

## AYURVEDA MEETS MODERN CONCEPTS: A COMPREHENSIVE REVIEW ON VOMITING IN CHILDREN

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### ABSTRACT

This comprehensive review explores the convergence of Ayurveda and modern medical concepts in understanding and managing vomiting in children. Integrating traditional Ayurvedic principles with contemporary medical knowledge, the paper delves into the multifaceted causes and manifestations of vomiting in pediatric patients. It scrutinizes Ayurvedic perspectives on digestion, doshas, and holistic health, juxtaposing them against modern physiological explanations. The review highlights the potential synergies between Ayurvedic therapies and evidence-based interventions, emphasizing the importance of a personalized and integrative approach. Examining Ayurvedic remedies such as herbal formulations and dietary modifications, the paper seeks to bridge the gap between traditional wisdom and contemporary medical practices. By providing a nuanced exploration of vomiting in children, this review contributes to a more

comprehensive understanding of health, fostering dialogue between Ayurveda and modern medicine for improved pediatric care.

**KEYWORDS:** Ayurveda, Vomiting, Children, Integrative approach, Comprehensive review.

### INTRODUCTION

The intersection of ancient wisdom and contemporary medical knowledge is a burgeoning field that holds significant promise for advancing pediatric healthcare. This introduction sets

the stage for a comprehensive review that navigates the convergence of Ayurveda and modern concepts in understanding vomiting in children. Ayurveda, a traditional system of medicine with roots in ancient India, offers unique perspectives on health, emphasizing holistic well-being and individualized approaches. In contrast, modern medicine relies on evidence-based practices and scientific principles.

This review aims to bridge the gap between these two paradigms by scrutinizing the causes, manifestations, and management of vomiting in pediatric patients. By juxtaposing Ayurvedic principles with contemporary physiological explanations, we seek to unravel the synergies and potential integrative approaches. Through this exploration, we aspire to contribute to an enriched understanding of pediatric health, fostering collaboration between Ayurveda and modern medicine for the holistic well-being of children.

Vomiting is a common chief complaint in pediatric patients seen in the Emergency Department.<sup>[1]</sup> Presentations include acute, chronic, and cyclic vomiting, with underlying etiologies such as toxin ingestion, emotional disturbances, and movement disequilibrium.<sup>[2]</sup>

The ancient Ayurvedic texts delineate distinct categories of vomiting known as "Chhardi,"<sup>[3]</sup> including Vataja, Pittaja, Kaphaja, Sannipatika, Agantuja, and Krimija.<sup>[4]</sup> Vataja Chhardi involves the expulsion of frothy and meager contents with an astringent taste, often accompanied by abdominal pain. On the other hand, Pittaja Chhardi is characterized by the ejection of sour, yellow, and pungent substances, accompanied by a burning sensation.<sup>[5]</sup>

## AIM OF STUDY

This study bridges Ayurvedic insights and modern medical perspectives, offering a comprehensive review on childhood vomiting. Integrating both approaches enhance understanding and opens avenues for synergistic treatment strategies.

## MATERIAL AND METHODS

Nausea is the feeling of an upcoming urge to vomit, often accompanied by autonomic responses like increased heart rate and salivation. While nausea and vomiting usually occur together, they can occur independently. Vomiting, an uncomfortable experience, leads to fluid loss and limited rehydration capacity, potentially causing dehydration.

**What is Nausea?**

Nausea in a child refers to the uneasy sensation of an impending urge to vomit. This discomfort is often accompanied by physiological changes like increased heart rate and salivation. Children may experience nausea due to various reasons, including infections, motion sickness, or adverse reactions to medications. While nausea and vomiting typically occur together, they can also manifest independently. Persistent or severe nausea in children requires attention, as it may lead to discomfort, potential complications, and dehydration due to fluid loss. Identifying and addressing the underlying causes is essential for managing nausea in children and ensuring their overall well-being.

**What is Vomiting?**

Vomiting in a child is the forceful expulsion of stomach contents through the mouth. It is a protective reflex triggered by various factors, including infections, digestive issues, motion sickness, or reactions to certain foods or medications. Vomiting in children often comes with discomfort, nausea, and may be accompanied by increased salivation. While occasional vomiting is common and usually not a cause for concern, persistent or severe cases may indicate an underlying issue that requires medical attention. Dehydration is a potential complication due to fluid loss, highlighting the importance of monitoring and addressing vomiting in children promptly for their well-being.

**Pathophysiology<sup>[6]</sup>**

Vomiting represents the culmination of a coordinated sequence orchestrated by the emetic center situated in the medulla. Activation of the emetic center can occur through afferent neural pathways originating from both digestive (e.g., pharynx, stomach, small bowel) and nondigestive (e.g., heart, testes) organs. Additionally, the chemoreceptor trigger zone, situated in the area postrema on the floor of the 4th ventricle and housing receptors for dopamine and serotonin, plays a pivotal role. Various central nervous system centers, including those in the brain stem and vestibular system, further contribute to the regulation of this complex physiological response.

**Etiology: Causes of Vomiting Across Age Groups****General Overview**

- Vomiting serves both as a protective mechanism to expel toxins and as an indicator of underlying health issues.

- Bilious vomiting, especially in infants, suggests high intestinal obstruction and necessitates immediate evaluation.

### Infants

- Normal occurrences involve minor spitting up (< 5 to 10 mL) during or after feedings, often during burping.
- Causes include rapid feeding, air swallowing, and overfeeding; however, spitting up can occur independently.
- Common causes: Acute viral gastroenteritis, gastroesophageal reflux disease.
- Other significant factors: Pyloric stenosis, intestinal obstruction (meconium ileus, volvulus), intussusception (typically in infants aged 3 to 36 months).
- Less common causes: Sepsis, food intolerance, uncommon metabolic disorders (urea cycle disorders, organic acidemias).

### Older Children

- Most common cause: Acute viral gastroenteritis.
- Non gastrointestinal infections may induce sporadic vomiting.
- Other considerations: Serious infections (meningitis, pyelonephritis), acute abdomen (appendicitis), elevated intracranial pressure from space-occupying lesions (trauma, tumor), cyclic vomiting.

### Adolescents

- Causes extend to pregnancy, eating disorders, toxic ingestions (acetaminophen, iron, ethanol), and hyperemesis related to frequent cannabis use (cannabinoid hyperemesis syndrome).
- Awareness of age-specific causes aids accurate diagnosis and timely intervention.

### Causes of Vomiting - Suggestive Findings and Diagnostic Approaches<sup>[7]</sup>

#### Viral Gastroenteritis

- **Findings:** Usually with diarrhea, sometimes fever, contact with a symptomatic person, or history of travel.
- **Approach:** Clinical evaluation; rapid immunoassays or PCR testing for viral antigens (e.g., rotavirus, adenovirus).

**Gastroesophageal Reflux Disease (GERD)**

- **Findings:** Recurrent fussiness during/after feedings, poor weight gain, respiratory symptoms.
- **Approach:** Empiric trial of acid suppression; upper GI contrast study, milk scan, pH monitoring, impedance study, or endoscopy if needed.

**Bacterial Enteritis or Colitis**

- **Findings:** Usually with diarrhea (often bloody), fever, crampy abdominal pain, distention, fecal urgency.
- **Approach:** Clinical evaluation; stool examination for white blood cell count, culture, or PCR testing for enteric pathogens.

**Pyloric Stenosis**

- **Findings:** Recurrent projectile vomiting in neonates, infrequent stools, possible emaciation and dehydration.
- **Approach:** Ultrasonography of pylorus; upper GI contrast study if ultrasonography is inconclusive.

**Congenital Atresias or Stenoses**

- **Findings:** Abdominal distention, bilious emesis (in the first 24–48 hours of life), possible polyhydramnios during pregnancy, Down syndrome, jaundice.
- **Approach:** Abdominal x-ray, upper GI series, or contrast enema based on findings.

**Intussusception**

- **Findings:** Colicky abdominal pain, lethargy, "currant jelly" stool; typically age 3–36 months.
- **Approach:** Abdominal ultrasonography; air or contrast enema if ultrasonography is positive or nondiagnostic (unless signs of peritonitis).

**Hirschsprung Disease**

- **Findings:** Delayed passage of meconium, abdominal distention, bilious emesis in neonates.
- **Approach:** Abdominal x-ray, contrast enema, rectal biopsy.

**Malrotation with Volvulus**

- **Findings:** Bilious emesis, abdominal distention and pain, bloody stool.
- **Approach:** Abdominal x-ray, contrast enema, or upper GI series.

**Sepsis**

- **Findings:** Fever, lethargy, tachycardia, widened pulse pressure, hypotension.
- **Approach:** Cell counts and cultures (blood, urine, cerebrospinal fluid), chest x-ray if pulmonary symptoms present.

**Food Intolerance**

- **Findings:** Abdominal pain, diarrhea, possible eczematous rash or urticaria.
- **Approach:** Elimination diet; skin testing and/or radioallergosorbent testing (RAST) if needed.

**Metabolic Disorders**

- **Findings:** Poor feeding, failure to thrive, lethargy, hepatosplenomegaly, jaundice, unusual odor, cataracts.
- **Approach:** Electrolytes, ammonia, liver tests, blood urea nitrogen (BUN), creatinine, serum glucose, total and direct bilirubin, complete blood count, prothrombin time/partial thromboplastin time (PT/PTT), neonatal metabolic screening, further specific tests based on findings.

**Cannabinoid Hyperemesis Syndrome**

- **Findings:** Cyclic episodes of nausea and vomiting in frequent cannabis users.
- **Approach:** Clinical evaluation.

**Non-GI Infection**

- **Findings:** Fever, localizing findings depending on the cause (e.g., headache, ear pain, sore throat).
- **Approach:** Clinical evaluation; testing as needed for suspected cause.

**Appendicitis**

- **Findings:** Initial malaise, periumbilical discomfort, pain localizing to right lower quadrant, vomiting after pain manifestation, anorexia, fever, tenderness at McBurney point, decreased bowel sounds.

- **Approach:** Ultrasonography (preferred over CT to limit radiation exposure).

### Serious Infection

- **Findings:** Fever, toxic appearance, back pain, dysuria (pyelonephritis), nuchal rigidity, photophobia (meningitis), listlessness, hypotension, tachycardia (sepsis).
- **Approach:** Cell counts and cultures (blood, urine, cerebrospinal fluid) as indicated by findings.

### Childhood Vomiting (Chhardi) in Ayurveda<sup>[8,9]</sup>

Childhood Chhardi, according to Ayurveda, is influenced by various factors contributing to the pathogenesis of the condition. Key elements include.

#### Dosha Imbalances

- Vidahiaharsevan, ajirna, and mandagni contribute to the formation of ama, a toxic substance playing a significant role in Chhardi.
- Tridosha imbalances, particularly involving Kapha, are associated with childhood Chhardi.

#### External Etiological Factors

- Unhygienic conditions, poor eating habits, disturbed lifestyle patterns, and compromised body immunity are external factors influencing childhood Chhardi.
- Kaphaj Chhardi is the most common form in children, and Kapha-related disorders contribute significantly.

#### Age and Susceptibility

- Children in the early stages of growth are more susceptible to childhood Chhardi.
- Those practicing Vidahi ahara sevana (consuming excessively hot or spicy food), experiencing Ajirna (indigestion), and having Mandagni (weakened digestive fire) are at a higher risk.

#### Dietary Factors

- Consumption of foods with Madhura Rasa (sweet taste) and Ruksha Guna (dry quality) increases the prevalence of childhood Chhardi.

**Body Constitution and Compatibility**

- The prevalence of Chardi is high in individuals with Madhyama sharira (moderate physique), Madhyama samhanana (moderate body proportions), and Madhyama Satmya (moderate adaptability to external factors).

**Symptoms**

- Aruchi (loss of appetite), Nidra (sleep disturbances), Jrumbha (retching or hiccups), and nausea are key symptoms associated with childhood Chhardi.

**Causative Factors of Chardi (Vomiting) in Ayurveda****Excessive Liquid Intake**

- Consuming an excessive amount of liquids can contribute to the onset of vomiting.

**Virudha Ahara (Incompatible Diet)**

- Ingesting incompatible or conflicting food combinations may trigger Chardi.

**Exertion**

- Physical overexertion and excessive strain can be causative factors.

**Anidra (Insomnia)**

- Lack of proper sleep or insomnia is identified as a potential cause.

**Indigestion**

- Impaired digestion, characterized by indigestion, is a common factor leading to Chardi.

**Intestinal Infestation**

- Presence of intestinal parasites or infestations can contribute to vomiting.

**Psychological Factors**

- Psychological factors such as fear and grief are considered influential in the onset of Chardi.

**Symptoms of Chardi (Vomiting) in Ayurveda<sup>[10]</sup>****Hrit Parshva Peeda (Pain in the Cardiac Region)**

- Pain experienced in the region around the heart.



**Mukha Shosha (Dryness of the Mouth)**

- Dryness and parched feeling in the oral cavity.

**Murdha Nabhya Arti (Pain in the Head and Umbilical Region)**

- Pain localized in the head and umbilical region.

**Kasa (Cough)**

- Presence of cough as a symptom.

**Svara Bheda (Changes in Voice)**

- Alterations in the voice or hoarseness.

**Tod (Vomiting Sensation)**

- The sensation of vomiting or the inclination to vomit.

**Udgara Shabda Prabala (Loud Eructation Sounds)**

- Pronounced and strong sounds during eructation.

**Tanu Kashayam (Bitter Taste in the Mouth)**

- Perception of a bitter taste in the mouth.

**Krchrena Alpam (Gradual Onset and Brief Duration)**

- Chardi occurs gradually and has a relatively short duration.

**Ayurvedic Treatment for Chardi (Vomiting) in Children<sup>[11]</sup>****Dietary Adjustments**

- Prescribing a suitable diet based on the child's dosha constitution to balance and pacify aggravated doshas.

**Herbal Remedies**

- Administering Ayurvedic herbs known for their digestive properties and ability to soothe the digestive system, such as ginger, fennel, and mint.

**Lifestyle Modifications**

- Recommending lifestyle changes, including proper sleep, stress management, and avoiding excessive exertion.

**Panchakarma Therapy**

- In severe cases, Panchakarma procedures may be suggested to detoxify and rebalance the body's doshas.

**Pranayama and Yoga**

- Incorporating specific breathing exercises (pranayama) and gentle yoga postures to promote overall well-being.

Ayurvedic treatment for vomiting in children typically involves a holistic approach, including dietary modifications, lifestyle changes, and the use of specific herbs and formulations. However, it's important to note that the choice of Ayurvedic medicine may vary based on the individual's constitution (Prakriti) and the underlying cause of vomiting. Always consult with a qualified Ayurvedic practitioner before administering any herbal remedies. Here are some Ayurvedic herbs and formulations that are commonly used for managing vomiting in children:

**Dill Water (Shatapushpa Arka)**

- Dill (*Anethum graveolens*) is known for its digestive properties and can be prepared as an infusion to alleviate digestive discomfort and vomiting.

**Fennel Tea (Saunf Kwath)**

- Fennel (*Foeniculum vulgare*) is often used to prepare a soothing tea that helps in relieving digestive issues, including vomiting.

**Ginger (Shunthi)**

- Ginger (*Zingiber officinale*) is a potent digestive aid and antiemetic. A ginger decoction or infusion can be beneficial in managing vomiting.

**Licorice (Yashtimadhu)**

- Licorice (*Glycyrrhiza glabra*) has soothing properties and may be used to alleviate irritation in the digestive tract, contributing to the reduction of vomiting.

**Musta (*Cyperus rotundus*)**

- Musta is known for its antiemetic and digestive properties. It may be used in formulations to manage vomiting in children.

**Triphala Churna**

- Triphala, a combination of three fruits (Amla, Haritaki, Bibhitaki), is known for its digestive benefits. It can be used in powdered form to support overall digestive health.

**Kutajarishta**

- Kutajarishta is an Ayurvedic liquid formulation that may be prescribed for its anti-diarrheal and digestive properties. It may help in managing vomiting associated with digestive issues.

**Allopathic Treatment for Chardi (Vomiting) in Children<sup>[12]</sup>****Antiemetic Medications**

- Prescribing antiemetic drugs to control and prevent vomiting episodes.

**Fluid Replacement**

- Administering oral rehydration solutions or intravenous fluids to prevent dehydration caused by fluid loss during vomiting.

**Treating Underlying Causes**

- Identifying and addressing specific causes of vomiting, such as infections, gastroenteritis, or other gastrointestinal disorders.

**Dietary Guidance**

- Recommending a bland and easily digestible diet to ease the digestive system's workload.

**Monitoring and Supportive Care**

- Monitoring the child's condition and providing supportive care, including rest and appropriate nutrition.

The treatment of nausea and vomiting in children is directed towards addressing the underlying cause, with a focus on rehydration. While antiemetic drugs commonly used in adults are less frequently employed in children due to limited evidence and potential risks, they can be cautiously used in severe or unremitting cases in children aged over 2 years. Some useful drugs include:

**Promethazine**

- **Dosage:** For children > 2 years, 0.25 to 1 mg/kg (maximum 25 mg) orally, IM, IV, or rectally every 4 to 6 hours.
- **Mechanism:** H1 receptor blocker (antihistamine) inhibiting the emetic center response.
- **Adverse Effects:** Respiratory depression, sedation, dizziness, anxiety, blurred vision, dry mouth, impotence, constipation. Contraindicated in children < 2 years.

**Prochlorperazine**

- **Dosage:** Varies based on weight; for example, for children > 2 years and weighing 9 to 13 kg, 2.5 mg orally every 12 to 24 hours.
- **Mechanism:** Weak dopamine receptor blocker depressing the chemoreceptor trigger zone.
- **Adverse Effects:** Drowsiness, dizziness, anxiety, strange dreams, insomnia, galactorrhea, akathisia, dystonia.

**Metoclopramide**

- **Dosage:** 0.1 mg/kg orally or IV every 6 hours (maximum 10 mg/dose).
- **Mechanism:** Dopamine receptor antagonist increasing gastric motility and decreasing impulses to the chemoreceptor trigger zone.
- **Adverse Effects:** Drowsiness, dizziness, agitation, headache, diarrhea, akathisia, dystonia.

**Ondansetron**

- **Dosage:** Varies based on age; for example, for children 2 to 4 years, 2 mg every 8 hours.
- **Mechanism:** Selective serotonin (5-HT<sub>3</sub>) receptor blocker inhibiting the vomiting reflex.
- **Adverse Effects:** Headache, dizziness, drowsiness, blurred vision, constipation, muscle stiffness, tachycardia, hallucinations.

**DISCUSSION**

Vomiting in children can be a distressing symptom, and both Ayurveda and allopathy offer perspectives on its causes and treatments.

From an Ayurvedic standpoint, vomiting in children is often seen as a result of an imbalance in the doshas, particularly Pitta dosha. Ayurvedic practitioners may recommend dietary modifications, herbal remedies, and lifestyle changes to restore balance. For example, cooling

foods and herbs may be suggested to pacify excessive Pitta. Popular Ayurvedic remedies include ginger and fennel preparations to alleviate digestive issues.

In contrast, allopathic medicine approaches vomiting by identifying and treating its underlying causes, which can vary widely. Common causes may include infections, food poisoning, gastrointestinal issues, or other medical conditions. Allopathic treatments often involve addressing the specific cause through medications such as antiemetics to control vomiting or antibiotics to combat infections.

While Ayurveda and allopathy have distinct approaches, they can complement each other. Some individuals may choose to integrate elements of both systems for a holistic approach to health. However, it's crucial to consult with healthcare professionals from both disciplines to ensure coordinated and safe care, especially when it involves treating children. Always seek medical advice for proper diagnosis and treatment, as vomiting can be a symptom of various underlying issues.

## CONCLUSION

In summary, the comprehensive review on childhood vomiting harmonizes Ayurvedic insights with modern concepts. Ayurveda's nuanced classification aligns with contemporary understanding, emphasizing personalized care through dietary, herbal, and lifestyle interventions. The integration of traditional wisdom and modern approaches underscores the potential for holistic pediatric healthcare. Further collaborative research and exploration are essential for maximizing the synergies between Ayurveda and modern medicine, promising comprehensive solutions for the management and prevention of vomiting in children.

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