

“Study The Efficacy of Chatuhsama Yoga in Ama Atisara in Children”

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ABSTRACT:

Background: Atisara (diarrhea) is a common gastrointestinal disorder in children, characterized primarily by frequent passing of watery stools, often accompanied by loss of appetite, abdominal pain, thirst, weakness, and sometimes mucus or blood depending on the type. Ayurvedic texts attribute Atisara to impaired Mandagni (digestive fire) causing Ama (toxins) formation. Chatuhsama Yoga, a classical Ayurvedic formulation, is traditionally used to treat Ama Atisara. This study aimed to evaluate its efficacy in pediatric patients aged 6 months to 5 years. **Methodology:** A single-arm, open-label clinical trial was conducted at BVDUCOA outpatient department of Kaumarbhritya. Twenty-two children meeting inclusion criteria were enrolled after ethical approval and informed consent. Chatuhsama Yoga was administered in age-appropriate doses for 5 days. Subjective and objective parameters, including stool characteristics, appetite, and frequency of diarrhea, were assessed at baseline, day 3, and day 5. **Results:** Significant improvements ($p < 0.05$) were observed in stool consistency, odor, mucus, frequency of diarrhea, and appetite by day 5. Notably, 95-100% improvement was seen in key subjective symptoms such as stool Swaroop (appearance), Amavasta (Ama state), and Trushna (thirst). Weight loss was also significantly reduced. No adverse effects or worsening of urine output, pain, or fever were reported. **Discussion:** The Deepana, Pachana, and Grahi properties of Chatuhsama Yoga likely enhanced digestive fire and reduced Ama, thus restoring bowel function and reducing diarrhea symptoms. Its ingredients work together to absorb excess moisture and restore Dosha balance, in harmony with traditional Ayurvedic principles. **Conclusion:** Chatuhsama Yoga is a safe and effective treatment for pediatric Ama Atisara, significantly improving clinical symptoms and overall health within 5 days of administration.

KEYWORDS: Ama Atisara, Diarrhea in children, Ayurveda, Agnimandya, Chatuhsama Yoga.

INTRODUCTION:

Atisara, commonly known as diarrhea, is a frequently encountered gastrointestinal disorder described in Ayurveda. The term “Atisara” is derived from Sanskrit, where ‘Ati’ means excessive and ‘Sara’ means flow, signifying the excessive and frequent passage of watery stools through the anus. ^[1, 2, 3] Atisara is characterized primarily by frequent passing of watery stools, often accompanied by loss of appetite, abdominal pain, thirst, weakness, and sometimes mucus or blood depending on the type ^[1].

Studies show that diarrheal diseases remain a major cause of morbidity and mortality in this age group globally, with children in developing countries being disproportionately affected. For example, childhood diarrhea can account for about 1.7 billion cases worldwide each year and causes around 4 lac 40 thousand deaths annually in children under the age of 5 years ^[4].

Socioeconomic factors such as low- and middle-class status, poor hygiene and malnutrition contribute to its high prevalence. Seasonal variation is observed, with more cases appearing in the summer and rainy seasons ^[5]. Ayurvedic texts highlight that Atisara occurs primarily due to the disturbance of Agni (digestive fire), most often referred to as Mandagni, which results in the formation of Ama (toxic, incompletely digested food) ^[6, 1]. This impaired digestion further aggravates Vata dosha, especially Samana and Apana Vata, leading to the downward movement and expulsion of watery stools.

Several previous studies have examined various aspects of Balatisara (diarrhea in children) in both classical Ayurvedic and modern clinical frameworks for example, Management of Balatisara in children with Yavani Panchaka ^[7]. Clinical evaluation of Dhatakyadi Churna in Balatisara ^[4], etc.

Atisara (diarrhea) is managed in Ayurveda with formulations having Deepana, Pachana, and Grahi properties, which help correct Agni-dushti, eliminate Ama, and restore bowel consistency. Chatuhsama

Yoga, mentioned in Bhavaprakash, is a classical formulation comprising Harītakī, Shuṇṭhi, Musta, and Guḍa, known for its Agni-dīpana, Ama-Pachana, and Grahi effects. It aids in the absorption of Drava-mala and promotes mala-stambhana. Considering its pharmacological benefits, this study was conducted to assess the efficacy of Chatuḥsama Yoga in managing pediatric Atisara in children aged 6 months to 5 years.

MATERIALS AND METHODS:

This research was conducted as a single-arm, open-label clinical trial. Prior to initiation, approval was obtained from the Institutional Ethics Committee of BVDUCOA, and the trial was registered with the Clinical Trials Registry of India (CTRI). Patients were screened at the outpatient department (OPD), and those who met the inclusion criteria were provided with detailed information about the study and the investigational drug. Informed consent was obtained from the parents or legal guardians. Upon enrollment, a physical examination was performed, and primary data were collected. Stool examination was done to exclude worms and follow-up assessments were conducted on the 3rd and 5th days, during which both subjective and objective parameters were evaluated, and clinical improvements were documented.

1. Sample size :

The prevalence rate of children suffering from Atisara in age group 6 months to 5 years who fit under inclusion criteria, attending the OPD of Bharati Vidyapeeth (Deemed to be university), college of Ayurved and hospital, Pune is around 1.3%. So, as per this rate sample size is $19.7166 \sim 20$. Considering 10% dropouts in clinical trials increased it to 22.

Selection criteria:

Inclusion criteria:

- Subjects of age 6 months to 5 years
- Each type of Ama Doshaj Atisara as mentioned in Samhita
- Diarrhea with no dehydration or mild dehydration
- Subjects having Atisara only of recent origin i.e. duration of less than 3 days
- Subjects presenting with 60% of symptoms of Vataj, Pittaj and Kaphaj Ama Atisara

Exclusion criteria:

- Subjects suffering from moderate to severe dehydration.
- Subjects suffering from chronic diarrhea
- Atisara showing signs and symptoms of Nirama Vataj, Pittaj and Kaphaj Atisara, Raktatisara, Shokaj, Bhayaj and Krimij Atisara
- Atisara associated with shock, cholera
- Child on any antibiotic medication

Dose of Yoga:

According to Sharangdhar Samhita, the dose of churna for 1 month old child is 1 ratti (~ 125 mg) and is increased by 1 ratti every month till 12 months i.e., till 1 year of age (12 ratti = 2masha) i.e. 1.5gm. In Clinical experience in our department, it was seen that Chatuhsama Yoga was effective when given half the dosage to that mentioned in Classical text Sharangdhar Samhita. So, the dose of Yoga for 1 year old child was 750 mg per day. Below as shown are the doses of yoga according to different age groups. The per day dose was given in 3 divided dosages from 6 months to 2 years of age. Since the quantity of yoga was more from 3 years of age it was given in 4 divided doses

Age	Yoga Dose/day
6 months	375 mg/day
7 months	437.5 mg/day
8 months	500 mg/day
9 months	562.5 mg/day
10 months	625 mg/day
11 months	687.5 mg/day
12 months (1 year)	750 mg/day
2 years	1.5 gm/day
3 years	2.75 gm/day
4 years	3 gm/day
5 years	3.75 gm/day

Drug duration : The drug dose was given for 5 days and follow up was taken on 0th, 3rd and 5th day.

OBSERVATION AND RESULT:

Demographic data analysis:

- **Age wise distribution** – In this study maximum number of patients were from age group above 4 years (i.e., 32%).
- **Gender wise distribution** – In this study we found that maximum children were males (68%)
- **Agni wise distribution** – Mandagni found in maximum number of children (i.e., 77%).
- **Religion wise distribution** – In this study maximum number of Hindu children were found.
- **Socio-Economic status wise distribution** – In this study we found that maximum number of patients were categorized under middle socio-economic status.

Parameters	Majority Group	Patients (in %)
Age	Above 4 years	32
Gender	Male	68
Socio-Economic	Middle	77
Agni	Mandagni	77
Religion	Hindu	95

Observational data analysis:

Subjective parameters:

Mala-Parikshana

Swaroop - The mean grade of Swaroop before treatment was 2.18 which decreased to 1.55 on the 3rd day of treatment. The mean increment in score was 29.17% which is significant as observed by Wilcoxon test (as p value<0.05) thus it can be said that there is significant increment on Swaroop in Ama Atisara in Children. Also, there was a 95.83% improvement found at 5th day of treatment on Swaroop in Ama Atisara in Children. Chatuhsama Yoga was effective on Swaroop in Ama Atisara in Children

Amavasta - The mean grade of Amavasta before treatment was 1 which was decreased to 0.59 on the 3rd day of treatment. The mean increment in score was 40.91% which is significant as observed by Wilcoxon test (as p value<0.05) thus it can be said that there is significant increment on Amavasta in Ama Atisara in Children., Also, here 100.00%improvement found at 5th day of treatment on Amavasta in Ama Atisara in Children. i.e., Chatuhsama Yoga was effective increment on Amavasta in Ama Atisara in Children.

Gandha - The mean grade of Gandha before treatment was 0.77 which decreased to 0.05 on the 3rd day of treatment. The mean increment in score was 94.12%, which is significant as observed by Wilcoxon test (as p value<0.05) thus it can be said that there is significant increment on Gandha in Ama Atisara in Children., Also, here 100.00%improvement found at 5th day of treatment on Gandha in Ama Atisara in Children. Chatuhsama Yoga was effective on Gandha in Ama Atisara in Children

Varna - The mean grade of Varna before treatment was 1.64 which decreased to 1.18 on the 3rd day of treatment. The mean increment in score was 27.78% which is significant as observed by Wilcoxon test (as p value<0.05) thus it can be said that there is significant increment on Varna in Ama Atisara in Children. Also, here 44.44% improvement found at 5th day of treatment on Varna in Ama Atisara in Children. Chatuhsama Yoga was effective on Varna in Ama Atisara in Children

Mucus - The mean grade of Mucus before treatment was 0.45 which was decreased to 0.18 on the 3rd day of treatment. The mean increment in score was 60.00%which is significant as observed by Wilcoxon test (as p value<0.05) thus it can be said that there is significant increment on Mucus in Ama Atisara in Children., Also, here 100.00% improvement found at 5th day of treatment on Mucus in Ama Atisara in Children. Chatuhsama Yoga was effective on Mucus in Ama Atisara in Children.

Loss of appetite - The mean grade of Loss of Appetite before treatment was 4.82which was increased to 6.14 on the 3rd day of treatment. The mean increment in score was 27.36% which is significant as observed by Wilcoxon test (as p value<0.05) thus it can be said that there is significant increment on Loss of Appetite in Ama Atisara in Children. Also, here 30.19%improvement found at 5th day of treatment on Loss of Appetite in Ama Atisara in Children. Chatuhsama Yoga was effective on Loss of Appetite in Ama Atisara in Children.

Trushna (Thirst and water intake) - The mean grade of Trushna before treatment was 0.27 which was decreased to 0.05 on the 3rd day of treatment. The mean increment in score was 83.33% which is

significant as observed by Wilcoxon test (as p value < 0.05) thus it can be said that there is significant increment on Trushna in Ama Atisara in Children., Also, here 100.00% improvement found at 5th day of treatment on Trushna in Ama Atisara in Children. Chatuhsama Yoga was effective on Trushna in Ama Atisara in Children.

Mutra Pravrutti (Urine output) - Mutra pravrutti was normal while recruiting the patient and it didn't worsen during the study period. Hence, we didn't see any statistical difference in it.

Parameters	% of improvement	p value
Swaroop	95	0
Gandha	100	0
Amavasta	100	0
Varna	44	0.004
Mucus	100	0.002
Loss of appetite	30	0
Trushna	100	0.034
Mutra Pravrutti	-	1

• Objective parameters

Frequency of diarrhea in 24 hrs. (Atisara vega) - The mean grade of Atisara before treatment was 1.41 which decreased to 1.05 on the 3rd day of treatment. The mean increment in score was 25.81% which is significant as observed by Wilcoxon test (as p value < 0.05) thus it can be said that there is significant increment on Atisara Vega in Ama Atisara in Children., Also, here 77.42% improvement found at 5th day of treatment on Atisara Vega in Ama Atisara in Children i.e., Chatuhsama Yoga was effective on Atisara Vega in Ama Atisara in Children

Loss of weight - The mean of Loss of Weight before treatment was 13.27 which was decreased to 13.08 at 3rd day of treatment. The mean increment in score was 1.43%, which is significant as observed by paired t test (as p value < 0.05) thus it can be said that there is significant increment on Loss of Weight in Ama Atisara in Children. Also, here 1.58% improvement found on 5th day of treatment on Loss of Weight in Ama Atisara in Children. Chatuhsama Yoga was effective on Loss of Weight in Ama Atisara in Children

FLACC SCALE for colic pain assessment - Out of 22 patients FLACC scale for colic pain assessment was found in only 2 patients. Hence, we didn't see any statistical difference in it.

Fever - Out of 22 patients Temperature was not found in any patient. However, the temperature was normal while recruiting the patient and it didn't worsen during the study period. Hence, we didn't see any statistical difference in it.

Parameters	% of improvement	p Value
Atisara Vega	77	0
Weight	1.58	0.002
FLACC scale	100	0.18
Fever	-	1

DISCUSSION

Chatuhsama Yoga, a combination of Abhaya, Nagara, Musta, and Guda, is an Ayurvedic formulation possessing Deepan (digestive), Pachan (metabolic digesting), and Grahi (absorptive) properties, and is traditionally described for the treatment of Ama Atisara.

The present clinical study evaluated the efficacy of Chatuhsama Yoga in managing Ama Atisara in children aged 6 month to 5 years with a sample of 22 participants. The demographic analysis revealed a higher prevalence was observed in children above 4 years (32%), which may be linked to increased exposure to contaminated food and water sources due to greater independence in eating habits and outdoor activity. The majority of the study participants were male (68%), aligning with earlier epidemiological observations where male children often had slightly higher hospital attendance rates for diarrheal illnesses possibly due to gender based differences in health seeking behavior in Indian households. Most children in the study presented with Mandagni (77%), consistent with the Ayurvedic concept that impaired digestive fire is a primary etiological factor in Ama Atisara. Religion wise, the majority were Hindus, which is reflective of the community distribution in the catchment area of the study site rather than a disease specific predisposition. Socioeconomic distribution indicated that middle

class families were more represented, which may point towards both better health seeking behavior and environmental exposure risks in this segment.

Statistical analysis of the study indicates that this drug positively affected various parameters:

Swaroop : With presence of Haritaki and Musta in Chatuhsama Yoga possessing Laghu and Ruksha Guna, the drug acts as a Sangrahi (absorbent/drying agent), due to its properties of drying up excess moisture in the body's waste, thereby effectively improving the Swaroop in children with Ama Atisara.

Gandha: Foul smell in stool results from Agni Mandya (weak digestive fire) and Amavasta (dampness). Presence of Haritaki (with Laghu and Ruksha Guna), Musta (with Katu & Tikta Rasa, Laghu and Ruksha Guna), Shunthi (with Katu Rasa, Laghu Guna) in Chatuhsama Yoga, promote Deepan and Pachan, enhancing Jatharagni (digestive fire) and removing Ama, which helps in curing foul odor in stool.

Amavasta: In Ama Atisara, weak Jatharagni leads to Ama formation. Presence of Haritaki (with Laghu and Ruksha Guna), Musta (with Katu & Tikta Rasa, Laghu and Ruksha Guna), Shunthi (with Katu Rasa, Laghu Guna), Guda (with Ushna Virya & Pittaghna property) in Chatuhsama Yoga, promote Deepan and Pachan, thereby stimulating Agni, reducing Ama, and restoring digestive balance.

Varna: The stool's color reflects the severity and specific dosha involved. Pitta dosha influences stool color, with visheshan (characteristic features) indicating Pitta involvement. The drug's Agni Deepan action and Tridosahar (balancing all three doshas) properties help normalize stool color (Prakrut Purisha Varna) in children with Ama Atisara.

Mucus in stool: Mucus results from Kapha vitiation. The Tikta, Katu (pungent), Kashaya (astringent) rasa, along with Laghu and Ruksha guna possess Kaphaghna (Kapha-pacifying) properties, which help in alleviating mucus in stool.

Loss of appetite: Mandagni (weak digestive fire) is the main cause of reduced appetite in Atisara. The Tikta rasa and Deepan-Pachan properties of the drug enhance digestion and stimulate oral intake, thereby improving appetite in children.

Atisara Vega: With its Deepan, Pachan, and Sangrahi properties, Chatuhsama Yoga aids in reducing Atisara Vega, thus decreasing the frequency of diarrhea episodes.

Additionally, parameters such as **Mutra Pravrutti**, **FLACC** Scale, and **Fever** were monitored during follow-up. None of the patients showed deterioration in these parameters, indicating the safety and overall efficacy of the drug.

When compared with previous ayurvedic and modern pediatric studies on diarrhea, the therapeutic effects observed here are consistent. Sudhir Pani (2017) reported significant symptomatic relief in Balaatisara with Yavani Panchaka, attributing results to its Deepana and Pachana actions, similar to Chatuhsama Yoga's pharmacodynamics. Likewise, Ajitsingh Yadav and Upadhyaya (2019) observed that Nagaradi Yoga reduced frequency and improved stool consistency in childhood Atisara, again correlating with our findings.

Overall, integrating our demographic findings with existing literature reinforces the position of Chatusama Yoga as an effective, safe, and culturally acceptable intervention for Ama Atisara in children. Limitations of the study, the study had a small sample size, was single-arm and open label without a control group, had 5 day follow up, and was conducted at a single center. Only mild cases were included in this study.

CONCLUSION:

The drug proved to be effective in the treatment of Ama Atisara, as all patients' symptoms subsided by the 5th follow-up.

Patients treated with the drug showed statistically significant improvements in the Swaroop of mala, Atisara vega, gandha, amavastha, varna, mucus, trushna, as well as in appetite and weight.

Parameters such as mutra pravrutti, FLACC scale, and temperature were included in the study to assess patient condition during follow-up. None of the patients showed any deterioration in these parameters, indicating that the drug was safe and effective in maintaining overall health status.

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