



**ROLE OF PRATIMARSHA NASYA, YOGIC PRACTICES AND DIET IN
PRATISHYAYA (ALLERGIC RHINITIS)**

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ABSTRACT

Introduction: Pratishyaya is one of the commonest diseases and ancient diseases. 20–30% of Indians suffer from allergic rhinitis and the conventional therapies of allergic rhinitis have their own draw backs. Hence this study was conducted to evaluate the effect of Pratimarsha Nasya (Nasal instillation) with Anutaila, selected diet and Yogic practices to combat and prevent Pratishyaya (Allergic Rhinitis). **Material and methods:** About 160 patients suffering from Pratishyaya belonging to different age groups, gender and socio-economic status were selected and randomly allocated into 4 groups namely Group I - Pratimarsha Nasya with Anu Taila and selected diet, Group II- Selected Diet, Group III- Yogic Practices and Diet, and Group IV- Levocetirizine after getting consent. Patients aged 16-60 years and suffering from sneezing, running nose symptoms on exposure allergens like dust, cold etc. were included. The patients below 16 years and above 60 years, one suffering from other complicated disorders like nasal polyp, epistaxis, Diabetes Mellitus, etc. were excluded from the study. Assessment was done on the basis of subjective parameters like watery nasal discharge, sneezing, itching in nose, eye etc. And objective parameters like TLC, DLC and ESR. **Conclusions:** Intra-group comparison showed highly significant results in all the four Groups with a progressive decrease of the symptoms in I, II, and III groups. Control group (Levocetirizine) was quick to act but with high recurrence. Group III treated with Yogic practices and selected diet is most effective. Group I and II showed equal relief when BT and AT were considered, but Group I can be considered better than Group II. *Anutaila Pratimarsha Nasya, Yogic practices and Diet as daily regimen are effective in prevention of Pratishyaya.* The Yogic practices and diet are cost effective and devoid of any side effect, hence can be effectively implemented at the society level to cure and prevent Pratishyaya.

KEY WORDS: Pratishyaya, Allergic rhinitis, Pratimarsha Nasya, Yogic practices, Diet

INTRODUCTION

Pratishyaya is one of the commonest diseases mostly occurring during change of season or exposure to dust, cold, mist, pollen allergy etc. The earliest references can be traced back to Vedic scriptures mentioned by the name *Velekandu, Vilohita, Devakosha*.^[1] A detailed description of *Pratishyaya* and its management is available in all the *Samhitas*. *Pratishyaya* is not a life threatening disease, but immunity is lowered resulting in complications like deafness, blindness, eye diseases, oedema, and diminution of Agni, Cough and *Kshaya* (emaciation).^[2] About 10% allergic rhinitis and 1% asthma were reported in Delhi, around 30 years back as per a study^[3], while a recent survey carried out in India shows that about 20–30% of the population ails from allergic rhinitis and that 15% develop asthma.^[4,5] The intranasal corticosteroid sprays and antihistamines used in conservative therapy of allergic rhinitis has its own

side effects like nasal dryness, nasal bleeding and drowsiness from antihistamines.^[6] The progressive increase in incidence is due to manmade havocs like dust, environmental pollution, ever increasing automobiles, industries, air conditioners, posh setups like carpet etc. Many of these changes are irreversible and change of occupation is not a remedy, as it may adversely affect that individual's life, but best remedy is to build up the resistance in person's body to combat and prevent the disease. Ayurveda is holistic science, which gives utmost importance to prevention. Various daily regimen and seasonal regimen, along with whole some dietary intake are advocated for prevention and cure of *Pratishyaya*. Daily practice of *Pratimarsha Nasya* (Nasal instillation) with *Anutaila* is indicated to prevent *Pratishyaya*. The wholesome intake of diet can build up resistance to prevent repeated attacks of *Pratishyaya*. Fresh ginger and jaggery are cost effective and found in

every kitchen; hence it has been advocated as *Pathya* in *Pratishyaya*. Yogic practices help to purify the *Nadi* as well as reduce the stress, enhance *Prana* and immunity. The present study was designed, with an objective of

MATERIAL AND METHODS

Present study was conducted at Kayachikitsa OPD and Swasthyarakshana OPD of Swasthavritta and Yoga in Ayurvedic wing and OPD of Oto-rhinolaryngology in Modern wing of Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi. The study was approved by the DRC of Department of Kayachikitsa and institute ethical committee. About 160 patients of *Pratishyaya* (Allergic rhinitis) belonging to different age groups, gender and socio-economic status were selected based on the fulfillment of diagnostic criteria and randomly allocated into 4 groups after getting their written and informed consent.

Inclusion criteria

- Age 16- 60 years
- Patients belonging to both sexes
- Patients of rural and urban habitat
- Patient having allergic history
- Patients who fulfill diagnostic criteria of *Pratishyaya* (Allergic Rhinitis)

Exclusion criteria

- Age below 16 and above 60 years
- One suffering from nasal polyp, epistaxis, Benign and malignant tumors, Tuberculosis, Diabetes Mellitus, Hypertension and other complicated disorders.

The data were collected by interview and examination according to the specified proforma. A proper regular follow up was done on 15th, 45th and 90th day for evaluation of efficacy of *Pratimarsha Nasya*, Yogic practices and selected Diet in prevention of repeated attacks. There were 20 drop outs after registration. About 140 patients completed 2 follow ups and 131 patients completed full course of treatment.

Treatment Methodology

Group I - *Pratimarsha Nasya* and Diet

The patients were advised to instill the *Anutaila* 2 drops in the morning by themselves, on an empty stomach for duration of 3 months daily. The patients were given *Gudaradraka* and general *Pathyapathya* instructions as mentioned in Group II.

Ingredients of *Anutaila*

Candana (Heart wood), *Agaru* (Heart wood), *Patra* (Leaf), *Darvi* (stem), *Madhuka* (Root), *Bala* (Root), *Hrivera* (Root), *Sukshmaila*, (Truti) (Seeds), *Vidanga* (Fruits), *Bilva* (stem bark), *Utpala* (Flower), *Abhaya* (*Sevyala/ Ushira*) (Root), *Vanya* (Root), *Tvak* (Stem bark), *Musta* (Plava) (Rhizome), *Sariva* (Root), *Sthira* (Panchanga), *Jivanti* (Root), *Prishnaparni* (Panchanga), *Suradaru* (Heart wood), *Shatavari* (Root), *Harenu*

comparative analysis of effect of *Pratimarsha Nasya*, Yogic practices, selected diet (*Gudaradraka* and general *Pathyapathya*) in prevention of *Pratishyaya*.

(Seeds), *Brihati* (Root), *Vyaghri* (*Panchanga*), *Surabhi* (Root), *Tila taila* (sesame oil), *Ajadugdha* (goat's milk). *Taila* was prepared at Department of *Rasashastra* as per standard procedure of *Taila Kaplpana*.

Group II- Selected Diet

They were advised to take *Ardraka* (fresh ginger) 10 gm with *Guda* (Jaggery) in equal quantity in the morning in an empty stomach and at night 30 minutes before taking food for a period of 3 months. They were also instructed to follow general *Pathyapathya*.

Pathya- Wheat, Rice, Barley, Green gram, Milk with turmeric, Radish, Garlic, Onion, *Amla*, Pomegranate, other seasonal vegetables.

Apathya- Cold items, Refrigerated water and food, Fried food, curd, Potato.

Group III- Yogic Practices and Diet

The patients were instructed to practice Yoga as per standard schedule daily and also advocated *Gudaradraka* and general *Pathyapathya* as mentioned in Group III for a period of 3 months.

General schedule for Yoga

Shatkarma

Jala Neti followed by *Kapalabhati* - 100 rounds,

Preparatory procedure- Joint Movements of toes, foot, ankle, knee, hip, finger, wrist, elbow, shoulder and neck were performed 5 rounds each/ day in the beginning.

Asana- *Tadasana* (mountain pose), *Padahastasana* (Hand to foot pose), *Ardhachakrasana* (Half wheel pose), *Trikonana* (Triangle pose), *Vajrasana* (Diamond pose), *Gomukhasana*(Cow pose), *Pavanamuktasana*, *Bhujangasana* (Serpent pose), *Shalabhasana*(Locust pose), *Shavasana*(Corpse pose).

Pranayama- *Nadishodhana* (*Anuloma – Viloma*) *Pranayama*, *Suryabhedana* *Pranayama*.

Dhyana

Group IV- Antihistamines

The patients were prescribed Levocetirizine 5mg OD for 1 month. It was purchased by patient from the market.

A thorough clinical examination of the patient was done and findings were recorded in a specially designed proforma after an informed and written consent. Assessment was done on the basis of subjective parameters like watery nasal discharge, mucous discharge, sneezing, itching in nose, itching in eye, itching of palate, itching of ear, nasal congestion, anosmia tearing redness of eyes fullness of ear headache heaviness of head fatigue drowsiness loss of appetite.

And objective criteria like total leucocyte count, differential leucocyte count and ESR were used for evaluation of the effect.

The data collected were entered in Microsoft excel sheets and the analysis of data was done using statistical software SPSS version 16.0. The intra-group (within the group) for subjective parameters were done by Cochran's Q test and Friedman's test, while objective parameters were done by paired t test. The intergroup comparison of subjective parameters were done by Pearson's Chi square test and objective parameters were assessed by ANOVA (Analysis of Variance) test followed by the Post Hoc test.

Observations

Demographic Data: Majority of patients were males (62.5%), students (43.8%), belonging to middle income (72.5 %), 21-30 years age group (34.4%) and Hindu religion (96.3) and residing in urban area (56.3 %).

Clinical Profile: Maximum patients had a history of Allergic rhinitis of 2 years or more (65.6 %), with attack or aggravation of existing condition on exposure to cold (82.5 %) and dust (80 %) during *Ritusandhi* and Seasonal changes (61.9 %) and (92.9). About 66.9 % patients had positive family history of allergic disorders among first degree, second degree relatives and 31.3 % and 23.1 % patients had previous history of Asthma and urticaria. Maximum patients had no history of tobacco addiction (90.6 %).

Maximum patients belonged to *Madhya Koshtha* (69.2 %), *Madhyama Sara* (81.9 %), *Madhyama Pramana* (83.8 %), *Madhyama Samhanana* (86.9 %), *Madhyama Satva* (78.8 %), *Madhyama Satmya* (81.3 %), *Madhyama Aharashakti* (35.6 %) and *Madhyama Vyayamashakti* (58.8 %).

Maximum patients had reduced appetite (61.9 %) and consumed (92.5 %) cold items despite of their symptoms aggravating due to cold. About 39.4 % patients used to consume fried items, which again enhances *Kapha* and reduce *Agni*. Maximum patients belonged to *Vatakaphaja* and *Kaphavata Prakriti* (68.8%), followed by other *Prakriti*.

Subjective Parameters: On intragroup comparison all the four groups were statistically highly significant in alleviating *Pratishyaya*.

Nasal discharge (Table 1): The intra-group comparison (Cochran Q test) showed that all the 4 groups were highly significant (0.001). On intergroup comparison in the final follow up, on the basis of percentage of relief the group I (90.6 %), Group III (88.2 %) and Group II (75 %) appear to be more effective and better than Group IV (54.5 %). The test was statistically significant (P<0.002).

Sneezing (Table 2): The intra-group comparison (Friedman's test), show that all the 4 groups were highly significant (P< 0.001). Intergroup comparison (Pearson's chi-square test) at the final follow up on the basis of percentage of relief of symptom, we can infer that group I (78.1 %) and III (73.1 %) are better than II Group (68.8 %). Maximum recurrence (45.1%) was observed in Group IV; however the χ^2 value was not significant.

Nasal congestion (Table 3): The intra-group comparison (Friedman's test), show that Group I and Group II were highly significant (P< 0.001) and Group III and IV were significant (P< 0.01). On intergroup comparison in the final follow up, on the basis of percentage of relief of symptom group I (90.6 %) and Group III (85.3 %) appear to be better than II Group (84.4 %) and Group IV (69.7 %). However the observations were statistically not significant (P>0.05) with respect to Chi-square test.

Itching of Nose (Table 4): The intra-group comparison show that all the 4 groups were highly significant (P< 0.001). On intergroup comparison at the final follow up, even though the χ^2 test could not be applied, on the basis of percentage of relief of symptom it can be inferred that group II (87.5 %) and Group III (85.3 %) are better than I Group (90.6 %). Maximum recurrence (18.2%) was observed in Group IV.

Anosmia (Table 5): The intra-group comparison (Cochran's Q test), show that Group I, II and III are highly significant (P < 0.001), while Group IV was significant (P < 0.05). On intergroup comparison at third follow up Group I, II and III had 96.9%, 91.2% and 90.6 % respectively, while 87.9 % patients were relieved in Group IV.

Headache (Table 6): The intra-group comparison (Cochran's Q test) show that all groups were highly significant (P < 0.001). On intergroup comparison at third follow up complete relief from headache was observed in 93.8 %, 91.2 % in Group I and Group III respectively, while in Group II (84.4%) relief was observed. While in Group IV only 54.5% relief was observed. The result was statistically highly significant (P<0.001).

Symptoms Relief based comparison (Table 7): The intergroup comparison was done after categorizing the symptoms on the basis of numbers. The cured (0 symptoms), marked improvement (1-2 symptoms persistent), moderate improvement (3-5 symptoms persistent) and slight improvement (More than 6 symptoms persistent) were interpreted by collectively considering all the symptoms present in allergic rhinitis without emphasizing the importance of an individual symptom. All the symptoms were given equal importance. The comparative analysis shows that Group III treated with Yogic practices and selected diet was most effective with 82.4 % cure rate and 17.7 % patients

with marked relief. While Group I and II had equal relief and Group IV was least effective.

Objective Parameters

Total Leucocyte Count (Table 8): The intra-group comparison (paired t test) show that difference in means \pm standard deviation of TLC observed in Group I (81.25 \pm 392.21) were statistically not significant ($P>0.05$), while changes in Group II (103.13 \pm 230.69), Group III (268.57 \pm 151.02) and IV (137.5 \pm 123.78) were statistically significant. However, clinically they were not significant as TLC were with in normal limits before and after treatment. Inter group comparison [One way Anova (F-test)], even though the results were highly significant, clinically the results were not significant as the values were with in normal limits.

Eosinophils (Table 9): The intra-group comparison (paired t test), the results show that difference in means \pm standard deviation of Eosinophils observed in all the four groups were statistically highly significant ($P>0.001$). Inter group comparison at the third follow up progressive decrease in the mean eosinophil values was observed and the difference was statistically highly significant ($P<0.001$). Group I, Group II, Group III were better than Group IV.

ESR (Table 10): The intra-group comparison show that difference in means \pm standard deviation of ESR

observed in Group II and Group IV (0.5 \pm 1.02) were statistically significant ($P<0.01$), while Group III (0.34 \pm 1.03) and I (0.09 \pm 3.3) were statistically not significant ($P>0.05$). Even though the results in were statistically significant, they were clinically not significant as all the values were with in normal range. Inter group comparison was not significant at any of the follow ups.

To summarize the observations, Group I treated with *Pratimarsha Nasya* once daily in the morning and selected diet (*Gudardraka* and general *Pathyapathya*) was most effective at the end of third follow up in relieving symptoms like nasal Discharge, sneezing, itching of eye, nasal congestion, anosmia, headache, drowsiness, and appetite. Group I was significantly effective with respect to eosinophils. Group II treated with selected Diet (*Gudardraka* and general *Pathyapathya*) was more effective in reducing itching of nose and heaviness of head. Group III treated with Yogic Practices and selected diet (*Gudardraka* and general *Pathyapathya*) was more effective in reducing symptoms like Itching of ear, watering of eyes, fullness of ear and fatigue. All the three groups were equally effective in reducing symptoms like itching of palate, redness of eyes, drowsiness and loss of appetite. The Group I, II and III did not experience any untoward effect during the course of treatment.

Table No. 1: Effect of intervention on Watery Discharge

Group	Grade	Watery Discharge								Intra-group comparison Cochran Test Q value
		BT		F ₁		F ₂		F ₃		
		No	%	No	%	No	%	No	%	
I	Present	35	100	13	37.1	15	46.9	3	9.4	61.15
	Absent	0	0	22	62.9	17	53.1	29	90.6	$P<0.001$
II	Present	35	100	15	42.9	21	65.6	8	25	82.16
	Absent	0	0	20	57.1	11	34.4	24	75	$P<0.001$
III	Present	35	100	14	40	15	57.1	4	11.8	69.64
	Absent	0	0	20	60	20	42.9	30	88.2	$P<0.001$
IV	Present	34	97.1	7	20	27	18.2	15	45.5	45.16
	Absent	1	2.9	28	80	6	81.8	18	54.5	$P<0.001$
Intergroup comparison χ^2 Test		χ^2 test not applicable		$\chi^2 = 4.87$ $P>0.05$		$\chi^2 = 13.4$ $P<0.004$		$\chi^2 = 15.29$ $P<0.002$		

Table No. 2: Effect of intervention on Sneezing

Group	Grade	Sneezing				Intra-group comparison Friedman test
		BT	F ₁	F ₂	F ₃	
I	0	0 (0)	14(40)	18(56.3)	25(78.1)	57.96 $P<0.001$
	1	24(68.6)	18(51.2)	14(43.8)	7(21.9)	
	2	10 (28.6)	3(8.6)	0(0)	0(0)	
	3	1(2.9)	0(0)	0(0)	0(0)	
II	0	0(0)	6(17.1)	11(34.4)	22(68.8)	49.57 $P<0.001$
	1	26(74.3)	23(65.7)	19(59.4)	10(31.3)	
	2	4(11.4)	6(17.1)	2(6.3)	0(0)	
	3	5(14.3)	0(0)	0(0)	0(0)	
III	0	0(0)	15(42.9)	23(65.7)	25(73.5)	56.59 $P<0.001$
	1	26(74.3)	18(15.2)	12(34.3)	9(26.5)	

	2	5(14.3)	2(5.7)	0(0)	0(0)	50.28 P<0.001
	3	4(11.4)	0(0)	0(0)	0(0)	
IV	0	1(2.9)	26(74.3)	7(21.2)	18(54.5)	
	1	26(74.3)	8(22.9)	24(72.7)	13(39.4)	
	2	7(20)	1(2.9)	2(6.1)	2(6.1)	
	3	1(2.9)	0(0)	0(0)	0(0)	
Inter-group comparison χ^2 Test		$\chi^2 = 0.698$, P>0.05	$\chi^2 = 5.1$, P<0.05	$\chi^2 = 26.3$, P<0.001	$\chi^2 = 4.77$, P>0.05	

Table No. 3: Effect of intervention on Itching of Nose

Group	Grade	Itching Nose				Intra-group comparison Friedman test
		BT	F ₁	F ₂	F ₃	
I	0	23(65.7)	25(71.4)	28(87.5)	29(90.6)	20.66 P<0.001
	1	7(20)	9(25.7)	4(12.5)	3(9.4)	
	2	5(4.3)	1(2.9)	0(0)	0(0)	
	3	0(0)	0(0)	0(0)	0(0)	
II	0	12(34.3)	13(37.1)	26(81.3)	28(87.5)	45.3 P<0.001
	1	17(48.6)	22(62.9)	6(18.8)	4(12.5)	
	2	6(17.1)	0(0)	0(0)	0(0)	
	3	0(0)	0(0)	0(0)	0(0)	
III	0	16(45.7)	21(60)	30(85.7)	29(85.3)	33.12 P<0.001
	1	13(37.1)	13(37.1)	5(14.3)	5(14.7)	
	2	5(14.3)	1(2.9)	0(0)	0(0)	
	3	1(2.9)	0(0)	0(0)	0(0)	
IV	0	15(42.9)	32(91.4)	16(48.5)	27(81.8)	35.31 P<0.001
	1	20(57.1)	3(8.6)	17(51.5)	6(18.2)	
	2	0(0)	0(0)	0(0)	0(0)	
	3	0(0)	0(0)	0(0)	0(0)	
Inter-group comparison χ^2 Test		$\chi^2 = 26.53$ P<0.001	18.18 P<0.001	$\chi^2 = 18.2$, P<0.001	χ^2 not applicable	

Table No. 4: Effect of intervention on Nasal Congestion

Group	Grade	Congestion				Intra-group comparison Friedman test
		BT	F ₁	F ₂	F ₃	
I	0	7(20)	26(74.3)	29(90.6)	29(90.6)	55.61 P<0.001
	1	21(60)	8(22.9)	3(9.4)	3(9.4)	
	2	6(17.1)	1(2.9)	0(0)	0(0)	
	3	1(2.9)	0(0)	0(0)	0(0)	
II	0	12(34.3)	13(37.1)	26(81.3)	27(84.4)	51.05 P<0.001
	1	18(51.4)	21(60)	6(18.8)	5(15.6)	
	2	4(11.2)	1(2.9)	0(0)	0(0)	
	3	1(2.9)	0(0)	0(0)	0(0)	
III	0	12(34.3)	21(60)	27(77.1)	29(85.3)	34.75 P<0.001
	1	17(48.6)	13(37.1)	8(22.9)	5(14.7)	
	2	5(14.3)	1(2.9)	0(0)	0(0)	
	3	1(2.9)	0(0)	0(0)	0(0)	
IV	0	14(40)	29(82.9)	20(60.6)	23(69.7)	22.63 P<0.001
	1	17(48.6)	5(14.3)	13(39.4)	10(30.3)	
	2	3(8.6)	1(2.9)	0(0)	0(0)	
	3	1(2.9)	0(0)	0(0)	0(0)	
Inter-group comparison χ^2 Test		$\chi^2 = 3.5$, P>0.05	$\chi^2 = 18.1$, P<0.001	$\chi^2 = 8.76$, P<0.05	$\chi^2 = 5.36$, P>0.05	

Table No. 5: Effect of intervention on Anosmia

Group	Grade	Anosmia				Intra-group comparison Cochran Test Q value
		BT	F ₁	F ₂	F ₃	
I	Present	10(28.6)	2(5.7)	7(21.9)	1(3.1)	18
	Absent	25(71.4)	33(94.3)	25(78.1)	31(96.9)	P<0.001
II	Present	14(40)	12(34.3)	1(3.1)	3(9.4)	25.88
	Absent	21(60)	23(65.7)	31(96.9)	29(90.6)	P<0.001
III	Present	12(34.3)	10(28.6)	1(2.9)	3(8.8)	24.29
	Absent	23(65.7)	25(71.4)	34(97.1)	31(91.2)	P<0.001
IV	Present	8(22.9)	3(8.6)	4(12.1)	4(12.1)	9.32
	Absent	27(77.1)	32(91.4)	29(87.9)	29(87.9)	P<0.03
Intergroup comparison χ^2 Test		$\chi^2 = 2.65$ P>0.05	$\chi^2 = 13.7$ P<0.003			

Table No. 6: Effect of intervention on Headache

Group	Grade	Headache				Intra-group comparison Cochran Test Q value
		BT	F ₁	F ₂	F ₃	
I	Present	28(80)	8(22.9)	4(12.5)	2(6.3)	45.41
	Absent	7(20)	27(77.1)	28(87.5)	30(93.8)	P<0.001
II	Present	25(71.4)	20(57.1)	7(21.9)	5(15.6)	30.6
	Absent	10(28.6)	15(42.9)	25(78.1)	27(84.4)	P<0.001
III	Present	25(71.4)	17(48.6)	7(20)	3(8.8)	38.61
	Absent	10(28.6)	18(51.4)	28(80)	31(91.2)	P<0.001
IV	Present	26(74.3)	6(17.1)	23(69.7)	15(45.5)	35.03
	Absent	9(25.7)	29(82.9)	10(30.3)	18(54.5)	P<0.001
Intergroup comparison χ^2 Test		$\chi^2 = 0.89$ P>0.01	$\chi^2 = 17.12$ P<0.001	$\chi^2 = 31.41$ P<0.001	$\chi^2 = 20.84$ P<0.001	

Table No. 7, Inter Group comparison of Symptoms before and after treatments

Group	Cured		Marked relief		Moderate relief		Slight Relief	
	No.	%	No.	%	No.	%	No.	%
I	24	75	7	21.9	1	3.1	0	0
II	24	75	7	21.9	1	3.1	0	0
III	28	82.4	6	17.7	0	0	0	0
IV	4	12.1	6	18.2	10	30.3	13	39.4

Table No. 8: Effect of intervention on Total Leucocyte Count

Group	Total Leucocyte Count				Intra-group comparison Paired t Test Q value
	BT	F ₁	F ₂	F ₃	
I	7008.57±854.18	6571.43±1021.12	6448.57±1090.16	6237.14±958.5	81.25±392.21 T=1.17 P>0.05
II	6948.57±792.0	6594.29±1049.63	6428.57±1062.34	5997.14±948.21	103.13±230.69 T=2.53 P<0.05
III	6990.63±759.18	6462.5±990.85	6231.43±1087.57	5996.88±718.64	268.57±151.02 T=10.52 P<0.001
IV	6446.88±792.7	6415.63±934.33	6180.0±1018.01	5959.3±856.8	137.5±123.78 T=6.28 P<0.001
Intergroup comparison One way Anova F Test	F=3.82 P<0.01	F=5.88 P<0.001	F=7.07 P<0.001	F=7.04 P<0.001	
Post Hoc test Significant pairs	(I, IV) P<0.008	(I, IV) P<0.001	(I, III), (P<0.01) (I, IV), P<0.001	(I, III)P<0.004 (I,IV)P<0.001	

Table No. 9: Effect of intervention on Eosinophils

Group	Eosinophils				Intra-group comparison Paired t Test t value
	BT	F ₁	F ₂	F ₃	
I	17.66±2.81	12.34±2.54	8.13±2.15	4.94±1.74	12.81±2.88 T=25.18 P<0.001
II	17.71±1.95	12.57±2.64	8.44±1.95	5.25±1.67	12.44±1.5 T=46.86 P<0.001
III	16.34±2.09	11.89±2.00	8.0±1.68	4.4±1.43	11.94±1.49 T=47.29 P<0.001
IV	15.17±2.64	6.97±2.67	12.25±3.21	8.5±3.8	6.66±3.71 T=10.14 P<0.001
Intergroup comparison One way Anova F Test	F=8.94 P<0.001	F=40.42 P<0.001	F=24.43 P<0.001	F=20.03 P<0.001	
Post Hoc test Significant pairs	(I, IV), (IV,II), P<0.001	(I,IV), (II, IV), (III,IV) P<0.001	(I, IV), (II, VI),(III, IV) P<0.001	(I, IV), (II, VI),(III, IV) P<0.001	

Table No. 10: Effect of intervention on ESR

Group	ESR				Intra-group comparison Paired t Test t value BT-F3
	BT	F ₁	F ₂	F ₃	
I	8.29±2.96	8.11±1.61	7.94±1.48	8.16±1.53	0.09±3.3 T=0.16 P>0.05
II	8.4±1.67	8.23±0.81	8.44±0.98	7.87±0.87	0.56±0.91 T=3.48 P<0.01
III	8.29±1.62	7.83±0.57	8.29±0.71	7.94±1.41	0.34±1.03 T=1.97 P>0.05
IV	8.29±1.62	7.77±0.81	8.06±0.35	7.81±1.55	0.5±1.02 T=2.78 P<0.01
Intergroup comparison One way Anova F Test	F=0.03 P>0.05	F=1.62 P>0.05	F=1.72 P>0.05	F=0.381 P>0.05	
Post Hoc test Significant pairs	NS	NS	NS	NS	

DISCUSSION

Observations

Regarding **Nasal Discharge**, initially nasal discharge was invariably present in 100% patients among all the four groups. After the treatment the results show that all the 4 groups were highly significant (0.001). On intergroup comparison even though Group IV showed a quick improvement in most patients, Group I was most effective at the end of third follow up. It may be due to combined effect of *Anutaila Pratimarsha Nasya* and selected diet (*Guḍardraka* and general *Pathyapathya*). *Anutaila* alleviates *Vata Doṣa* triggering factor for *Srava* and *Guḍardraka* dry up *Kapha* and general *Pathyas* enhance immunity. The

recurrence rate was more in Group IV. With respect to **sneezing**, initially majority of patients (97.1 %) had sneezing. The patients were graded depending upon the severity. Namely Grade 1- 1-10 sneezes/day, Grade 2- 11-20 sneezes /day and Grade 3- more than 21 sneezes/day. After third follow up majority of patients

were in Grade 1 and Group I was most effective. Probably *Anutaila* enhances the resistance power of nasal mucosa to allergens like dust and *Pathyapathya* have synergistic effect by reducing *Kapha*. Regarding **itching of Nose**, initially majority of patients (40.7 %) had mild itching of nose, 11.4% patients had moderate

itching of nose and 0.7% patients had severe itching and 47.14 % patients did not have itching of nose. After third follow up majority of patients were in Grade 1 and Group II was most effective. *Guḍardraka* pacify *Kapha* and relieve the patient from itching of nose. General *Pathyapathyas* enhance immunity and prevent recurrence. With respect to **Nasal congestion**, initially majority of patients (52.1 %) had mild nasal congestion, 1.9 % patients had moderate nasal congestion and 2.9 % patients had severe congestion and among 32.1 % patients nasal congestion was absent. After third follow up majority of patients were relieved and few patients were in Grade 1. At the end of third follow up Group I was most effective. *Anutaila* humidifies the nasal passage and reduces congestion as per Harry Beckman's principle. Regarding **Anosmia**, initially only 31.7 % patients complained of anosmia and in majority of patients (68.3 %) anosmia was absent. At the end of third follow up, maximum patients had relief from anosmia. Group I was most effective among all the groups. Practice of *Pratimarsha Nasya* daily prevents affliction of Nose and strengthens sense organs.^[7] *Anutaila* clears the obstruction in the micro-channels and stimulates *Gandhavahanaḍi*, thus relieving anosmia. But in Group IV 12.1 % patients again suffered from anosmia. With respect to **Headache**, initially majority of patients (74.3 %) suffered from headache and headache was absent in 25.7 % patients. At the end of third follow up, maximum patients had relief from headache. Group I was most effective among all the groups. *Pratimarsha Nasya* expels the accumulated *Kapha* locally in the nose and head and *Guḍardraka* helps in *Amapachana*, thus provide relief from headache. But in Group IV 45.5 % patients again suffered from headache.

Over all analysis of Subjective parameter

All the symptoms were given equal importance. The comparative analysis shows that Group III treated with Yogic practices and selected diet was most effective with 82.4 % cure rate and 17.7 % patients with marked relief. While Group I and II appear to have given equal relief when BT and AT are considered, but Group I can be considered better as the result was quick. Group IV was least effective.

The Objective assessment was based on the basis of simple parameters like TLC, DLC and ESR. Immunological investigations were not included due to constraints of fund.

Objective parameters

Total Leucocyte Count: Even though both intra-group comparison and inter group comparison show highly significant results, clinically the results were not significant as the values before and after intervention were within normal limits.

Eosinophils: The intra-group comparison showed highly significant results in all the four groups. The

reduction of eosinophils was in the order Group I > Group II > Group III > Group IV. Inter group comparison show highly significant results before treatment and after first, second and third follow up. Before treatment eosinophil counts in Group I and II were significantly higher than Group IV and the difference was statistically not significant with Group III and Group IV. At the first follow up, based on mean difference Group IV (8.2) was most effective compared to Group I (5.32), Group II (5.14) and Group III (4.45). At the second follow up an increase in mean eosinophil value (5.18) was observed in Group IV, whereas progressive decrease in mean values was observed in Group I (4.21), Group II (4.13) and Group III (3.89). The difference in efficacy was statistically highly significant ($p < 0.001$). The Group I, Group II, and Group III were better than Group IV. At the third follow up again progressive decrease in the mean eosinophil values was observed with Group I (3.19), Group II (3.19), Group III (3.6) and Group IV (3.75) in all the groups. The difference was statistically highly significant ($P < 0.001$). Group I, Group II, Group III were better than Group IV. Depending on the difference of means Group I was most effective. *Pratimarsha Nasya* probably enhanced local Nasal immunity to various allergens. *Guḍardraka* has anti-inflammatory action.

Mode of Action of *Pratimarsha Nasya*

Pratimarsha Nasya with *Anutaila* acts via nasal pathway reaches the head and nourishes the *Tarpaka Kapha* situated in the head. The lipid soluble and volatile principles present in *Anutaila* especially conducive to minute channels^[8] this in turn nourishes all the sense organs and provides strength to them. The active principles reach the head through nasal mucosa by *Ushna*, *Tikshna*, *Sukshma* and *Anupranavaguna* of *taila*. They nourish all the sense organs, improve the olfactory sensation and provide strength. The main function of nose is olfactory sensation and it is the root of olfactory channel (*Gandhavaha dhamani*). *Anutaila* stimulates these channels and improves the olfactory sensation. The mucous membrane present in the nostrils spread to about 1-2 cm further gets in touch with olfactory nerve, amygdaloid nucleus and pyriform area, frontal cortex. So the medication coming in contact with nasal mucous membrane stimulates remote areas of the brain. The *Nasya* is given through oil media hence the absorption rate of active principles in *Anutaila* is rapid as mucous membrane is lipophilic (Potiroli, E. A. et-al 1983 and Berquist et-al 1979) and stimulate remote areas of the brain. The nasal decongestion is brought about by provision of humidification in Nasal passage according to Harry Beckman pharmacological principle. *Nasya* with medicated oil will act similarly by providing proper breathe in atmosphere saturated with moisture and relieve the feeling of fullness in the head.

Mode of Action of Diet

The diet should be *Vatakaphahara* and *Ojovardhaka* to prevent and cure *Pratishyaya*. *Ardraka* (fresh ginger) and Jaggery are among the common *Aharayogi dravyas*, the combination has been advocated in equal proportion in dose of 10 gram twice daily based on the reference in *Ashtanga Sangraha*.^[9] Jaggery has *Madhura Rasa, Natishita, Snigdha Guna, Madhura Vipaka, Shita Virya* and *Pittavataghna, Raktadoshahara, Mutrashodhana, Balya, Vrishya, Majjasrikkara* and *Medokaphakara Karma*. Minerals like Magnesium, Potassium, Iron, Calcium, Phosphorous and Zinc are present in Jaggery. Jaggery is also a good source of selenium and acts as an antioxidant by reducing free radicals in the cells. According to the paper presented by scientists of Industrial Toxicology Research Centre at a workshop held in Lyon, France, the jaggery has a preventive action on smoke-induced lung lesions which suggests the jaggery can act as a protective agent for workers in dusty and smoky environments.^[10] *Ardraka* has *Katu Rasa, Laghu, Snigdha Guna, Madhura Vipaka, Ushna Virya*, and *Kaphavatashamaka*. Active ingredients in ginger compounds called gingerol is a known pain reliever. It affects the pain pathways directly, but also relieves the inflammation which in itself causes pain. Studies in Montreal and Tokyo in 1955 and 1979 concluded that ginger also enhances immunity.^[11]

Mode of Action of Yogic practices

Jala Neti rinses out the dirt and bacteria filled mucous lining as the warm water loosens and dissolves any internal build ups and expels them out. The body's protection mechanisms against nasal and upper respiratory infections get enhanced. Removing pus from the sinus via simple irrigation a procedure comparable with *Jala Neti* can significantly fasten healing process and prevent spread of infection from the sinus to the lungs. Removal of pus by the patient at home is beneficial.^[12] *Kapalabhati* clears the channels and alleviates *Kapha* resulting in healthy mucous membrane. *Suryabhedana Pranayama* has heating effect, so it effectively alleviates both *Vāta* and *Kapha*. The *Nadishodhana Pranayama* help to enhance *Prana*, purify *Nadis* and strengthen the respiratory system. *Asanas* included in the study help in chest expansion, thus help in strengthening the lungs and the body. *Shavasana* and *Dhyana* induce relaxation and calm down the mind and reduce the stress.

Levocetirizine a highly effective and well tolerated antihistamine used was administered in Group IV (Control Group). Even though initially results were highly effective, chances of recurrence was very high and produced side effects like slight sleepiness, headache, mouth dryness, light headedness, vision problems (mainly blurred vision), palpitations and fatigue in some patients.

CONCLUSIONS

- Intra-group comparison showed highly significant results in all the four Groups. Progressive decrease in the symptoms was observed in I, II, and III groups. Even though Group IV (control) treated with Levocetirizine was most effective in the first follow up, there was high recurrence rate after discontinuation of medicine.
- The comparative analysis shows that Group III treated with Yogic practices and selected diet (*Gudardraka* and general *Pathyapathya*) was most effective with 82.4 % cure rate and 17.7 % patients with marked relief.
- While Group I and II appear to have given equal relief when BT and AT are considered, but Group I can be considered better as the result was quick.
- *Anutaila Pratimarsha Nasya, Yogic* practices and Diet as daily regimen are effective in prevention of *Pratishyaya*.
The Yogic practices and diet are cost effective and devoid of any side effect, hence can be effectively implemented at the society level to prevent repeated attacks of *Pratishyaya*.

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