ISSN: 2322 - 0902 (P)
ISSN: 2322 - 0910 (O)

International Journal of Ayurveda and Pharma Research

Research Article

EFFECT OF *HAREETAKYADI YOGA* IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE – PRE TEST-POST TEST DESIGN

Aswathy M[1]*, Radhakrishnan VN[2], Jithesh M[3]

*[1]PhD Scholar, [3]Professor & HOD, Department of Kayachikitsa, V.P.S.V Ayurveda College, Kottakkal, Kerala.

[2]Former Professor & HOD, Department of Kayachikitsa, Govt. Ayurveda College, Trivandrum, Kerala, India.

ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is a lung disease characterized by chronic obstruction of lung airflow that interferes with normal breathing, which is progressive and is not fully reversible. COPD includes chronic bronchitis and emphysema. Symptoms of COPD are well explained in Ayurveda in the context of *Kasa* and *Swasa* among which chronic bronchitis can be better correlated to *Vataja* and *Kaphaja kasa* and emphysema to *Tamaka swasa.* COPD is characterized by mucous hyper secretion, airway narrowing, fibrosis and destruction of lung parenchyma. Even though the existing conventional management is excellent, Ayurveda provides additional benefits such as improvement in quality of life. The study drug *Hareetakyadi yoga* is mentioned in *Prakarana* of *kasa* in *Chikitsa manjari*. The objective of the study was to evaluate the Effect of *Hareetakyadi yoga* in Chronic Obstructive Pulmonary Disease. The Study includes 10 subjects of age group 40-70 years of both gender, diagnosed clinically and as per investigations satisfying COPD, stage 1 & 2 as per GOLD criteria of spirometry attending department of *Kayachikitsa*, Government Ayurveda College, Thiruvananthapuram. A protocol from *Deepana* to *Virechana* were done as preparatory phase before administering drug. *Hareetakyadi yoga* having the properties of *Kapha vata hara, Agni deepana* and *Rasayana* property seems to be effective in the management of this disease.

KEYWORDS: COPD, *Deepana, Virechana, Agnimandhya, Hareetakyadi yoga, Kasa, Swasa.*

INTRODUCTION

Majority of diseases affecting people nowadays are due to these new age life styles, habits, occupational and environmental factors and COPD is one among them. Smoking and atmospheric pollution causes more incidence of the disease. In India, COPD is the second most common lung disorder. [1] Crude estimates suggest there are 30 million COPD patients in India. WHO estimates, 65 million people have moderate to severe COPD. [2] It is estimated as the fifth leading cause of disability and third leading cause of death by 2020. With the increasing prevalence of smoking in developing countries, and aging populations in high-income countries, the prevalence is expected to rise over the next 40 years and by 2060 there may be over 5.4 million deaths annually from COPD and related conditions. [3]

COPD is a lung disease characterized by chronic obstruction of lung airflow that interferes with normal breathing, which is progressive and not fully reversible. It is characterized by chronic cough with or without sputum production lasting more than 3 months for atleast 2 consecutive years. [4] It includes chronic bronchitis and emphysema. Chronic bronchitis is an inflammatory disease of the lungs that causes the respiratory inflammation in which there is increase in mucous production and cell damage. Emphysema is a condition where alveoli are damaged and enlarged. COPD is having a significant impact on a person's quality of life, restricting daily work and leisure activities.

From the Ayurveda point of view, COPD can be considered as a disorder of *Pranavaha Srotas*. The etiological factors and clinical features described in Ayurvedic classics for *Pranavaha Srotodushti* are nearly similar with those of COPD and occurs usually in prolonged conditions of *Kasa or Tamaka Shvasa*. Though COPD cannot be compared to any single condition of *Pranavaha Sroto Dushti,* advanced condition of *Doshika Kasa* and *Tamaka Shvasa* leads to COPD. Due to indulgence in etiological factors, vitiated *Prana* and *Udana Vata* situated in *Pranavaha Srotas* enforces *Kapha,* resulting into obstruction of channels. So a drug having *Pachana, Agni deepana, Kapha vatahara* and *Rasayana* property will be

effective in managing the symptoms and improving the quality of life. The study drug '*Hareetakyadi yoga*' mentioned in *kasa chikitsa of Chikitsa Manjari* have 6 drugs with the above mentioned properties.

Research question: Whether the drug *Hareetakyadi yoga* 6 gm twice daily half hour before food for 2 months administered after sodhana is effective in *Chronic Obstructive Pulmonary Disease* among 10 participants of age group 40 - 70 years attending the OPD & IPD of Department of Kayachikitsa, Government Ayurveda College, Thiruvananthapuram during the period of 2014-2016.

Aim: To study the role of *Rasayana* drugs in the management of COPD.

Objective: To assess the effect of *Hareetakyadi yoga* in *Chronic Obstructive Pulmonary Disease* and also the improvement in the quality of life.

MATERIALS AND METHODS

The research design selected for the study was pre & post test design without control. Ten subjects, diagnosed as having COPD were selected from the OPD & IPD of Department of Kayachikitsa, Government Ayurveda College, Thiruvananthapuram as per the inclusion criteria. After a detailed clinical examination using a semi structured clinical proforma (prepared based on the review of literature) and examination by a Pulmonologist, the confirmed cases were selected. Study was carried out after getting ethical clearance (IEC no: AVC IEC 052012 / 2014).

Inclusion criteria: Subjects of age group 40 -70 years of both sex diagnosed clinically and as per investigations of COPD, stage 1 & 2 as per GOLD criteria of spirometry and with written consent.

Exclusion criteria : Subjects with diabetes mellitus, allergic asthma, malignancy, Pregnant and lactating women, Smokers, Status asthmaticus, Subjects with Peak Expiratory Flow Rate <50%, those not fit for *sodhana*, subjects on prolonged medication for systemic diseases were excluded.

Table -1: Management protocol

Intervention	Drug	Dose, Time of administration and *Anupana*	Duration
Deepana- Pachana	*Vaiswanara churna*[5]	6g with hot water twice daily, half hour before food	1-7 days or till *Agni Deepthi*[6].
Sadyasneha & hot water bath	*Rasnadasamoola ghrita*[7]	50 ml along with *Saindava* (1pinch),7am and 7 pm before food	1 day
Virechana	*Avipathy churna*[8]	24 g with honey (48 ml),7am in empty stomach	1 day
Samsarjana karma[9]			*According to *Sudhi*[11]
Hareetakyadi yoga[10]		6 gm twice daily half hour before food	2 months.

*According to the *Vegas (Avara,Madyama* and *Pravara sudhi)* patients were advised to have *Peya, Vilepi, Krita yusha, Akrita yusha* and *Mamsa rasa* for one, two and three *Annakalas* each respectively with an intention to retain the *Agnibala.*

Table 2 : Ingredients of *Hareetakyadi yoga*

Drug	Botanical Name	Ratio	Part used	*Guna*	*Karma*
Hareetaki	*Terminalia chebula*	1	Fruit rind	*Laghu, Ruksha*	*Tridoshahara, Anulomana, Rasayana, Lekhana*
Nagara	*Zingiber officinalis*	1	rhizome	*Guru, Ruksha, Teekshna*	*Kaphavata hara, Deepana, bhedana*
Musta	*Cyprus rotundus*	1	tuber	*Laghu, Ruksha*	*Kapha pitta hara, Deepana, Pachana, Grahi, lekhana*
Pippali	*Piper longum*	1	fruit	*Laghu, Snigdha*	*Shvasahara, Kasahara, Deepana, Pachana*
Maricha	*Piper nigrum*	1	fruit	*Laghu, Tikshna*	*Kaphavata hara, Deepana, Pramadhi, Avrishya*
Guda	Jaggery	2		*Laghu*	*Agnivardhaka, Vata Pittaghna*

Assessment: Evaluation done on the day 0, day 17 (last day of *Samsarjana krama* after *Sodhana*), day 77 (after treatment) and day 107 (follow-up). Changes in the scores of the spirometric criteria and quality of life with SGRQ were recorded.

Assessment tools: St. George's Respiratory Questionnaire[12],Case proforma, GOLD criteria of spirometry[13].

Administration of Trial Drug: All the raw drugs of good quality was collected from market and thoroughly cleaned. Drugs were powdered and Guda was melted and the above powder was mixed well with it, to prepare *Vataka*. The *Vataka* so obtained was dried properly and stored in air tight containers. The drug was dispensed to the patients in air tight packets of 6gm each with date of administration labelled on the packets and they were advised to take one packet of medicine alone by melting in mouth, half an hour before food, twice daily for a period of two months.

Statistical analysis: For testing the effect of treatment for significance 'paired't' test' and wilcoxon's signed rank test were used. For all comparisons two tailed P values were used. If any one of the P value is less than 0.05, the difference was considered as significant at that level.

RESULTS

Table 3: Distribution based on Demographic data

Domains	Distribution	Frequency	Percentage
Age	60 -70	5	50
	50 - 60	3	30
	40 - 50	2	20
Gender	Male	6	60
	Female	4	40
Socioeconomic status	Poor	9	90
	Middle class	1	10
Educational status	Primary	7	70
	Higher Secondary education	2	20
	Illiterate	1	10
Occupation	Manual labourers	8	80
	Desk work	1	10
	House wife	1	10
Religion	Hindu	8	80
	Muslim	0	0
	Christian	2	20
Marital status	Married	10	100

Table 4: Distribution of Data related to risk factors of COPD

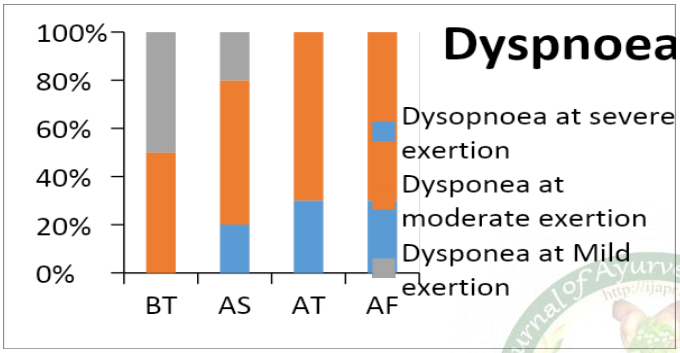
Domains	Distribution	Frequency	Percentage
Addiction	Ex-smokers	6	60
	Non smokers	4	40
	Alcoholic	6	60
	Non Alchoholic	4	40
Allergy	Present	8	80
	Absent	2	20
Family history	Present	4	40
	Absent	6	60
Prakrithi	*Vata kapha prakrithi*	7	70
	Vatapitta prakrithi	2	20
	Kaphapitta prakrithi	1	10

Table 5: Distribution of Data related to Personal history

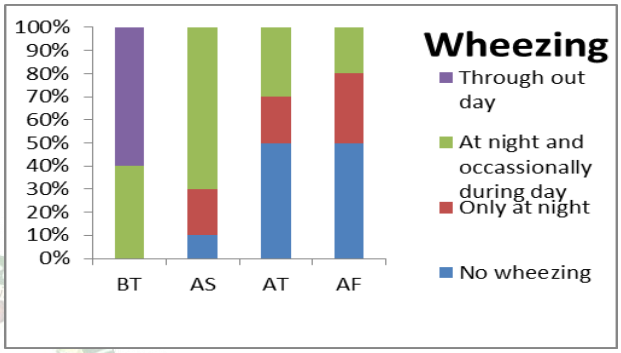
Domains	Disribution	Frequency	Percentage
Appetite	Good	1	10
	Moderate	4	40
	Poor	5	50
Bowel habits	Normal	4	40
	Hard stools	6	60
	Constipated	0	0
Sleep	Sound	0	0
	Disturbed	10	100

I. **Data related to clinical features:** When analyzed the symptoms, productive cough, dyspnoea, wheezing and rhinitis all was found to reduce after treatment and seen to be statistically significant. In overall study period ie. Between, before treatment and after follow up, study was statistically significant (P < 0.05).

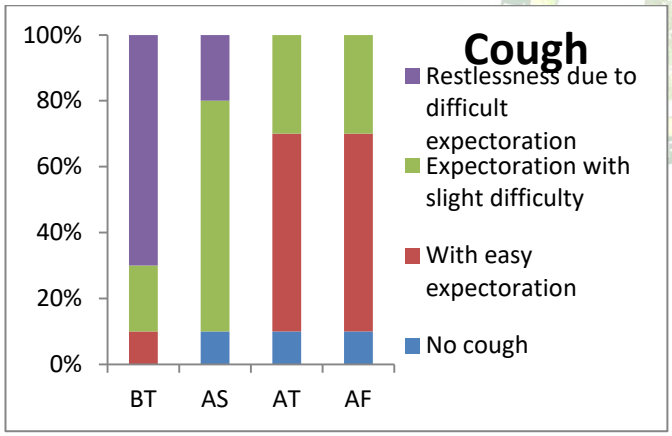
Graph: 1 - Outcome on dyspnea



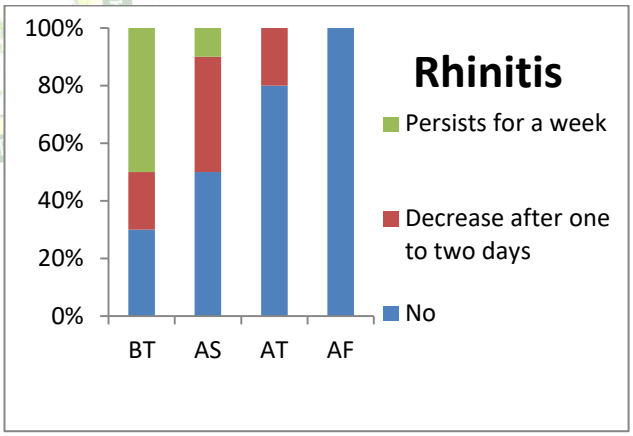
Graph: 2 - Outcome on wheezing



Graph: 3 -Outcome on cough

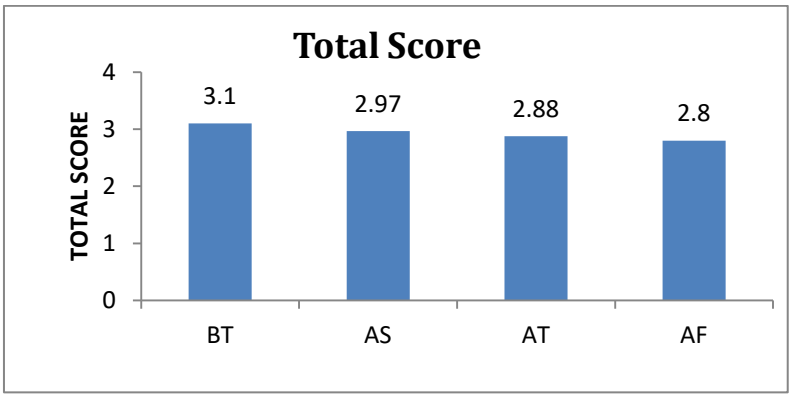


Graph: 4 - Outcome on rhinitis



II. **Data related to SGRQ (QOL Questionnaire):** The activity, impact and total scores of SGRQ had shown a statistically significant (P< 0.05) reduction after treatment, which suggests an improvement in the functioning of respiratory system.

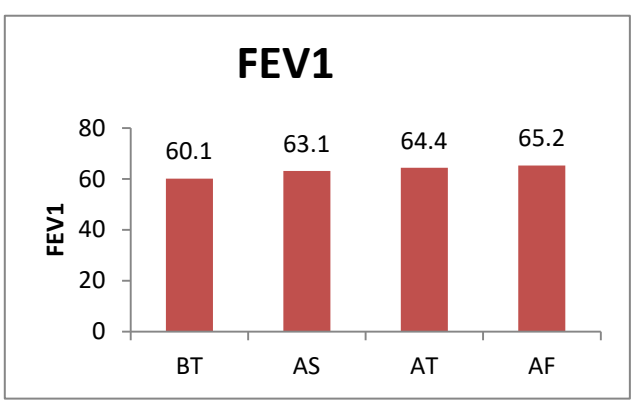
Graph: 5 - Outcome on SGRQ

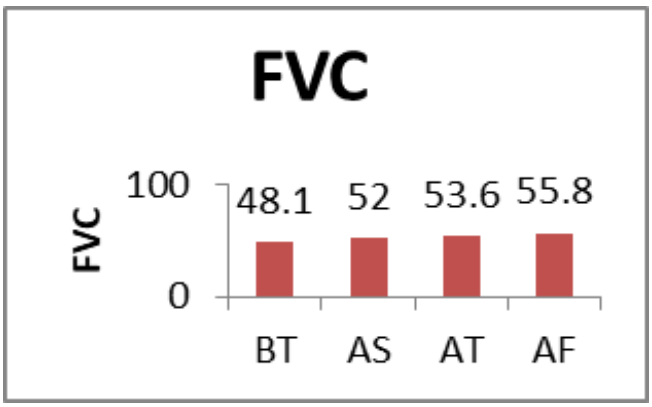


III. **Data related to Spirometry Values (GOLD CRITERIA):** After the treatment period, FEVI & FVC values seen increased with statistical significance($P < 0.05$). A decrease in the value in long follow up period was noted. But in the overall study period, including treatment and follow up periods, the medicine seen effective in increasing spirometry values significantly.

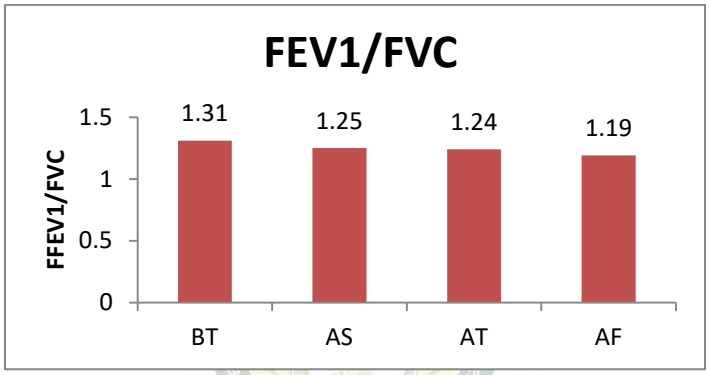
Effect on spirometry

Graph: 6 - Outcome on FEV_1 Graph: 7 - Outcome on FVC





Graph: 8 - Outcome on FEV_1 / FVC



DISCUSSION

COPD is a *Kapha vata* predominant disease in the spectrum of *Kasa* and *Swasa*. In the *Samprapthi ghatakas* of *Kasa* and *Swasa*, the main *Doshas* involved are *Vata* and *Kapha. Agnimandya, Agnijanya ama* and *Pranavaha srotorodha* are having major role in the pathogenesis of disease. *Agni mandya* and *Srotorodha* leads to depletion of body constituents – the *Dhatus* and finally *Kshaya roga*. This may produce weakness of the digestive fire, because the *Srotomukhas* are coated and obstructed, the *Dhatvagni* being poor and the rasa undergoes improper metabolism and remaining in its own place produces the various complications. It won't lead to the formation of further *Dhatus.* The food not getting digested properly by the digestive fire in the alimentary tract gives rise to more of wastes and less for the nourishment of *Dhatus.* Thus *kasa* can be considered as a progressive type of disease and if left untreated, it will finally lead to *Kshaya.* COPD is also progressive in nature with chronic bronchitis if not managed properly leading to emphysema. Early management is ideal in such cases with special reference to *rasayana.*

Propable mode of action of sodhana: By *Sodhana utklishta doshas* are eliminated through *Urdhva* and *Adhobhaga* and also prevents relapse of the condition. Here the *Sodhana* selected was *Virechana* which is indicated in *Tamaka swasa* by Acharyas- '*Tamake thu virechana*' [14]. Even though *Vata and Kapha doshas* are dominant, *Pitta* is also seen associated as the roga is originated from the *Amasaya*. Also considering the age and *Bala* of the patient *Virechana* can be considered safe to administer. *Sodhana* helps to clear the *Srothases* so that air can pass more easily and prepares the body for the study drug to act more effectively. In this study, *Virechana* was administered with *Avipathy churna*.

Probable mode of action of the drug: The drugs in *Hareetakyadi yoga* are having *Deepana, Pachana, kaphavatahara and vatanulomana* properties. Among the 6 drugs, 5 are having *Katu rasa, Laghu guna, Usna veerya, Deepanapachana* and *Kaphavatahara* property. Since *Kapha* and *Vata* plays an important role in *Samprapthi* of *Kasa* and *Swasa, the Kapha vatahara* property of the drugs in *Hareetakyadi yoga* is believed to be a key factor. *Katu rasa* is *Deepana,*

Pachana, Shodhana along with *Sophahara* and *amapachana.* It can reduce *Sopha* and dilates *Srothases*. Broncho dialatory and anti inflammatory action of *Katu rasa* is essential for reducing COPD severity. *Haritaki* and *Pippali* are having *Rasayana* property. The drugs along with *Guda* will act both on *Jataragni* and *Dhatavagni* level and there by corrects digestion, absorption and assimilation of food substances. *Amasaya* is the pathological site of *Kasa*, the drug will correct the *Doshic* disturbances and *Rasayana* property will give sufficient strength to structural and functional aspect of organs especially lungs and associated structures.

When looking upon the chemical constituents and pharmacological action- based on them, *Hareetaki* contains chebulin which is having anti spasmodic action on smooth muscle. It is having anti oxidant property by which it reduces DNA breaks of human leukocytes caused by cigar smoke condensate. It has proven antilipidaemic and hypoglycaemic action. Chebulagic acid is anti inflammatory and anti phlegmatic[15]. By its laxative action it helps in correcting the bowel in COPD patients. In *Nagara*, the ethanolic extract is anti inflammatory and enhances bio availability[16]. It increases the appetite and thus by body weight. It is also having antioxidant property. *Maricha* is having anti bacterial [17]. Crude extract of *Pippali* is found to be effective in improving ciliary action and thus by suppressing the cough reflex[18]. Here in COPD, ciliary movement is impaired and causes the lodging of mucus in airways and obstruction. So this action of *Pippali* may be working positively in this case. Extract of *Pippali* is also proven to be anti allergic and study shows its action in reducing bronchospasm and improving FVC & FEV1. *Mustha* is having antibacterial, anti inflammatory and smooth muscle relaxant action[19].

Outcome variable: On analysis, in the SGRQ scoring, the symptom score covers the recollection of symptoms over a preceding time of one year. So in the present study, since the duration of the study is only 2 months and follow up is 1 month, there won't be any change in it. The activity, impact and total scores of SGRQ had shown a significant reduction after treatment, which suggests an improvement in the condition of respiratory functioning.

After the treatment period, FEVI & FVC values seen increased with statistical significance. When analyzed the symptoms, productive cough, dyspnoea, wheezing and rhinitis were found to reduce after treatment and significant. There was significant reduction in all symptoms in comparing with before and after *Shodhana* itself. Also when comparing with after *Shodhana* and after treatment, significance was noticed.

CONCLUSION:

Statistical analysis from clinical trial showed that there is improvement in the pulmonary function values and SGRQ values. This study observed statistically significant symptomatic and clinical improvement of COPD in 2 months. No untoward effects were reported during the study period. Even though recurrence of the symptoms was observed in some patients after follow up period, on analyzing data before and after follow up, it can be concluded that the trial drug is effective in Chronic Obstructive Pulmonary Disease.

Limitations of the study: The study period was of short duration to show more significant changes**.** Longer follow up was not done**.** A detailed protocol study was not done and there was no control group.

ACKNOWLEDGEMENTS

The authors express sincere thanks to Vaidya Prof. K. S. Dheeman, Director General, CCRAS, Dr. N. Srikanth, Deputy Director General, CCRAS and Dr. C.V Jayadevan, Principal, V.P.S.V Ayurveda College, Kottakkal for their extensive support.

REFERENCES

1. Fauci et al. Harrison's Principles of Internal medicine, McGraw Hill Publications, 17th edition, Vol2, part 10, Section1, chapter 254,page 1635.
2. American Lung Association Epidemiology and Statistics Unit. Trends in COPD (Chronic Bronchitis and Emphysema): Morbidity and Mortality 2013. https://www.lung.org/assets/documents/research/copd-trend-report.pdf (accessed 14 October 2019).
3. World Health Organisation, Burden of COPD, Dec 2017; www.who.int
4. Global Burden of Disease Study Collaborators. Global, regional, and national age-sex specific all-cause and cause- specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet 2015; 385(9963): 117-71.
5. Govindan vaidyan P M. Ashtanga Hridaya chikitsa sthana. Edition reprint 17.Volume1.Devi book stall, Kodungallur. 2016; 14/34. p 410.
6. Indu, Validation of Rukshana in Amavata after Valuka sweda, GAVC Tripunithura. 2017
7. Govindan vaidyan P M. Ashtanga Hridaya chikitsa sthana. Edition reprint 17.Volume1. Devi book stall, Kodungallur. 2016; 3/6-9. p88.
8. Sreekanta Murthy K. R, Vagbhata's Astanga Hridaya, Chaukhambha krishnadas academy, Varanasi, kalpa sthana, 2004. 2/12, pg 540.

9. Sreekanta Murthy K. R, Vagbhata's Astanga Hridaya, Chaukhambha krishnadas academy, Varanasi, sutra sthana, 2004.18/ 29. pg 230.
10. Chikitsa Manjari, Vidyarambha publishers, kasa chikitsa page-115.
11. Malay. Proforma development for validation of samyak virikta lakshana. PG Dissertation. KUHS. 2018.
12. St. George's Respiratory questionnaire, St. George university of London; www.healthstatus.sgul.ac.uk
13. The Global Strategy for Diagnosis, Management and Prevention of COPD (updated 2020), the Pocket Guide (updated 2020); www.goldcopd.org.
14. Gangasahaya pandey, The Charaka samhitha of Agnivesha with Ayurveda Deepika Commentary of Chakrapani Dutta 1997, Varanasi 5th edition, chikitsa sthana, 17/121, pg no-432.
15. Shastri J LN.Illustrated Dravyaguna Vijnana, Chaukhambha Publications Vol- 2,pg 209.
16. Ibid; pg 519.
17. Ibid; pg 448.
18. Ibid; pg 452.
19. Ibid; pg 551.
20. Shargadhara, Shargadhara Samhitha, translated by Prof. Srikanra Moorthy, Chaukhambha Orientalia, Varanasi, 6th edition, 2006, pg:203.

Cite this article as:
Aswathy M, Radhakrishnan VN, Jithesh M. Effect of Hareetakyadi Yoga in Chronic Obstructive Pulmonary Disease – Pre Test-Post Test Design. International Journal of Ayurveda and Pharma Research. 2021;9(2):29-35.
Source of support: Nil, Conflict of interest: None Declared

***Address for correspondence**
Dr. Aswathy M
PhD Scholar,
Department Of Kayachikitsa,
V.P.S.V Ayurveda College,
Kottakkal, Kerala, India.
Email:
draswathym.212@gmail.com
Mobile: 8281630672