

Effect Of Saline Nasal Irrigation (Jala Neti) Versus Pranayama (Suryabhedana And Anuloma-Viloma) In Chronic Rhino Sinusitis – A Comparative Study

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Abstract:

Background: Traditional yogic practices like Jala Neti and Pranayama have significant impact on rhino sinusitis patients. Hence, it is essential to understand the individual contributions of these two practices.

Aim: Comparing the efficacy between Nasal irrigation (Jalanethi) and pranayama (Anuloma viloma and Suryabhedana) in alleviating rhino sinusitis.

Methods: Sixty subjects were randomly assigned to either group 1 (Jalanethi followed by Kapalabhati) or group 2 (suryabhedana and alternate nostril breathing Pranayama). Subjects from either group practiced Kriya and Pranayama for a period of thirty days. Assessments were made to the both the groups before (baseline) and after thirty days of intervention. The assessment variables included Sino nasal outcome test and Global question regarding symptom frequency.

Results: The results showed a significant difference on comparison of group 1 and group 2 with respect to pre-test to post-test in Sino nasal outcome test and Global question regarding symptom frequency. ($p = 0.002$). On comparing each group individually from pre-test to post-test both the groups showed significant difference ($p = 0.0001$). The Global question regarding symptom frequency score also showed significant difference in both groups (0.0001).

Interpretation & Conclusion:

The study results suggest that Jala Neti and pranayama practices can be considered as effective treatments in patients with Chronic Rhino sinusitis.

Keywords: Rhino sinusitis; Nasal saline irrigation; Pranayama

I. INTRODUCTION

Rhino-sinusitis is a widely prevalent, significant health problem affecting more than 14% of adults and children. Rhino-sinusitis is a common disease affecting peoples of all ages, especially those with the allergies; inflammation leads to impaired drainage and poor ventilation from the sinuses.¹The

increasing frequency of allergic rhinitis results in a large financial burden on society.²⁻⁷

Chronic Rhino-sinusitis has a significant impact on patients' health.⁸ Studies suggest that approximately 31 million Americans are affected by sinusitis annually.⁹ Studies estimates than more than 120 million Indians suffer from at least one episode of acute sinusitis each year.¹⁰

Yoga offers a holistic path that deals with the human existence at all levels. All aspects of yoga are useful but the pranayama, the life force, is the most valuable technique used to correct faulty breathing and chronic diseases of the nose, throat and lungs. Yogic practices help to purify the Nadis as well as reduce the stress, enhance Prana and immunity.

Shatkarma of hata yoga is considered as the most important yoga practices for the prevention and management of upper respiratory disorders. Neti kriya is one of the shatkarma, in which the nasopharyngeal tract is cleansed with liquids or threads. There are mainly four types of neti. They are Jalanethi (nasal irrigation with lukewarm saline water), SutraNeti (nasal cleansing with thread or catheter), Dugdha Neti (with milk), and Ghritha (with ghee).¹²

Jalanethi helps in preventing and managing sinusitis in an effective manner by improving mucociliary clearance, thinning of mucus, and by decreasing inflammation.¹² The technique used in Jalaneti (yogic nasal irrigation) is more appropriate and cost effective for patients with sinusitis¹³ and number of other nasal conditions like common cold, allergies of nose, nasal obstruction etc. Kapalabhati clears the channels and alleviates Kapha resulting in healthy mucous membrane.¹⁴

Hence the present study aims at comparing the effect of saline nasal irrigation versus pranayama in Chronic Rhinosinusitis.

II. MATERIALS AND METHODS

A total of Sixty-four subjects were divided into two groups. The kriya Group subjects were advised to practice Jalaneti (yogic nasal irrigation) and Kapalabhati (3 rounds with 30 strokes each) for a period of 4 weeks once daily in the morning.

The Pranayama group subjects were advised to practice Suryabhedana pranayama and Alternate nostril breathing for a period of 4 weeks for duration of 10 minutes, daily. End (post intervention) questionnaire were administered at the end of 4 weeks.

The study was executed in the SDM College of Naturopathy and Yogic Sciences, Ujire.

INCLUSION CRITERIA

The following inclusion criteria was the basis for selecting subjects

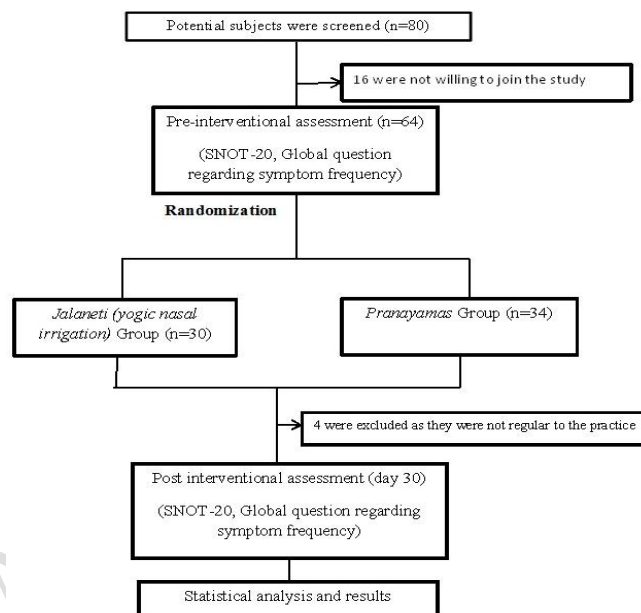
- ✓ Both the genders.
- ✓ Aged between 17 years to 25 years who self-report 1 or more of the following symptoms for 4 or more days each week in the preceding 2 weeks:
- ✓ Nasal stuffiness (blocked sensation in the nose)
- ✓ Nasal dryness or crusting
- ✓ Nasal congestion (This term will be left open to the individual patient's interpretation)
- ✓ Discolored nasal discharge or thick nasal discharge (Including post-nasal discharge)
- ✓ Diagnosed case of Rhino-sinusitis

In addition to the presence of the symptoms at least 4 days each week, the symptoms must have been present for 15 of the preceding 30 days.

EXCLUSION CRITERIA

- ✓ Recent nasal surgery
- ✓ Respiratory infection within the preceding 2 weeks
- ✓ Have used either of the study interventions within the preceding 12 months.

STUDY PLAN



VARIABLES

- ✓ 20-Item Sino-Nasal Outcome Test (SNOT-20) measure of symptom severity.
- ✓ A global question regarding symptom frequency: Symptom frequency will be measured with the question "Over the past 2 weeks, how much have you been bothered by your nasal and/ or sinus symptoms?" offering the following 5-point multiple-choice Likert response scale: Never, rarely, seldom, often or always. Symptom Chronicity will be measured with the questions: "Of the preceding 12 months, how many months have you had these symptoms?"

III. RESULTS

Results were compared between two groups, group 1 (Jalaneti followed by Kapalabhati) and group 2 (Anuloma viloma pranayama and Suryabhedana Pranayama), wherein data was extracted at both baseline and post intervention.

Comparison between Kriya group and Pranayama group of SNOT-20 scores was done by independent t test, showed significant difference in post-test (Table 1).

Variable	Groups	Mean	SD	SE	t-value	P-value
Pre-test	Kriya group	47.07	10.79	1.97	-0.3326	0.7406
	Pranayama group	48.13	13.86	2.53		
Post-test	Kriya group	16.15	5.25	0.96	-3.9355	0.0002*

	Pranayama group	15.57	8.75	1.60		
Difference	Kriya group	30.83	10.35	1.89	2.1514	0.0295*
	Pranayama group	16.57	11.38	2.08		

$p < 0.05$

Table 1: Comparison of Kriya group and Pranayama group with respect to pre-test and post-test SNOT-20 scores by independent t test

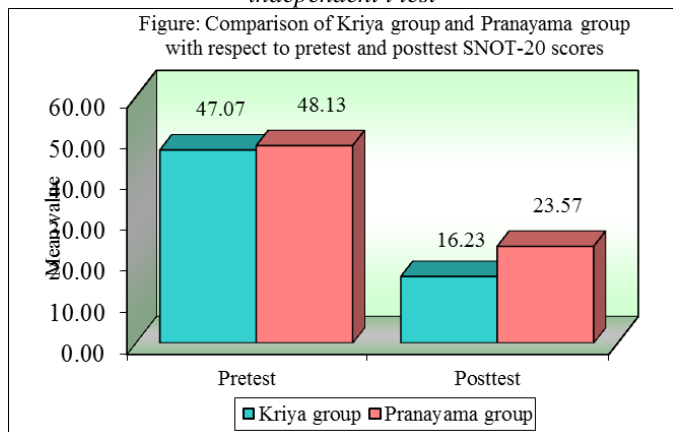


Figure 1

Groups	Time points	Mean	Std. Dev.	Mean Diff.	SD Diff.	% of change	Paired t	P-value
Kriya group	Pre-test	47.07	10.79	30.83	10.35	65.51	16.3153	0.0001*
	Post-test	16.15	5.25					
Pranayama group	Pre-test	48.13	13.86	16.57	11.38	51.04	11.8213	0.0001*
	Post-test	15.57	8.75					

$*p < 0.05$

Table 2: Comparison of pre-test and post-test SNOT-20 scores in Kriya group and Pranayama group by dependent t test

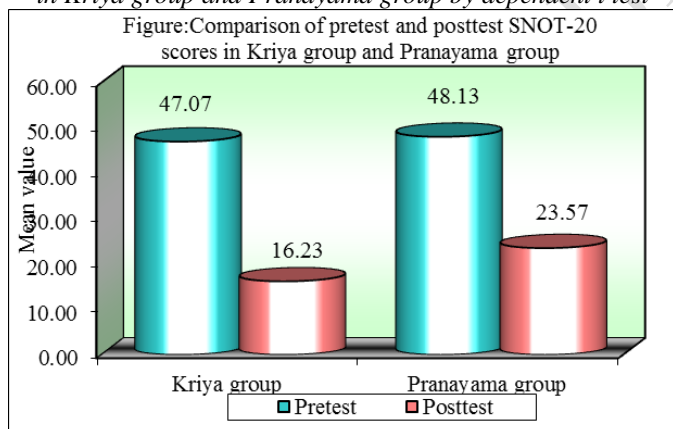


Figure 2

Comparison of pre-test and post-test SNOT-20 scores was done in Kriya group and Pranayama group by dependent t test (Table 2). There was a significant difference in Kriya and pranayama group ($p=0.0001$) but the percentage of change in Kriya group was 65.51% and the pranayama group was 51.04% compared to baseline.

The comparison of Global question regarding symptom frequency scores of pre-test and post-test between the group was done by Mann-Whitney U test, showed some changes but there were no significant results as shown in Table 3.

Variable	Groups	Mean	SD	Sum of ranks	U-value	Z-value	P-value
Pre-test	Kriya group	3.57	1.01	1015.50	349.50	-1.4858	0.1373
	Pranayama group	3.17	0.99	814.50			
Post-test	Kriya group	1.47	0.51	909.00	444.00	-0.0887	0.9293
	Pranayama group	1.53	0.68	921.00			
Difference	Kriya group	2.10	0.71	1074.00	291.00	-2.3507	0.0187*
	Pranayama group	1.63	0.56	756.00			

$*p < 0.05$

Table 3: Comparison of pre-test and post-test Global question regarding symptom frequency scores in Kriya group and Pranayama group by Mann-Whitney U test

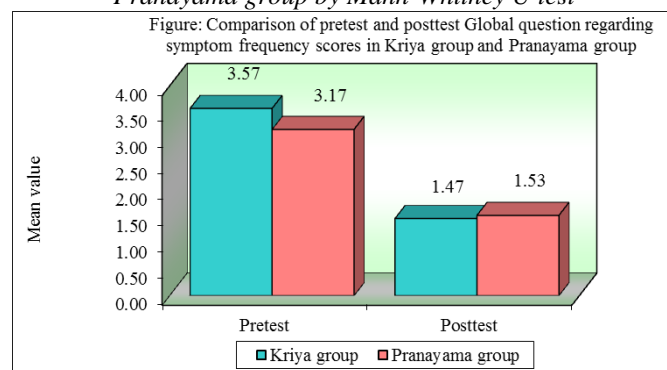


Figure 3

Comparison of pre-test and post-test Global question regarding symptom frequency scores within the group was done by Wilcoxon matched pair test shows significant difference in both the groups ($p=0.0001$) (table 4).

Groups	Time points	Mean	Std. Dev.	Mean Diff.	SD Diff.	% of change	Z-value	P-value
Kriya group	Pre-test	3.57	1.01	2.10	0.71	58.88	4.7821	0.0001*
	Post-test	1.47	0.51					
Pranayama group	Pre-test	3.17	0.99	1.63	0.56	51.58	4.7820	0.0001*
	Post-test	1.53	0.68					

$*p < 0.05$

Table 4: Comparison of pre-test and post-test Global question regarding symptom frequency scores in Kriya group and Pranayama group by Wilcoxon matched pairs test

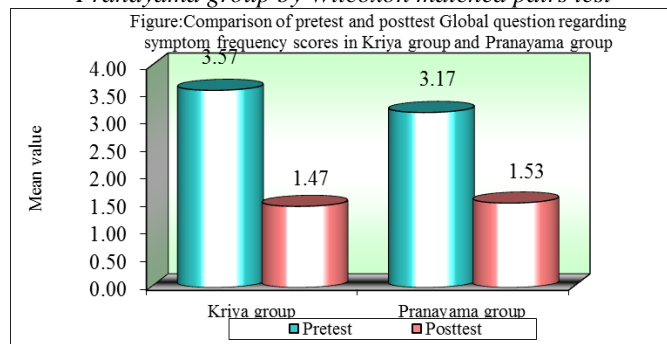


Figure 4

This study results showed a significant improvement in both Kriya and pranayama group on Global question regarding

symptom frequency scores and SNOT-20 scores after the intervention. However, upon comparison there was a significant difference between the groups indicating that *Kriya* group showed better results than that of *Pranayama* group in reducing symptoms and both the groups showed an almost equal response in reducing of symptom frequency.

IV. DISCUSSIONS

The result showed that there was a significant reduction in SNOT-20 scores as compared to pre-test in *kriya* and *pranayama* ($p < 0.05$). The instrument measures physical problems, functional limitations and emotional consequences of sinusitis. The symptoms of chronic rhino sinusitis including the need to blow the nose, sneezing, running nose, cough, postnasal discharge, thick nasal discharge have been found to be significantly reduced after the practice. The claims can be attributed by *Jalaneti* as it helps to dissolve and expel the internal build-up mucus out of nasal cavity and it also enhances body's protection mechanism against nasal and upper respiratory infections¹⁶ and *Kapalabhati* clears the channels and alleviates both vata and kapha.

The pranayama used in this study such as *suryabhedana* because of its effect alleviates both vata and kapha and *alternate nostril breathing* help to purify nadis and strengthen the respiratory system. Hence in this study both *kriya* and *pranayama* has the significant effect on the rhino sinusitis symptoms.

The results of the present study showed significant difference in SNOT-20 scores which can be compared to the study of Melissa A et.al where similar results were found, in which saline nasal irrigation was compared with nasal spray. This could be due to decreased viscosity of nasal secretions, decreased edema of the nasal mucosa, and removal of debris, bacteria, allergens, and inflammatory mediators by the mechanical "lavage" action of saline irrigation.

Although the present study duration is lesser (4 weeks) than the above study (8 weeks), the SNOT-20 score assessed showed significant difference ($p < 0.05$) compared to pre-test. The underlying mechanism for the reported benefits of saline nasal irrigation (*Jalaneti*) may be also due to the property of water used in *Jalaneti*. The warm saline water because of its dissolution and dissociation property helps in easy detachment of sticky mucus from the sinuses. The post *Jalaneti* procedure of active and forceful exhalation through nasal cavity also helps in elimination of the remaining water and sticky mucus out of nasal cavity.

The result showed significant difference in both *pranayama* and *kriya* group on comparing pre-test to post-test in Global question regarding symptom frequency score ($p = 0.0001$). These significant changes may be obtained due to longer duration of intervention and it may be also due to the reason that subjects were regular to the *kriya* and *pranayama* practice.

Hence, in this study of comparison between *Pranayama* and *Kriya* intervention, the data was statistically analysed for both the groups of which both the groups showed significant results but *Kriya* (*Jalaneti*) can be used as a first line of management in chronic rhino sinusitis.

LIMITATION OF THE STUDY

- ✓ Smaller sample size
- ✓ Follow up study was not done.
- ✓ Study conducted for short duration.
- ✓ The study was limited to the use of better subjective tools.

DIRECTION FOR FUTURE RESEARCH

- ✓ Study can be done with larger sample and longer follow-up.
- ✓ The study was limited to the use of better subjective tools; hence the future studies require a better objective variable to establish observed clinical benefits.

V. CONCLUSION

This study shows a significant improvement in both *Kriya* and *Pranayama* group on Global question regarding symptom frequency scores and SNOT-20 scores after the intervention. By this study it is proved that both the interventions can be effective in the treatment of chronic Rhino sinusitis and *Jalaneti* being the first preference. Hence, we can conclude that *Jalaneti* can be used as a home remedy for Chronic rhino sinusitis which is inexpensive and safe when done under proper supervision.

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