classics as "Atisara". The Charaka Samhita provides a comprehensive description of Atisara in elaborate detail. Atisara has been a common health issue in the past and continues to be so in the present time. Sushruta^[10] and Vagbhata^[11] have mentioned that Krimi (worms) can also cause Atisara.

The term Atisara is a combination of two words:

- ATI = Excessive
- SARA = Passing of liquid matter through the anus

This refers to the excessive flow of watery stool through the anus. Dalhana, in his commentary on Sushruta Samhita, stated that passing watery stools in increased quantity is a characteristic feature of Atisara.

Treatment of Childhood Diarrhoea in Ayurveda

The main protocol of the treatment for each disease is:

1. Samshodhana – Elimination therapy.
2. Sanshamana – Alleviation therapy.
3. Nidana Parivarjana – Avoidance of causative factors.

(A) Samshodhana chikitsa

1. Vaman
2. Virechan
3. Basti
4. Niruh Basti

(A) Samshodhana Chikitsa

Following approaches of Panchkarma can be used for the management of Balatisra under the supervision of expert physician.^[12]

i. VAMAN

Amatisara with Shoola and Adhamana can be control by Vamana Karma using Pippali Saindhav jal. After Vamana is recommended langhana and then Pachana in Dravyatisara.^[13]

ii. VIRECHAN

When Atisara possesses conditions of Vibhanda, Shoola, Virechana can be done using Abhaya, and Pippali etc.^[14]

iii. BASTI

When Vata get aggravated then basti can be used to restore of Bala specially niruha and anuvasan basti are choice of treatment in childhood diarrhea. When Pakvastha, Vibanda and Bahudosh then Niruha Basti prepared from Ksheera, Madhu and Ghrita, etc. should be used. When Atisara occurs with Shoola, Pravahana and Mutraghata then Anuvasana Basti of Madhura Amla Dravyas or Bilva, Shati.^[15]

(B) Shaman chikitsa

The Sama and Nirama avastha of the dosha are assessed first before determining the treatment plan for Atisara (diarrhoea). First, In the Amavastha stage, drugs with the following properties are used:

- ❖ Deepana (appetizer)

- ❖ Pachana (digestive)
- ❖ Langhana (lightening)

Second, In the Niramavastha stage, drugs with stambhana properties are used.

Single Drug Remedies for Diarrhoea in Ayurveda

Ayurveda describes several single drug remedies and compound formulations for different types of diarrhoea. Some of these remedies include:

- Oral use of Pippali (*Piper longum* Linn.) with honey, Chitraka (*Plumbago zeylanica* Linn.) with buttermilk, and Bilva fruit (*Aegle marmelos* Correa.) can control all types of diarrhoea.^[16]
- Local application of Amalaki paste (*Emblica officinalis*) filled with Adaraka (*Zingiber officinale* Rosc.) juice in the peri umbilical region can check diarrhoea.^[17]
- Ativisha (*A. heterophyllum* Wall.) combined with Bilva (*A. marmelos*), Mocharasa, Lodhra (*Symplocos racemosa* Roxb.), and Dhataki (*Woodfordia fruticosa* Kurz.) seed decoction, effective in treating severe diarrhea.^[18]
- Patha (*Cissampelos pareira* Linn.) and Daruharidra (*Berberis aristata*) crushed with rice water and dried under shade, administered with rice water, can treat all types of diarrhoea.^[18]
- A linctus made from Bhanga (*Cannabis sativa* Linn.), Jatiphala (*Myristica fragrans* Houtt.), and Indrayava seed (*Holarrhena antidysenterica* Linn.) in a 1:1:2ratio can check all types of diarrhoea.^[18]
- Decoction of Indrayava (seed of *H. antidysenterica*) and Patol (*Trichosanthes indica*) mixed with honey and sugar can check all types of diarrhoea.^[19]

Compound Formulations for Diarrhoea

Ayurveda prescribes traditional formulations for treating diarrhoea in children, including:

1. Balchaturbhadra Churna: Effective in cough, cold, and diarrhoea (Kasatisara), with main ingredients Musta, Ativisha, Pippali, and Karkatsringi.^[20]
2. Gangadhar Churna: Relieves primary symptoms and stops progression of diarrhoea, consisting of Mustaka, Araluka, Shunthi, Lodhra, Sugandhbala, Bilva, Mocha rasa, Patha, Kutaj seed, and Ativisha.
3. Dhanya Panchak Kwatha: Reduces frequency and improves consistency of stool, with main ingredients Dhanyaka, Shunthi, Mustaka, Netrabala, and Bilva, possessing Deepan, Pachana, and Grahi properties.^[21]

DISCUSSION AND CONCLUSION

Diarrhoea is a prevalent issue among children worldwide, categorized into three types: acute, persistent, and chronic. Acute diarrheal episodes typically subside within 7 days, with some lasting up to 14 days. Persistent and chronic diarrhoea are defined as episodes exceeding 14 days in duration. Chronic diarrhoea is often non-infectious and associated with malabsorption, whereas persistent diarrhoea is usually infectious in origin.

In Ayurveda, diarrhoea is described as "Atisara". Various single drugs like Ativisha, Bilva, Mocharasa, and Kutaj seed are used to treat different types of diarrhoea. Compound formulations such as Balchaturbhadra Churna and Gangadhar Churna are also employed to control various forms of diarrhoea.

To significantly reduce the incidence of persistent diarrhoea (PD) and chronic diarrhoea, it is essential to:

- Promote exclusive breastfeeding in early infancy
- Practice safe complementary feeding
- Ensure access to safe drinking water
- Implement scientific management of acute diarrhoea.

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