



# RETROSPECTIVE ANALYSIS ON THE EFFECT OF SHARAD VIRECHANA PROCEDURE ON PEAK EXPIRATORY FLOW RATE (PEFR) IN HEALTHY INDIVIDUALS.

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## ABSTRACT

**BACKGROUND:** WHO states respiratory diseases to be leading cause of death and disability in the world. Obstructive lung diseases are major contributors of adverse respiratory health. Researches prove the efficacy of Shodhana as treatment for many respiratory diseases. Ritu shodhana an unique contribution of Ayurveda aims at disease prevention. To understand the effect of Sharad virechana on lung function PEFR was recorded throughout the shodhana procedure. PEFR is a very sensitive and accurate index that shows airway obstruction and the strength of respiratory muscles. It is one of the important and widely used lung function tests owing to it being easy and reliable.

**AIM :** To understand the effect of complete Virechana procedure on PEFR.

**METHODOLOGY:** The data collected during Sharad virechana camp on healthy individuals conducted by Department of Panchakarma at Alva's Ayurveda Medical College and hospital as a part of routine Ritu sodhana was analysed retrospectively. Here peak flow meter was used to measure PEFR.

**RESULTS:** The data was analysed using sigma stat software. It shows an increasing pattern in PEFR starting from before treatment, after Snehapana, after Vishrama kala and after Virechana in all healthy individuals. The findings also suggest an influence of various factors related to Virechana karma on PEFR.

**CONCLUSION:** The study concludes that virechana increases PEFR which in turn suggests an improvement in lung function. Hence Sharad virechana can be effective in prevention as well as treatment of diseases which lead to narrowing airways.

**KEYWORDS :** Ritu shodhana, PEFR, Narrowing airway

## INTRODUCTION

Despite the fact that breathing is essential to life, lung health is not as generally recognized as a key health component as other indicators such as weight and blood pressure. Anyone who has battled to breathe, even for a short period, understands how important it is. Asthma affects 235 million individuals

worldwide. It is the most common chronic condition in children and affects adults as well. COPD, which includes emphysema and chronic bronchitis, affects 64 million people.

Chronic respiratory diseases remain a leading cause of death and disability worldwide. Premature mortality from chronic respiratory disorders appears to be higher in regions with under-resourced health-care systems. Healthy People focuses on increasing prevention. Strategies to eliminate environmental triggers and ensure patients obtain the proper drugs can help avoid chronic respiratory diseases (CRDs), which affect the airways and other structures of the lungs.

CRDs are not curable; however, various forms of treatment that help open the air passages and improve shortness of breath can help control symptoms and improve the condition.<sup>2</sup>

A stressful lifestyle, along with environmental pollution and respiratory infections, is known to have adverse effects on the lung functions. PEFr, as a measurement of the ventilatory function, was introduced by Hadorn in 1942, and it was accepted in 1949 as an index of spirometry.

Peak expiratory flow rate (PEFR) is a measure of ventilatory capacity measured by peak flow meter. It is the reflection of the functioning of the larger airways and any amount of stress/ infection/ inflammation in these airways causes adverse reactions<sup>2</sup>.

Asthma is the most common condition that affects peak flow. However, other conditions such as Chronic Obstructive Pulmonary Disease (COPD) that cause airway obstruction can also affect PEFr. Peak expiratory flow is a simple and easy, yet essential diagnostic tool used to assess asthma severity.<sup>2</sup>

The healthcare system of Ayurveda places a strong emphasis on maintaining good health and a healthy lifestyle. Ayurveda notably mentions Samshodhana and Samshamana therapies as a technique to normalize vitiated Doshas and maintain a normal state of health. Shodhana is a type of purifying therapy that eliminates toxins as well as balances the Dosha.

Panchakarma is described as a crucial Shodhana therapy that not only aids in maintaining general health but also helps in preventing and treating the harmful effects of numerous diseases. In this regard, it was also indicated to perform Panchakarma in accordance with the specific season.

The conduction of Ritushodhana helps to avoid contracting illnesses brought by the effects of the seasons and it also supports the normal functioning of body. In the right seasons, Shodhana helps in the expulsion of vitiated Doshas and improves vitality of organs.

Virechana advises in Sharad Ritu to avoid Pitta Prakopa since this season is susceptible for Pitta Prakopa. Ritu Shodhana controls immunological disturbances, lowers disease morbidity, prevents lifestyle problems. Ritu Shodhana contributes to Swastya rakshana and Vikara prashamana. The impacts of accumulated environmental pollutants can also be lessened by Ritu Shodhana. The Ritu Shodhana restores physical strength and delays the onset of premature aging. Ritu Shodhana not only prevents or treat diseases but also improves general health.

**AIM :** To understand the effect of complete Virechana procedure on PEFr.

## **MATERIALS AND METHODS**

**Source of data:** Subjects were selected from Alva's Ayurveda Medical College, Moodbidri

**Method of collection of data:**

- The data collected during Sharad virechana camp on healthy individuals conducted by Department of Panchakarma at Alva's Ayurveda Medical College and hospital as a part of routine Ritu sodhana was analysed retrospectively. Here peak flow meter was used to measure PEFr.

**Study design:** It is a retrospective study.

Data was analyzed using ANOVA one way test and paired t test to assess the effect of sarat virechana in PEFR in healthy individuals using SIGMA STAT software. The major findings were classified into different categories and are presented in tables, figures and description below.

## TREATMENT PLAN (VIRECHANAKARMA)

The procedure of *Virechanakarma* was performed in three steps.

(1)*Poorvakarma*, i.e., the preparatory procedures; is to be performed before the main therapy, which includes *Deepana* and *Pachana* (use of appetizers and digestives drugs) followed by *Snehapana* (oral administration of medicated ghee) for 3-7 days as per the *Koshtha* (nature of bowel) of the patient until achieving features of adequate oleation. This is followed by *Abhyanga* (external application of oil) and *Swedana* (sudation) for next 3 days

(2)*Pradhanakarma* (main procedure), which means administration of *Virechana* drug as per the disease, *Bala* (strength), and *Koshtha* of the patient. The drug used for inducing *Virechana* in the patients was *Trivrit lehya* (*Operculina turpethum*)

The anupanas were selected based on dosha predominance. commonly used anupanas are:

- Draksha Kashaya
- Triphala Kashaya
- Ushna jala

The patients are observed for *Samyakshuddhi Lakshana* (symptoms of appropriate *Virechanakarma*).

(3)*Pashchatakarma* (postoperative procedures) also known as *Samsarjanakrama*, in which the patient is advised for specific code of conduct and dietary regimens for 3-7 days depending upon the number of bouts of bowel evacuated after administering *Virechana* drug.

## OBSERVATIONS:

Among 49 healthy individuals, 12 patients were males and 37 were female. Following the classical guidelines for *Virechana*, starting from *Purvakarma*, subjects were administered *Snehapana* for 3-7 days. *Snehapana* was stopped when *Samyaksnidha* features were present in the individuals.

Out of 49 individuals, 2 had *Krurakoshtha*, 4 had *Mridukoshtha*, and the remaining 43 had *Madhyamakoshtha*.

After a period of 3 days, wherein subjects were advised external oleation (*Abhyanga*) and sudation (*Swedana*), followed by administration of *Virechana* drug as per the *koshta*.

## RESULTS

### ANALYSIS OF PEFR

1. The assessment of PEFR before and after the *Virechana* was within the normal range with an increase in range after treatment, which was statistically significant. **The result shows that there is a statistically significant change (P = 0.001)**

**Table 1 - CHANGE IN PEFR BEFORE (DEEPANA & PACHANA) AND AFTER TREATMENT (VIRECHANA)**

	MEAN	T VALUE	P VALUE
AT-BT	22.317	3.466	0.001

2. On analysis of effect of virechana on PEFR in each stage of virechana, there was no statistically significant change in the PEFR in each stage which shows that the PEFR was maintained stable throughout the period of virechana karma.

**Table 2 - DIFFERENCE IN PEFR BEFORE AND AFTER OF EACH STAGES OF VIRECHANA**

	MEAN DIFFERENCE	t value	P value
PEFR B/D&P V/S B/SN	7.195	1.403	0.168
PEFR B/SN V/S A/SN	4.146	0.942	0.352
PEFR A/SN V/S B/VR	2.195	0.577	0.567
PEFR B/VR V/S A/VR	8.780	2.212	<u>0.033</u>
PEFR A/VR V/S A/SA	3.500	0.207	0.837

3. On analysis of the difference in PEFR before treatment upon each stage of virechana, change in PEFR was shown statistically significant effect in the interval of before treatment and after virechana karma. It shows that the virechana procedure is having a statistically significant effect ( $P=0.001$ ) on PEFR compared to the other stages of virechana karma.

**Table 3 - DIFFERENCE IN PEFR BEFORE TREATMENT UPON EACH STAGES OF VIRECHANA**

	MEAN DIFFERENCE	T VALUE	P VALUE
PEFR BT V/S B/SN	7.195	1.403	0.168
PEFR BT V/S A/SN	11.341	2.176	0.036
PEFR BT V/S B/VR	13.537	2.228	0.032
PEFR BT V/S A/VR	22.317	3.466	0.001
PEFR BT V/S A/SA	24.125	1.402	0.169

4. On analysis of change in PEFR according to BMI, It shows that the change in PEFR in subjects having BMI less than 25 is statistically significant.

**Table 4 - COMPARISON OF CHANGE IN PEFR ACCORDING TO BMI**

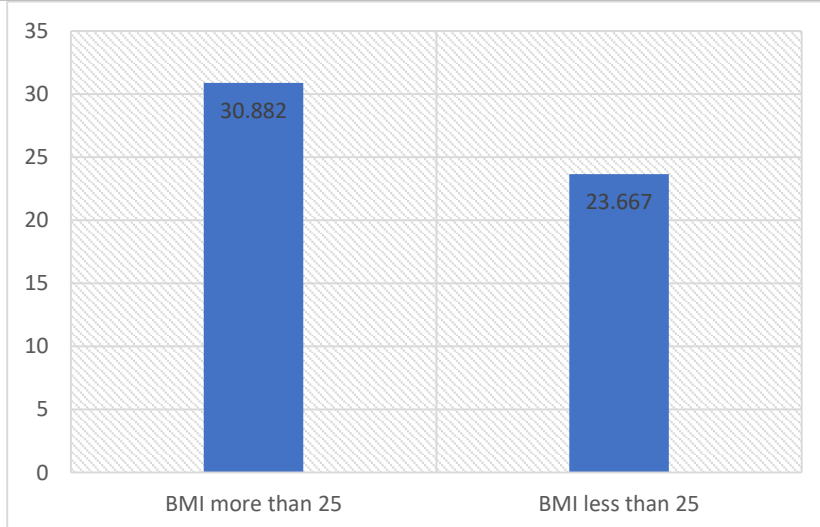
MORE THAN 25	MEAN DIFFERENCE	T VALUE	P value
AT-BT	30.882	1.510	0.151

LESS THAN 25	MEAN DIFFERENCE	T VALUE	P value
AT-BT	23.667	3.386	0.002

5. On statistical analysis of change in PEFR between the groups of BMI less than 25 and more than 25 by ANOVA test, It shows that there is no statistically significant result. It means that there is no significant influence on the change in PEFR in relation with BMI

**Table 5 - CHANGE IN PEFR BETWEEN THE GROUPS**

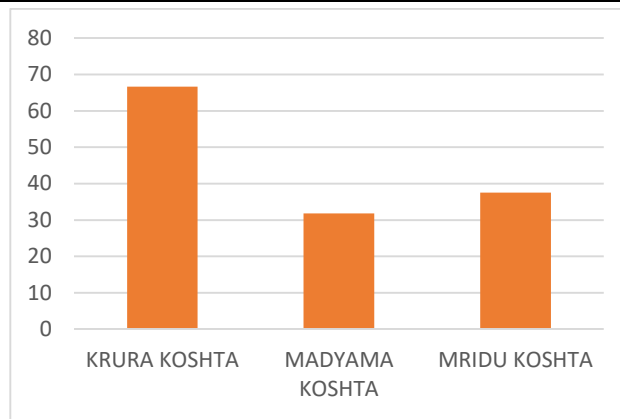
Group name	MEAN	P value(A v/s B)
BMI more than 25(GroupA)	30.882	0.689
BMI less than 25(Group B)	23.667	



6. On analysis of change in PEFR between the different koshta predominant individuals, it shows that there is no statistically significant difference "P = 0.808" which is more than 0.05 this shows that there is no influence of koshta over change in PEFR

**Table 6 - COMPARISON OF CHANGE IN PEFR ACCORDING TO KOSHTA**

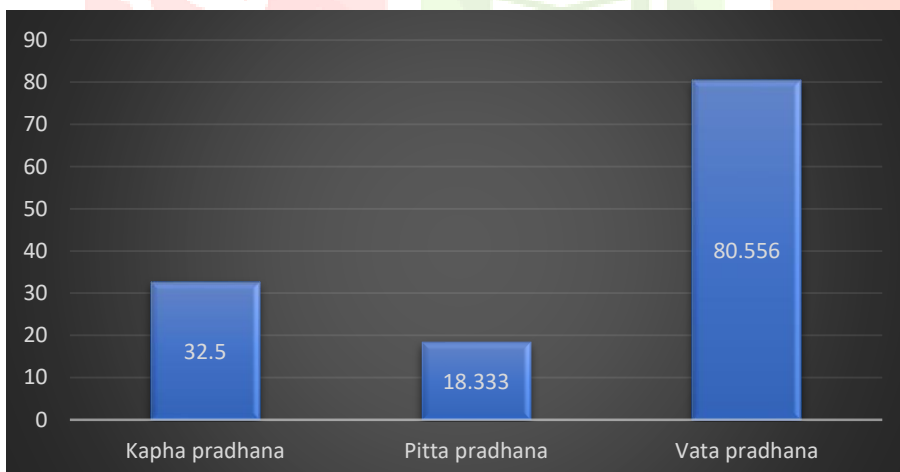
GROUP NAME	MEAN	P VALUE
KRURA KOSHTA	66.667	0.057
MADYAMA KOSHTA	31.774	0.057
MRIDU KOSHTA	37.500	0.528
KRURA V/S MADYAMA V/S MRIDU		0.808



7. On analysis of change in PEFR between the different prakriti individuals, It shows that there is a statistically highly significant difference ( $P = <0.001$ ). This means on comparison in relation with prakriti it shows that the prakriti will have influence on the change in PEFR

**Table 7 - COMPARISON OF CHANGE IN PEFR ACCORDING TO PRAKRITI**

Group name	Mean	P VALUE
Kapha pradhana	32.500	0.048
Pitta pradhana	18.333	0.012
Vata pradhana	80.556	0.053
Kapha v/s pitta v/s vata pradhana prakriti		<0.001



## DISCUSSION

Peak expiratory flow rate (PEFR) is the fastest rate of air that can blow out of lungs. It is the maximum flow rate (expressed in liters per minute [L/min]) generated during a forceful exhalation, starting from full inspiration and is a reliable indicator of ventilation adequacy as well as airflow obstruction.

The normal peak flow value can range from person to person and is dependent upon factors such as sex, age and height. The normal peak flow rate is 450-550 L/min in adult males and it is 320-470 L/min in adult females. PEFR is typically higher in males than females and higher in taller patients. After expected increases through childhood and adolescence, PEFR decreases with age from 30-40 years onwards.

The peak expiratory flow emerges from the large airways within 100-102ms from the start of a forced expiration and it remains peaked for 10 minutes. It primarily reflects large airway flow and depends on the lung recoil, voluntary effort, and muscular strength of the patient.

It is regarded as a basic physiological parameter for the diagnosis of patients with respiratory illnesses and it shows the airway obstruction and the strength of respiratory muscles.

To understand the effect of Sharad virechana on lung function PEFR was recorded throughout the shodhana procedure. The data was analysed using sigma stat software and It shows an increasing pattern in PEFR

On analysis of effect of virechana on PEFR in each stage of virechana, there was no statistically significant change in the PEFR in each stage which shows that the PEFR was maintained stable throughout the period of virechana karma.

It showed highly significant result on analysing before (deepana & pachana) and after treatment (virechana). It shows that the virechana procedure is having a statistically significant effect on PEFR

On analysis of change in PEFR according to BMI, It shows that the change in PEFR in subjects having BMI less than 25 is statistically significant. PEFR shows some decline with high BMI in elderly age group. On analysis, it shows no significant effect of koshta on changes in PEFR values

Prakruti is the constitution of the body, there is highly significant changes in PEFR values in different Prakruti on virechana procedure. This means on comparison in relation with prakriti it shows that the prakriti will have influence on the change in PEFR.

## CONCLUSION

- Sharad virechana as a part of routine Ritu sodhana helps in prevention of respiratory disorders.
- On analysis it showed that, it helps in increasing and maintaining PEFR (Peak expiratory flow rate)
- On each stages of virechana there is a gradual increase in the PEFR.
- It showed a highly significant changes in PEFR values in different Prakruti on virechana procedure.
- Eventhough there is no statistically significant influence of koshta and BMI over PEFR on virechana, further studies can be conducted to analyse their effect on various other parameters.

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