



A STUDY ON IMPACT OF FACE MASK USAGE IN CONTROLLING NASAL SYMPTOMS IN ALLERGIC RHINITIS PATIENTS

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ABSTRACT

Introduction: Inflammation of the nasal mucosa, or rhinitis, affects almost 40% of the global population. A growing number of people are being affected by allergic rhinitis (AR), the most prevalent type of chronic rhinitis, which affects 10% to 20% of the population.¹ Two or more of the following symptoms must be present on most days in order for AR to be diagnosed: watery rhinorrhea, sneezing, nasal obstruction, and persistent nasal pruritus lasting at least one hour.² Sneezing, runny nose, itching nose, nasal blockage, and conjunctivitis are some of the most significant symptoms. Using facemasks reduced the symptoms of allergic rhinitis among one of the studies conducted on nurses with chronic allergic rhinitis. Using the face mask could help lessen symptoms or at the very least cut down on the amount of medicine needed.³ There are quite a few reports and preliminary observations which have looked into the possible association between face mask use and reduced symptoms of AR and mentioned about the positive relationship, still there is lack of medical scientific studies to correlate this relationship. **Aims And Objectives:** To assess the impact of face mask usage in controlling nasal symptoms in allergic rhinitis patients. **Materials And Methods:** This was a Prospective interventional study, conducted at Department of Otorhinolaryngology, PES Hospital, Kuppam. This study included all the patients with allergic rhinitis between the ages of 18 to 70 years attending Otorhinolaryngology OPD of PES Hospital, Kuppam.

Results:

- There was no significant difference with the SNOT22 scores between group A (with mask) and group B (without mask) at baseline assessment.
- During the 1st assessment at 4 weeks, Group A had a mean and SD of 34.0 ± 9.4 and Group B had a mean and SD of 39.9 ± 6.4 . This difference was statistically significant. ($p < 0.0001$).
- During the 2nd assessment at 8 weeks, Group A had a mean and SD of 22.4 ± 8.8 and Group B had a mean and SD of 33.1 ± 9.7 . This difference was statistically significant. ($p < 0.0001$).

KEYWORDS :**INTRODUCTION:**

Public health recommendations could be significantly impacted by understanding how face masks affect AR symptoms, particularly in high-allergen environments. Most of the studies are done on the impact of face masks in relation to infection control. There is a lack of comprehensive studies specifically focusing on their effect on AR symptoms, highlighting a critical gap that needs to be addressed.

Since there was no study carried out like this in this region where agriculture is one of the important occupations, exploring the non-pharmacological intervention of using a face mask could provide an accessible and cost-effective method for reducing AR symptoms. These observations could lead to effective management strategies, which will potentially improve the quality of life for individuals suffering from this chronic condition and further contribute to the literature.

AIMS AND OBJECTIVES:

To assess the impact of face mask usage, in controlling nasal symptoms, in allergic rhinitis patients.

MATERIALS AND METHODS:

This was a Prospective interventional study, conducted at Department of Otorhinolaryngology, PES Hospital, Kuppam.

Inclusion Criteria:

Patients with two or more of following symptoms -watery nasal discharge (rhinorrhea), excessive sneezing, itching sensation in the nose, and sensation of nasal obstruction which are hallmarks of allergic rhinitis for > 1 hour on most days was taken up for the study between the age of 18 to 70 irrespective of sex.

Exclusion Criteria:

1. Patients presenting with symptoms due to structural abnormalities such as grossly deviated nasal septum, nasal polyps, tumors, chronic nasal obstruction were not included.
2. Patients requiring surgical management were not included.
3. Patients with smoking habit.
4. Patients who were unable to complete the questionnaires.

Study Tools:

The data was collected using a pretested questionnaire which contains

socio-demographic data, presenting complaints, and clinical examination and SNOT -22 questionnaire.

RESULTS:

Patients were divided in two groups each having 60 participants,

Group -A: where in addition to standard treatment patients were advised to wear face mask

Group -B: patients who just took standard treatment and didn't wear face masks.

These two groups of patients were evaluated by baseline symptom score, practical problems; emotional morbidity by SNOT-22 score at time of presenting to OPD (Baseline assessment) and after 4 weeks (1st assessment) and 8 weeks (2nd assessment) by follow up or through phone call.

Table 1: Comparison Of Mean SNOT22 Score Between The Groups At Baseline

SNOT 22 score at baseline	Mean $\pm$ SD		t-value	'p' value
	Group A	Group B		
	48.7 $\pm$ 11.7	47.0 $\pm$ 9.7	0.8451	0.3998

The mean and standard deviation of the SNOT22 score for group A (48.7 $\pm$ 11.7) and group B (47.0 $\pm$ 9.7) did not show any difference at baseline (p value = 0.3998)

Table 2: Comparison Of Mean SNOT22 Score Between The Groups During 1st Assessment

SNOT 22 score during 1 st assessment	Mean $\pm$ SD		t-value	'p' value
	Group A	Group B		
	34.0 $\pm$ 9.4	39.9 $\pm$ 6.4	4.0191	<0.0001*

The mean and standard deviation of the SNOT22 score for group A was low (34.0 $\pm$ 9.4) than compared to group B (39.9 $\pm$ 6.4). This difference in mean was found to be statistically significant (p value <0.0001) during the first assessment.

The mean and standard deviation of the SNOT22 score for group A was low (22.4 $\pm$ 8.8) than compared to group B (33.1 $\pm$ 9.7). The difference in mean was found to be statistically significant (p value <0.0001) during

the second assessment.

Table 3: Comparison Of Mean SNOT22 Score Between The Groups During 2nd Assessment

SNOT 22 Score During 2 nd Assessment	Mean $\pm$ SD		t-value	'p' value
	Group A	Group B		
	22.4 $\pm$ 8.8	33.1 $\pm$ 9.7	6.3143	<0.0001*

DISCUSSION:

Allergic rhinitis (AR) is an inflammatory condition of the nasal mucosa that results from exposure to specific allergens, which can be present either inside or outdoors. When these allergens come into contact with the body, immunoglobulin E triggers the activation of mast cells or basophils in the nasal mucosa. This leads to the production of vasoactive mediators, including histamine, which causes inflammation.⁴ Allergic rhinitis (AR) is mostly characterized by nasal symptoms, including congestion, discharge, itching, and sneezing. It also causes ocular symptoms such as itching, redness, and tearing.⁵

This SNOT22 was applied to the study participants at 3 different times – first at baseline, 2nd at 4 weeks interval and 3rd at 8 weeks interval. The 22 score distribution was done at baseline as shown in the results. According to which, blowing of nose, runny nose, cough, dizziness, facial pain, falling asleep, having good nights' sleep, waking up tired, reduced concentration, feeling sad and loss of sense of taste and smell were mild problems. Whereas, sneezing, ear fullness, ear pain, waking in-between sleep and reduced productivity were moderate problems. Post nasal discharge, thick nasal discharge, fatigue, frustration, feeling embarrassed and blockage of nose were problems which ranged between moderate degree and severe degree.

The comparison between Group A (with masks) and Group B (without masks) in terms of SNOT22 scores reveals compelling insights into the impact of mask usage on sinus and nasal symptoms. Initially, at baseline, there was no statistically significant difference in mean SNOT22 scores between Group A (48.7 $\pm$ 11.7) and Group B (47.0 $\pm$ 9.7) ($p = 0.3998$). However, significant differences emerged during subsequent assessments. In the first assessment, Group A exhibited a notably lower mean SNOT22 score (34.0 $\pm$ 9.4) compared to Group B (39.9 $\pm$ 6.4), indicating better symptom management in Group A ($p < 0.0001$). This trend persisted into the second assessment, with Group A maintaining a lower mean score (22.4 $\pm$ 8.8) compared to Group B (33.1 $\pm$ 9.7), further demonstrating significant improvement in Group A's symptoms ($p < 0.0001$). Therefore this finding clearly indicates that face mask affects the quality of life in AR patients and improves the severity of AR symptoms as evidenced in previous literatures.⁶ Nasal symptoms of patients decreased after using mask and this was found to be statistically significant ($p < 0.001$).⁷

These findings suggest that participants in Group A, who wore masks, experienced greater improvements in sinus and nasal symptoms over time compared to those in Group B, who did not wear masks.

CONCLUSION:

- There was no significant difference with the SNOT22 scores between group A (with mask) and group B (without mask) at baseline assessment.
- During the 1st assessment at 4 weeks, Group A had a mean and SD of 34.0 $\pm$ 9.4 and Group B had a mean and SD of 39.9 $\pm$ 6.4. This difference was statistically significant. ($p < 0.0001$).
- During the 2nd assessment at 8 weeks, Group A had a mean and SD of 22.4 $\pm$ 8.8 and Group B had a mean and SD of 33.1 $\pm$ 9.7. This difference was statistically significant. ($p < 0.0001$).
- Group A had a significant reduction from baseline to 1st and 2nd assessments which was statistically significant ($p < 0.0001$).

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