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 Jalaneti 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 (Jalaneti followed by Kapalabhati) or group 2 (suryabedhana and alternate nostril breathing Pranayama). Subjects from either group practiced Kriya and Pranayama for a period of thirty days. Assessments were made to 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 Jalaneti 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. The increasing frequency of allergic rhinitis results in a large financial burden on society.  
Chronic Rhino-sinusitis has a significant impact on patients’ health. Studies suggest that approximately 31 million Americans are affected by sinusitis annually. Studies estimates than more than 120 million Indians suffer from at least one episode of acute sinusitis each year.
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 Rhino-sinusitis.

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, Ujjire.

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).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Groups</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>t-value</th>
<th>P-value</th>
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<tr>
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<td>Kriya group</td>
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<td>0.96</td>
<td>-3.9355</td>
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</table>
Table 1: Comparison of Kriya group and Pranayama group with respect to pre-test and post-test SNOT-20 scores by independent t test

<table>
<thead>
<tr>
<th></th>
<th>Groups</th>
<th>Mea n</th>
<th>SD</th>
<th>Sum of ranks</th>
<th>U- value</th>
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<td>0.68</td>
<td>921.00</td>
<td>444.00</td>
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<tr>
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<td>1074.0 0</td>
<td>291.00</td>
<td>-2.35</td>
<td>0.01</td>
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<tr>
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<td>756.00</td>
<td>291.00</td>
<td>-2.35</td>
<td>0.01</td>
</tr>
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</table>

*p<0.05

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

<table>
<thead>
<tr>
<th>Groups</th>
<th>Time points</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Mean Diff.</th>
<th>SD Diff.</th>
<th>% of change</th>
<th>Paired t</th>
<th>P- value</th>
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</thead>
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<td>65.51</td>
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</table>

*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

<table>
<thead>
<tr>
<th>Groups</th>
<th>Time points</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Mean Diff.</th>
<th>SD Diff.</th>
<th>% of change</th>
<th>Z- value</th>
<th>P- value</th>
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<td>Kriya group</td>
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<td>Post- test</td>
<td>1.47</td>
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<td>1.63</td>
<td>0.56</td>
<td>51.58</td>
<td>4.782</td>
<td>0.0001</td>
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<tr>
<td>Pranayama group</td>
<td>Pre- test</td>
<td>3.17</td>
<td>0.99</td>
<td>1.63</td>
<td>0.56</td>
<td>51.58</td>
<td>4.782</td>
<td>0.0001</td>
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<tr>
<td></td>
<td>Post- test</td>
<td>1.53</td>
<td>0.68</td>
<td>1.63</td>
<td>0.56</td>
<td>51.58</td>
<td>4.782</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

*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

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

This study results showed a significant improvement in both Kriya and Pranayama group on Global question regarding symptom frequency scores.
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 infections 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 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.

REFERENCES

Education & Research (ICYER) and Yoganjali Natyalayam, Puducherry.


