

**“EFFECT OF STEAM INHALATION AND ACUPUNCTURE ON SUBJECTS WITH CHRONIC RHINO SINUSITIS” A RANDOMIZED CONTROLLED TRIAL**

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**ABSTRACT**

**Background and Objectives:** Facial steam and acupuncture are a part of naturopathy based drugless systems of medicine and are commonly used by naturopathy physicians as a treatment of choice in Chronic rhinosinusitis (CRS). This study was done to investigate the effects of facial steam and acupuncture in patients with CRS and thereby substantiate the clinical understanding of its effect. **Methodology:** A total of 60 participants, were randomly assigned into 2 groups. One group received facial steam as intervention & other acupuncture for 10 days. Assessments were made on 1<sup>st</sup> day and after 10 day of intervention. The assessment tools included were 22-item Sino nasal outcome test (SNOT-22) and a global questionnaire regarding symptom frequency. **Results:** Data was checked for normal distribution and SNOT-22 scores were analysed by using Independent ‘t’ test and symptom frequency scores were analysed by Mann-Whitney U test with SPSS (Version 20.0) package. In both the groups significant decrease in the scores of severity of symptom, measured by SNOT-22 and severity of frequency of symptoms, measured by Global question were found. **Interpretation and Conclusion:** Facial steam and acupuncture were found to be very effective in patients suffering from CRS by reducing the clinical symptoms and improvement in the quality of life. There were no adverse effects reported among the subjects across all the groups who received the respective interventions.

**KEYWORDS:** Chronic rhinosinusitis, facial steam, Acupuncture, SNOT.

**INTRODUCTION**

Chronic rhinosinusitis (CRS) is defined as an infection of sinus lasting for more than 12 weeks which includes 2 or more major sinus symptoms or at least 1 major and 2 minor symptoms.<sup>[1]</sup> An estimated 134 million Indians, approximately one in eight Indians suffer from chronic sinusitis caused by the inflammation of the nasal and throat lining. CRS is a common health problem which significantly affects quality of life.<sup>[2]</sup> In terms of adversely effecting mood, social and physical performance.<sup>[3]</sup> CRS prevalence rate is higher in females than males.<sup>[4]</sup> In the United States, the estimated prevalence of allergic rhinitis ranges from 9% to 16%.<sup>[5]</sup> Allergic rhinitis is the most common atopic condition in the United States.<sup>[6]</sup> Acupuncture and facial steam as complimentary treatments are shown beneficial effect on treating the Sino nasal symptoms. So this study conducted to compare the effects of facial steam and

acupuncture in patients with CRS and thereby substantiate the clinical understanding of its effect.

**MATERIALS AND METHODS****Participants**

Sixty subjects with chronic rhinosinusitis of age ranging between 18 to 30 years were recruited for the study. Inclusion Criteria's were self-reported cases of sinusitis with 1 or more symptoms for 4 or more days in a week persisting for minimum 2 weeks. The symptoms are nasal stuffiness, nasal dryness, nasal congestion, thick nasal discharge Exclusion Criteria's were recent sinus surgery, respiratory infection within the preceding 2 weeks or have used either of the study interventions within the preceding month and under medication for other chronic illnesses. The subjects were instructed about the study and a signed informed consent was

obtained from each individual. Institutional Ethical Committee approved the study.

### Study Design

This is a two group pre – post interventional study. The subjects were randomly allocated into 2 groups each with 30 subjects. Participants of Group-1, received facial steam for 20 minutes for ten days and Group-2 received acupuncture for 20 minutes for ten days. The subjects were assessed before and after a ten day of intervention.

### Assessments

Symptom severity was assessed by using SNOT-22, a validated self-administered, quality of life instrument specific for patients with symptoms of Rhinosinusitis and symptom frequency was measured by using global question “Over the past 2 weeks how much have you been bothered by your nasal and /or sinus symptoms?” and response was recorded with 5-point Likert response scale.

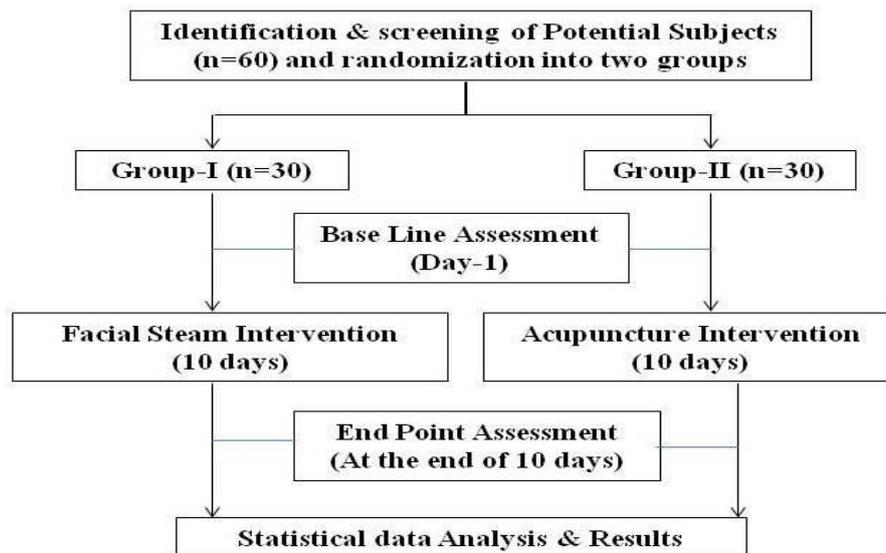


Fig-1: Trial profile.

### Intervention

- **Steam Inhalation:** Steam Inhalation was given to the group-1 using an instrument, Steam inhaler, modified with thermostat. The patient sits in the chair comfortably and steam inhaler is kept on a table at patient's level. The head is covered with the cotton towel. Patient inhales saturated, hot (42-44 degrees C) air through the nose.<sup>[7]</sup> Eyes are kept close during inhaling the hot air. The treatment was given for 20 minutes inhalation of the steam for 3 minutes then Withdraws for 1-2 minutes and repeated it for four times.
- **Acupuncture:** All participants of the group-II received acupuncture treatment administered for 20 minutes, for 10 days. Sterile needles were positioned for 20 minutes at 10 specific acupuncture points, namely bilateral LI4, LI20, ST2, and ST36, unilateral EX-1 and GV23 ) according to WHO Standard Acupuncture Point Location.<sup>[8]</sup> Acupuncture needles of 0.2×30 mm, were inserted bilaterally to a depth of ≤2 cm, and the needles were retained for 20 min. The intervention was given in supine position. The needles were removed at the end of 20 minutes.

### DATA ANALYSIS

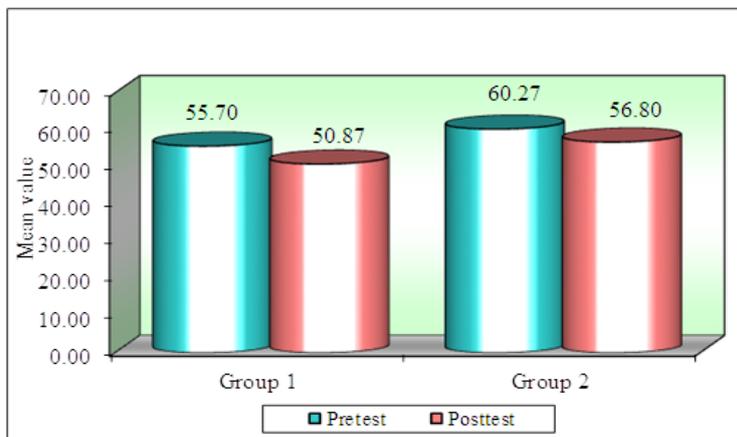
The data obtained following facial steam and acupuncture were analysed for normal distribution and variance using Shapiro Wilk test. SNOT pre-test and post-test scores in two study groups (1, 2) follows a normal distribution, the parametric test, independent 't' test were applied and global questions regarding symptom frequency pre-test and post-test scores in two study groups (1, 2) does not follows a normal distribution, the non-parametric test, Mann-Whitney U test was applied using with SPSS (Version 20.0) package.

### RESULTS AND DISCUSSION

There was a significant decrease in the pre and post values of SNOT scores of both facial steam ( $p < 0.05$ ) and acupuncture ( $p < 0.005$ ) following respective intervention. Comparison of two group results indicates that changes in the SNOT scores are more significant in acupuncture group than facial steam.

**Table 1: Comparison of two study groups(I & II) with respect to SNOT scores at pre-test and post-test by independent ‘t’ test.**

Groups	Pre test	Post test	Difference	p-value
Group-1: Facial Steam	55.70±11.93	50.87±12.55	4.83±3.55	0.05
Group-II: Acupuncture	60.27±14.05	56.80±13.63	3.47±1.74	0.005



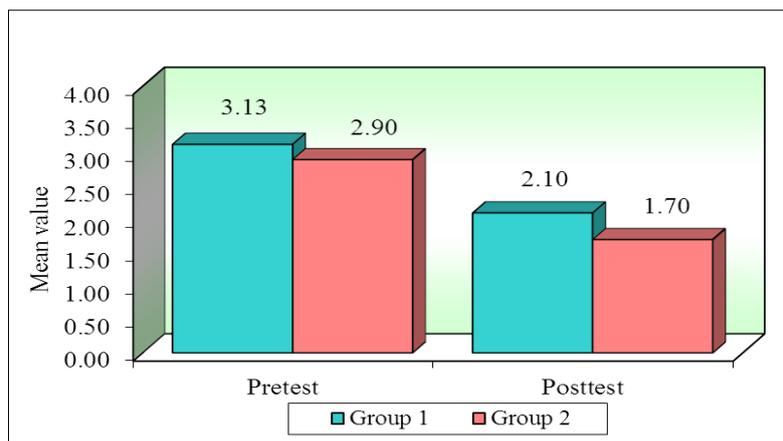
**Figure: 2 Comparison of two study groups (1, 2) with respect to SNOT scores at pre test and post test.**

Significant decrease is also observed in the pre and post scores of global question regarding symptom frequency in both facial steam (p<0.05) & acupuncture (p<0.001) following respective intervention. Comparison of two

group results indicates that changes in the SNOT scores are more significant in acupuncture group than facial steam.

**Table 2: Comparison of two study groups (1, 2) with respect to global questions regarding symptom frequency pre-test and post-test scores by Mann-Whitney U test.**

Groups	Pretest	Posttest	Difference	p-value
Group-1: Facial Steam	3.13±0.68	2.10±0.71	1.03±0.56	0.05
Group-II: Acupuncture	2.90±0.66	1.70±0.92	1.20±0.96	0.001



**Figure 3: Comparison of two study groups (1, 2) with respect to global questions regarding symptom frequency pre-test and post-test scores.**

**DISCUSSION**

The main aim of the study was to compare the effect of facial steam and acupuncture for the patients with CRS. The results of the present study indicate that both facial steam and acupuncture were found to be effective to reduce the symptoms and improving the quality of life of subjects with CRS. Both the modalities provided nearly

comparable clinical efficacy in improving the sinonasal symptoms after the 10 days of treatment of chronic rhinosinusitis.

Meenu Singh et al. done a study, on humidified air for the common cold found benefits of steam for symptom relief for the sinusitis.<sup>[9]</sup> The effectiveness of steam inhalation and nasal irrigation for chronic or recurrent

sinus symptoms were studied by a pragmatic randomized controlled trial and reported that steam inhalation reduced headache but had no significant effect on other outcomes, and the combined effect of nasal irrigation with steam inhalation was found to be beneficial.<sup>[10]</sup> Ophir *et al.* studied the effects of inhaled humidified warm air on nasal patency and nasal symptoms in allergic rhinitis and they concluded that steam inhalation could be an additional therapy for the patients who are suffering from discomfort from allergic rhinitis.<sup>[11]</sup> Manpreet Singh Nanda conducted a study on efficacy of steam inhalation with inhalant capsules in patients with common cold and found that, the hot steam moistens the nasal passages, causes the temperatures to raise leading to dilation of blood vessels, improvement in blood circulation leading to opening of blocked noses and restoring normal colour of nasal mucosa.<sup>[12]</sup>

The results of our study have shown significant reduction in symptom frequency followed by acupuncture treatment using 10 specific acupuncture points, namely bilateral LI4, LI20, ST2, and ST36, unilateral EX-1 and GV23. Patients with nasal congestion and hypertrophic inferior turbinate's were treated with acupuncture and found to have significant improvement on visual analog scale and in nasal airflow as measured by active anterior rhinomanometry.<sup>[13]</sup> Twenty-four patients with a history of nasal congestion due to chronic sinusitis without polyposis were asked to score the severity of their nasal congestion on a visual analogue scale, and found that 60% reduction in sinus-related pain by acupuncture compared with only 30% in the placebo group.<sup>[14]</sup> Effects of improved mucociliary clearance and airway surface liquid have also been demonstrated in a prospective randomized study by using acupuncture. Ralph and others also shown that acupuncture is very effective treatment for allergic diseases for reducing the sino nasal symptoms.<sup>[15]</sup> John L and his associates conducted a study on the anti-inflammatory effects of acupuncture on allergic rhinitis reported that improvement in clinical outcomes in patients with allergic rhinitis.<sup>[16]</sup>

## CONCLUSION

Practice of steam inhalation and acupuncture are effective treatments in reducing the symptom score frequency and improving the quality of life in patients suffering from chronic Rhinosinusitis (CRS). Hence this can be an adjacent treatment in the management of CRS. And there were no reported adverse effects so it can possibly be a first line of treatment in the Sino nasal symptoms for the management of CRS.

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