



Research Article

A COMPARATIVE CLINICAL STUDY TO EVALUATE THE EFFICACY OF NAYOPAYAM SYRUP AND VYAGHRYADI SYRUP IN THE MANAGEMENT OF TAMAKA SHWASA

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ABSTRACT

Tamaka shwasa is a Pitta Sthana Samudbava Pranavaha srotovikara in which the aggravated Kapha and Vata doshas plays a major role in causing Sthanasamshraya in the Pranavaha srotas, where Udrita kapha gets accumulated and causes obstruction to the normal movement of Prana Vata, which ends up in Pratiloma Gati of Vata producing the Lakshanas of Shwasa. This pathology is similar with that explained in modern i.e., bronchial asthma, where the inflammation of the airway is produced by broncho-constriction. The peak incidence of bronchial asthma is seen in 5 to 10 years of age group. Its prevalence range is 4% to 32% for 6 to 7 years old children. In childhood, there is 2:1 male/female preponderance but the sex ratio gets equalizes by age 30. The prevalence of bronchial asthma is increasing by age worldwide. Nayopayam Kashayam and Vyaghryadi Kashayam having Vatakaphahara and Shawasahara property, mentioned in Arogya Raksha Kalpa Drumam and Ashtanga Hrdayam respectively are the formulations taken for the study.

INTRODUCTION

Tamaka shwasa is a disease of Pranavaha Srotas were Vayu is vitiated and blocked by Kapha, moves upward instead of its normal flow to the Uras[1]. The vitiated Doshas effect Rasa dhatu, involves Pranavaha Srotas and produces the disease. It is characterized by Pratiloma vayu, Kasa, Ghurghuraka, Ateeva Teevra vegam chashwasam, Pranaprapidakam, Kaphanishteevana, Muhurmuhur Shwasa, Urah parshwapeedana and so on[3]. Though, it is a Yapya disease. However in individual of recent origin of disease, person of Pravarabala or both said to be Sadhya[4].

Tamaka Shwasa is analogous to Bronchial Asthma in its characteristics. It is a chronic inflammatory disorder of the lower airway is characterized by bouts of dyspnea, as a results of temporary narrowing of the bronchi by bronchospasm, mucosal edema and thick secretions^[5]. Origin of asthma in most of cases is from the very first 2 years of life.

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In India, rough estimates indicate a prevalence of between 10% and 15 % in 5-11 year old children^[7].

Many environmental risk factors have been associated with the manifestation of Asthma. Bronchial Asthma in children has a greater risk of suffering and disability to perform the day to day activities. Dust, mites, animal dander, perfumes and other noncompatible house variants play an important role in asthma in childhood. Air pollutants, cigarette, environmental chemical smoke, injudicious usage of antibiotics will trigger the healthy respiratory cycle. Endogenic and exogenic allergens make the disease more acute in children.

Asthma in school going children is very much alarming nowadays resulting in thousands of school absenteeism, poor nutrition, ignorance and repeated noticeable adverse reactions and drug resistance makes the children more miserable and fatigue. Those children in their later age may develop difficulties in the life pattern, thoracic deformities resulting in pigeon chest, decline in the lung function etc.

OBJECTIVES OF THE STUDY

 To evaluate the efficacy of Nayopayam syrup and Vyaghryadi syrup in the management of Tamaka Shwasa in children. To evaluate the comparative effect of Nayopayam syrup and Vyaghryadi syrup in the management of the disease Tamaka Shwasa.

MATERIALS AND METHODS

Source of Data

Literary Source: All the classical Ayurvedic texts, Modern literatures and contemporary texts including the websites about the disease and treatment were reviewed and documented for the study.

Sample Source: Subjects attending OPD and IPD's of Alva's Ayurvedic Medical College & Hospital and Alva's Health Centre, Moodbidri were selected.

Drug Source: Drugs required are collected and properly identified under the supervision of *Dravya Guna* experts and medicines are prepared according to classical references at *Rasa Shastra Bhaishajyakalpana* lab, Alva's Ayurveda Medical College.

Method of Preparation of Syrup

Raw drugs were properly identified and collected from Alva's pharmacy and local markets. For making *Nayopayam* syrup, *Bala* (10 part), *Jeeraka* (1 part) and *Shunti* (1 part) were taken which is properly cleaned in running water to remove dirt and later dried and made into coarse powder. For making *Vyaghryadi* syrup, *Vyaghri* (1 part), *Shunti* (1 part), *Guduchi* (1 part) were taken which is properly cleaned in running water to remove dirt and later dried and made into coarse powder.

For making *Nayopayam Kashayam*, all the needed drugs were mixed together and added 8 times water and boiled and reduced to 1/4th to prepare *Kashaya*. For making *Vyaghryadi Kashayam*, all the needed drugs were mixed together and added 8 times water and boiled and reduced to 1/4th to prepare *Kashaya*. While preparing *Vyaghryadi Kashaya*, coarse powder of *Pippali* was added as *Prakshepaka dravya*.

Both prepared *Kashayam* were sieved and collected in a vessel and heated. Double quantity of *Sharkara* was added to the *Kashaya* and heated till it attains one - two thread consistency^[11]. The syrup prepared was kept for self-cooling to normal temperature. Later it was collected in 100ml bottles.

Method of Collection of Data

Study Design: Randomized comparative clinical study **Selection of Patients and Sample Size:** 40 children having diagnostic criteria of *Tamaka Shwasa* was randomly divided into two groups.

Group A (Trial Group): This group contains 20 children who was administered *Nayopayam* Syrup.

Group B (Trial group): This group contains 20 children who was administered *Vyaghryadi* Syrup.

Diagnostic Criteria: Children were diagnosed based on the following features of *Tamaka Shwasa* as mentioned below:

- Shwasa (Difficulty in breathing)
- Kasa (Cough- dry or productive)
- Ghurghuraka (Wheeze/Ronchi)
- Kapha Nishteevana (Expectoration of sputum)
- Ateeva Teevra vegamcha Shwasam (Tachypnea)
- Muhur Muhur Shwasa (paroxysm of dyspnea)
- *Nishtitante Kshanamsukhi* (Relief of dyspnoea after expectoration)
- Aseenolabhatae Saukhyam (orthopnea)
- Urah Parshwa Peedana (Tightness of chest)

Inclusion Criteria

- 1) Children fulfilling 3-4 diagnostic criteria are included.
- 2) Children irrespective of sex, religion and socio economic status was taken.
- 3) Children between age group of 6-12 years.
- 4) Children with mild and moderate symptoms of *Tamaka Shwasa.*

Exclusion Criteria

- 1) Children with acute or severe exacerbation of asthma who requires immediate intervention were excluded.
- 2) Children suffering from other systemic disorders are excluded.
- 3) Children with history of malignancy, or any other congenital anatomical abnormalities of chest and Respiratory system.

Table 1: Interventions

Groups	Drug	Dose	Duration
Group A	Nayopayam syrup	5ml (6 to 9 years)	1 month
		10ml (10 to 12 years) TID	
Group B	<i>Vyaghryadi</i> syrup		1 month

Period of Observation

- Treatment duration: 30 days.
- Assessment of children was done on before treatment, 15th and 30th day.
- Follow up period: Follow up study was done on 15th day (45th day) after completion of treatment.
- Total duration of study: 45 days.

Table 2: Grading of Subjective and Objective criteria

Assessment criteria	0	1	2	3
Subjective Criteri	a			
Shwasa	No dyspnea	Dyspnea doesn't hamper normal activities	Dyspnea hampering daily/physical activities	Dyspnea forcing absolute rest
Kasa	No cough	After ingestion of irritable food	During morning and or night	Frequently in day and or night
Muhur Muhur Shwasa	No attacks of dyspnea	Episode of dyspnea on exposure to specific allergen/ cold environment	Less than 2 episodes per month	More than 2-3 episodes per month
Aseenolabhatae saukhyam	Can lie flat & sleep comfortably	Can lie flat & sleep with little distress	Can't lie flat & has to remain in semi erect/upright position	No comfort even in sitting posture
Objective Criteria				
Ghurghuraka	No wheeze	At occasional spots	Diffuse in one phase of respiration	Diffuse in both phase of respiration
Ateeva teevravegamcha Shwasam	RR 18 to 23 per min	RR 24 to 30 per min	RR 31 to 40 per min	RR >40 per min
PEFR	Normal	>80% of the predicted	50-80% of the predicted	<50% of the predicted

Table 3: Assessment of severity of Asthma in children can done

Based on	Mild	Moderate	Severe
Buseu on	Mila	Moderate	Severe
Frequency/ Month	< one episode JAPI	> One Episode	4 Episodes
Duration of Symptoms Brief for hours		Prolonged 2-3 days	Almost continuous
Activities		10 40 1 50	
• Eating	Normal	Solids	Liquids
Sleep Disturbance	Nil	At times	Frequent
 Playing 	Able	Restricted	Not able
School Absenteeism Nil		Occasional	Frequent
Hospitalization	Rare	Occasional	Frequent
PEFR	60-80% predicted	40-60% predicted	40%

Table 4: Observations and interpretations

Observations	Predominance	%	Interpretations
Age	6 to 9 years	55%	Sample size is small which is not enough to shows the prevalence of age in bronchial asthma.
Gender	Male	70%	The sample size is small which is not enough to show the prevalence of sex even though this study shows the data of 2:1 ratio of males over females.
Religion	Muslim	55%	May be due to predominance of Muslims in the study area
Socio economic status	Lower class	55%	May be due to low health care maintenance and partly due to higher level of exposure to different kinds of allergens.
Family history	Absent	75%	Apart from family history the other environmental factors like dust, smoke, allergens, viral infections also plays a

			major role in developing asthma.
Nature of diet	Mixed	60%	Guru guna of non-vegetarian food items leads to Agnimandhya, Ama formation and Srotorodha which in fact are the main factors for the development of Asthma.
Habit	Freeze foods	45%	The coldness of freeze foods aggravates both <i>Vata</i> and <i>Kapha</i> . It leads to pooling of mucus in to the bronchial tree causes aggravation of Asthma.
Sleep pattern	Disturbed	70%	Nocturnal attack of asthma and cough may be the reason for having disturbance in sleep
Prakrthi	Vatakapha	50%	This may be due to the fact <i>Tamaka Shwasa</i> is <i>Vata</i> and <i>Kapha dosha</i> predominant.
Habitat wise distribution	Urban	80%	May be due to polluted environment and change in lifestyle in urban area influence the increased incidence of Asthma in children.
Upashaya	Intake of hot substance	100%	In <i>Tamaka Shwasa</i> , <i>Vata</i> and <i>Kapha</i> are the main <i>Doshas</i> . Both are having <i>Sheeta</i> property, hence <i>Ushna</i> is antagonist of Sheeta, which suppress <i>Vata</i> and <i>Kapha dosha</i> . So the subjects of <i>Tamaka shwasa</i> likes warm articles like tea, coffee, hot water etc.

RESULTS

Table 5: Effect of Nayopayam syrup in subjective and objective parameter (Group A)

Tuble of Enece of Tray opayarm syrup in Subjective and objective parameter (droup 11)								
Symptoms	BT	AT	BT-AT	urv%	S.D	S.E	WSRT Z Value	P value
			20		(±)	(±)		
Shwasa	1.70	0.40	1 .30	76.47	0.470	0.108	3.92	< 0.05
Kasa	2.30	0.20	2.10	91.30	0.447	0.103	3.29	< 0.05
Muhur Muhur shwasa	1.30	0.40	0.90	69.23	0.718	0.165	3.72	< 0.05
Aseenolabhatae	1.15	0.05	1.10	95.65	0.553	0.127	3.72	< 0.05
Saukayam			7u1 11	ADR UP				
Ghurghuraka	1.45	0.15	1.30	89.66	0.571	0.131	3.82	<0.05
Ateeva teevra Vegam	1.00	0.35	0.65	65.00	0.489	0.112	3.18	< 0.05
Cha Shwasam								
PEFR	1.40	0.30	1.10	78.57	0.447	0.103	3.82	< 0.05

Table 6: Effect of *Vyaghryadi* syrup in subjective and objective parameter (Group B)

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Symptoms	BT	AT	BT-AT	%	S.D (±)	S.E (±)	WSRT Z Value	P Value
Shwasa	1.70	0.65	1.05	61.76	0.605	0.139	3.62	< 0.05
Kasa	1.90	0.80	1.10	57.89	0.912	0.209	3.82	< 0.05
Muhur muhur shwasa	2.05	0.70	1.35	65.85	0.587	0.135	3.82	< 0.05
Aseenolabhatae Saukhyam	1.50	0.15	1.35	90.00	0.489	0.112	3.92	<0.05
Ghurghuraka	1.95	0.35	1.60	82.05	0.598	0.137	3.92	< 0.05
Ateeva teevra Vegam Cha Shwasam	1.90	0.30	1.60	84.21	0.598	0.137	3.82	<0.05
PEFR	1.85	0.10	1.75	94.59	0.444	0.102	3.92	< 0.05

Table: 7; Comparative effect of Group A and Group B

	•		-	-			
Signs and Symptoms	Group A (Mean Score)	Group B (Mean Score)	S.D (±)	S.E (±)	MW U Value	MW Z Score	P Value
Shwasa	0.95	1.11	0.565	0.130	155	1.20	>0.05
Kasa	1.25	1.24	0.582	0.134	181	0.48	>0.05
Muhur Muhur Shwasa	0.89	1.20	0.465	0.107	90	2.94	< 0.05
Aseenolabhatae Saukhyam	0.53	0.76	0.401	0.092	118	2.20	<0.05
Ghurghuraka	0.74	1.05	0.479	0.110	99	2.71	<0.05
Ateeva Teevra Vegam Cha Shwasam	0.68	0.89	0.400	0.092	120	2.15	<0.05
PEFR	0.73	0.81	0.540	0.124	179	0.55	>0.05

Table 8: Overall Result in Percentage (Group A and Group B)

Group A	Group B	Mean Difference	SE (±)	MW U Value	MW Z Score	P value
82.94	76.60	6.34	4.56	146.5	1.43	0.152

Comparative analysis of the overall effect of the treatments in both the groups was done by statistically with Mann Whitney test. The test shows that the treatment is statistically not significant in Group A when compared to Group B, except *Muhur Muhur Shwasa, Aseenolabhatae saukhyam, Ghurghuraka* and *Ateeva Teevra vegam cha shwasam*. In Group A, overall result is 82.94% and Group B overall result is 76.60%.

Table 9: Overall Effect

Class	Grading working april 19	No. of Subjects		
		Group A	Group B	
0%	No improve <mark>m</mark> ent	2 0	0	
1-30 %	Mild improvement	6 0	0	
31 - 60%	Moderate improvement	2	3	
61-99 %	Marked improvement	10	16	
100%	Complete Relief	8	1	

DISCUSSION ON RESULTS

Effect of Treatment on Shwasa

Shwasa (breathlessness) is due to bronchoconstriction (Srotosanga) of the airway due to inflammatory causes like increased secretion of epithelial secretions and bronchial mucous gland. So by administration of medicine, there would have reduction and clearance in the obstruction to the passage of *Prana vayu* by clearing the vitiated *Kapha* which results in reduction in *Prana Vilomata*.

Effect of Treatment in Kasa

Kasa is an effort to expel the *Kapha* (*Malaroopa*) secreted in the *Pranavaha srotas*. So by administration of medicine, there would have been an action in liquefaction of the sputum and then only the diminishing of cough is possible.

Effect of treatment in Muhur Muhur Shwasa

To fulfill the demand of oxygen, the respiratory rate gets increased. The symptom produced due to the demand but the anatomical structures are inefficient due to the bronchospasm and inflammation. This is equivalent to the Paroxysm dyspnoea described in

modern science. So on the administration of medicine helps to reduce inflammation and bronchospasm.

Effect of Treatment in Aseenolabhatae Saukhyam

In sleeping or supine position dyspnea will increase due to increase of airway hindrance at that particular position, because of narrowing airways. So this study helps to reduce the *Srotosanga*, which in turns helps to reduce the obstructed airways.

Effect of treatment in Ghurghuraka

Wheeze (*Ghurghuraka*) is produced by vibration in the wall of an airway on the point of closer due to contraction of smooth muscles. So administration of medicine helps for the *Kapha Vilayana* and thus in turns helps to reduce *Sroto sanga*.

Effect of Treatment in Ateeva Teevra Vegam Cha Shwasam

Tamaka Shwasa has been described as the disease with Vega (paroxysmal attacks). This means that during the attack, patients feel very much

troublesome. Due to obstruction of *Shwasa marga*, less amount of *Prana Vayu* can enter the body. So this study shows reduction and clearance in the obstruction and thus allows easy passage of *Prana Vayu*.

Effect of Treatment in PEFR

This may be due to the *Kapha Vilayana* property of the drug and helps in the normal *Gati* of *Vayu*. It shows significant reduction in the airway obstruction.

Probable Mode of Action of Nayopayam Syrup

Navopavam Kashavam is mentioned in Aroava Raksha Kalpa drumam. Bala, Jeeraka and Shunti are the three ingredients of Nayopayam Kashayam. Though they are in Kashaya form, to make it easily administrable and palatable, syrup preparations are adopted. It has *Vata Kaphahara*. Shwasahara property and also predominantly *Katu rasa* and *Ushna veerya* in nature, which in turns act against the disease Tamaka shwasa. Among the ingredients of Nayopayam *kashayam*, the two ingredients (*Jeeraka* and *Shunti*) are having the predominance of Katu rasa, Laghu guna, Ushna veerya, Madhura Vipaka and Vata Kaphahara Thus by combinational effect, this formulation helps to remove the obstruction made by Kapha in the Pranavaha srotas, thus leading to Samprapti Viahatana and relieves the symptoms of the disease Shwasa. Bala moola have anti-inflammatory, anti- asthmatic activity and good immunity boosting activity. Thus it helps to reduce the inflammation of airways (Shothahara) and also provide strength to Pranavaha Srotas and acts as immunomodulatory (Rasayana action) by enhancing the immunity. Bala contains the phytochemicals ephedrine, vasicine, vasicinol, and vasicinone which act as bronchodilators, helping to clear the airways and facilitate easy breathing. *Jeeraka* acts as anti-inflammatory, immunity boosting action, digestive stimulant and carminative in nature. It is *Ushna Veerya* in nature. It helps to eliminate the Kapha and clears the airway for comfortable breathing. Also the Deepana, Pachana action helps to digest the Ama and in turns helps to normalize the Agni. Shunti is anti-inflammatory, digestive in nature and also had expectorant activity. So it helps in the easy expectoration of Kapha which have accumulated in Pranavaha Srotas. Thus, it helps for clearing the Srotomarga obstructed by increased Kapha.

Probable Mode of Action of Vyaghryadi Syrup

Vyaghryadi Kashayam having Vatakaphahara and Shawasahara properties are mentioned in Ashtanga Hridayam, Jwara Chikitsa chapter. Though they are in Kashaya form, to make it easily administrable and palatable, syrup preparations are adopted. The ingredients of Vyaghryadi syrup are Vyaghri, Shunti and Guduchi. Vyaghri is having Tikta and Katu rasa, Laghu, Ruksha Ushna Guna, Vatakapha

deepana. Pachana. Anulomana. Srotoshodana, anti- inflammatory as well as antiasthmatic property. Shunti has Guru, Snigdha guna, Madhura Vipaka, acts as Deepana and Pachana and Ama Nashaka property. Gudhuchi is mentioned as Pathya ahara in Charaka Samhita, Bhaishagya ratnavali and Yogaratnakara in Tamaka shwasa due to its Kashaya rasa, Laghu Sniadha guna, Ushna Veerva and Madhura Vipaka. It is Deepana, Rasayana and Balya. It also has anti-inflammatory and immune modulatory action. The Ama Nashaka property, acts on Agni and alleviate Ama. This would clear up Rasa Dhatu dushti and excessive production of Mala Kapha. These drugs act at the level of Agni in Samprapti Vighatana. The Srotoshodana property helps to clean the various channels of *Pranavaha Srotas* which leads to Anulomana Gati of Vata. In this way Srotoshodaka drugs helps in Samprapti Vighatana. Vata Kaphahara property, which helps in the Samprapti Viahatana at the level of Pratiloma Vata Dosha and removes obstruction of Pranavayu. These drugs provide to Pranavaha Srotas and acts strength immunomodulatory (Rasayana action) by enhancing the immunity.

CONCLUSION

Children in the early stages of Bronchial asthma, with early approach and less severity responded well during the first/second week of the treatment. Wheeze, breathlessness, cough are the main symptoms and signs of Bronchial asthma was observed in almost all the children during the study. Few children had rhinorrhea, heaviness in the head, cough prior to the main symptoms of asthma. The average percentage of improvement in Group A with Nayopayam syrup is 82.94% and Group B with Vyaghryadi syrup is 76.60%. Even though both Nayopayam syrup and Vyaghryadi syrup have Vata Kaphahara and Shwasahara property, Nayopayam syrup is more effective than Vyaghryadi syrup in the management of Tamaka Shwasa in children.

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