

# Comparison of Nozovent with Breathe Right Nasal Dilators in Management of Snoring and Obstructed Sleep Apnoea

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## ABSTRACT

**Aim:** To compare the effectiveness of nozovent with breathe right nasal dilators in the management of obstructed sleep apnoea and snoring.

**Study Design:** Comparative/observational study

**Place and Duration of Study:** Department of ENT, Hayat Memorial Hospital Lahore from 15<sup>th</sup> January 2017 to 1<sup>st</sup> February 2019.

**Methods:** One hundred and ten patients of both genders having ages 18 to 70 years presented with nasal obstruction were included in this study. All the patients were equally divided into two groups. Group I contain 55 patients and advise to use nozovent device and group II with same number of patients advise to use breathe right strips. Patients were followed for 6 months. Effectiveness was examined by scoring system 0 to 100 and was graded as grade I, II, III and IV as 75 to 100%, 51 to 74, 25 to 50 and less than 25% relief of symptoms. Compare the effectiveness between both groups.

**Results:** In group I, 32 (58.18%) patients were males and 23 (41.82%) were females and in group II, 29 (52.73%) were males and 26 (47.27%) were females. No significant difference was observed regarding mean age between both groups' 41.23±10.54 years Vs 40.98±11.28 years. Allergic rhinitis was the most common cause of nasal obstruction in both groups I and II [26 (47.27%) and 24 (43.64%)]. At final follow-up in group I, 15 (27.27%), 25 (45.45%), 10 (18.18%) and 5 (9.09%) patients had grade I, II, II and IV responses and in group II 16 (29.09%), 20 (36.36%), 15 (27.27%) and 4 (7.27%) patients had grade I, II, II and IV responses. No significant difference was observed regarding effectiveness of nasal dilators between both groups (p-value >0.05).

**Conclusion:** Mechanical nasal dilators such as nozovent and breathe right strips were effective for the management of snoring and obstructed sleep apnoea.

**Keywords:** Nasal obstruction, Nozovent, Breathe Right Strips, Snoring, Obstructed Sleep Apnoea

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## INTRODUCTION

The nose is composed of both internal and external structures. Although the internal structures of the nose (turbinates<sup>1</sup>, septum<sup>2</sup>) do not generally move in a dynamic fashion, they can become edematous with associated symptoms of congestion and obstruction. It is known that the nose may contribute to snoring<sup>3</sup> and obstructive sleep apnea (OSA) when congested or obstructed. There are many treatments for OSA, to include medical management with positive airway pressure devices, oral appliances, and myofunctional therapy.<sup>4</sup> Nasal therapies to help treat OSA include nasopharyngeal airway stenting devices, nasal expiratory positive airway pressure devices (Provent), and nasal surgery.<sup>5,6</sup>

The simple act of changing from the upright to the supine position has been shown to reduce upper airway volume by approximately 33% in OSA patients.<sup>7</sup> Given that the nasal cavity is upstream from the collapsible soft tissues of the upper airway, the nasal cavity directly influences the downstream airflow. Moreover, when the nasal cavity's cross-sectional area increases by 10%, there is a corresponding 21% increase in nasal airflow.<sup>8,9</sup> A nostril dilator "Nozovent" is a device to fit in the vestibule of nasal cavity. It is a mechanical method to keep nasal valve area

dilated and is well tolerated by males and less by females due to the use of "cocoa" in the nasal alae and also for cosmetic reasons and these cylinder enter nose.<sup>10</sup> Breathe right is a simple Silastic sheet and designed to cover the nasal valve area. The present study was conducted aimed to compare the effectiveness of internal nasal dilators (Nozovent device) with external Breathe right in the management of snoring and obstructed sleep apnea.

## MATERIALS AND METHODS

This comparative/observational study was conducted at Department of ENT, Hayat Memorial Hospital Lahore from 15<sup>th</sup> January 2017 to 1<sup>st</sup> February 2019. A total of 110 patients of both genders having ages 18 to 70 years presented with nasal obstructions were enrolled and divided equally in to two groups. Group I contain 55 patients and advise to use nozovent device and group II with same number of patients advise to use breathe right strips. Patients detailed demographic including age, sex and causes of nasal obstruction were recorded after taking informed written consent. Patients with septal deviation, nasal polyps, vestibulitis, severe pulmonary diseases, deformity of nose and patients with ages below 18 years were excluded from this study. All the patients of both groups were advised to use nasal dilators on daily basis for 6 to 8 hours. The noses were examined clinically for airflow and assess level of obstruction. The treating physician filled

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a performa explaining patient's complaints and symptoms. After full assessment of the anterior nares, nasal cavity was examined clinically and endoscopically with 0 degree and 30 degree scopes to exclude any pathological problems. Patients were followed for 6 months. Effectiveness was examined by scoring system 0 to 100 and was graded as grade I, II, III and IV as 75 to 100%, 51 to 74, 25 to 50 and less than 25% relief of symptoms. Compare the effectiveness between both groups. Data was analyzed by SPSS 24. Mean±SD was done. Chi-square test was done to compare the responses of patients. P-value <0.05 was taken as significant.

**RESULTS**

There were 32 (58.18%) male patients and 23 (41.82%) were females in group I with mean age 41.23±10.54 years and in group II 29 (52.73%) were males and 26 (47.27%) were females with mean age 40.98±11.28 years. No significant difference was observed between both groups regarding age and gender with p-value >0.05. Allergic rhinitis was the most common cause of nasal obstruction in both groups I and II [26 (47.27%) and 24 (43.64%)] followed by vasomotor rhinitis, traumatic/post-surgical, common cold and congestion during pregnancy and menstruation in 15 (27.27%) and 16 (29.09%), 7 (12.73%) and 8 (14.55%), 4 (7.27%) and 5 (9.09%), and 3 (5.45%) and 2 (3.64%) patients in group I and II respectively. No significant difference was observed with p-value >0.05 (Table 1).

At final follow-up in group I 15(27.27%), 25(45.45%), 10(18.18%) and 5(9.09%) patients had grade I, II, III and IV responses and in group II 16(29.09%), 20(36.36%), 15(27.27%) and 4(7.27%) patients had grade I, II, III and IV responses. No significant difference was observed regarding effectiveness of nasal dilators between both groups (p-value >0.05) (Table 2)

Table 1: Comparison of age and gender according to causes of nasal obstruction

Variable	Group I	Group II	P value
Age (years)	41.23±10.54	40.98±11.28	>0.05
Gender			
Male	32 (58.18%)	29 (52.73%)	>0.05
Female	23 (41.82%)	26 (47.27%)	
<b>Causes</b>			
Allergic Rhinitis	26 (47.27%)	24 (43.64%)	>0.05
Vasomotor Rhinitis	15 (27.27%)	16 (29.09%)	
Traumatic/post-surgical	7 (12.73%)	8 (14.55%)	
Common cold	4 (7.27%)	5 (9.09%)	
Congestion during pregnancy and menstruation	3 (5.45%)	2 (3.64%)	

Table 2: Comparison of outcomes between both groups at final follow-up

Responses	Group I	Group II	P-value
Grade I	15 (27.27%)	16 (29.09%)	0.428
Grade II	25 (45.45%)	20 (36.36%)	
Grade III	10 (18.18%)	15 (27.27%)	
Grade IV	5 (9.09%)	4 (7.27%)	

**DISCUSSION**

Nasal obstruction and sleep apnea are the common clinical problems in ENT settings. Nasal obstruction can be due to many causes in which allergic rhinitis, vasomotor rhinitis, post-surgical/trauma were the most common causes of nasal obstruction. Many of treatment modalities have been used to relief for these complaints of nasal obstruction and snoring, in which mechanical dilator devices showed significant results for considerable relief.<sup>11,12</sup>In present study we compare the effectiveness of nasal dilators (Nozovent and Breathe right) in the management of snoring and obstructed sleep apnoea. In this regard 110 patients were enrolled and divided equally in to two groups. Group I patients had advised to use internal Nozovent and Group II patients had advised to use external breathe right strips. Follow-up was taken at 6 months to examine the effectiveness of nasal dilators. In our study overall male patients were high in numbers 55.45% as compared to females 44.55% with average age of 45 years. These results were similar to some previous studies in which male patients were predominant 52% to 70% with complaining snoring and obstructed sleep apnoea as compared to females and mostly patients were ages 30 to 50 years.<sup>13,14</sup>

In present study the most common etiology of nasal obstruction was allergic rhinitis found in 45.45% patients followed by vasomotor rhinitis, traumatic/post-surgical, common cold and congestion during pregnancy and menstruation in 28.18%, 13.64%, 8.18% and 4.55% patients. A study by Camacho et al<sup>15</sup> reported that allergic rhinitis, NO-VAS score ≥50, and external nasal deformity (grades 2–4) were statistically significant independent predictors of high NOSE scores on multivariate analysis. Another study by Nosset al<sup>16</sup> reported that allergic rhinitis was the commonest cause of nasal obstruction in 48% patients.

In present study at final follow-up we found that in group I, 15 (27.27%), 25 (45.45%), 10 (18.18%) and 5 (9.09%) patients had grade I, II, III and IV responses and in group II, 16 (29.09%), 20 (36.36%), 15 (27.27%) and 4 (7.27%) patients had grade I, II, III and IV responses. No significant difference was observed regarding effectiveness of nasal dilators between both groups (p-value >0.05). A study conducted by Gelardiet al<sup>17</sup> reported that internal nasal dilators showed significant effectiveness in the management of obstructed sleep apnoea. A study by Kiyohara et al<sup>18</sup> regarding effectiveness of mechanical dilator for nasal obstruction demonstrated that external nasal strips and nasal clips effectively relieve obstruction of the internal nasal valve and may be the effective alternative of surgical treatment. Some other studies showed similarity to our findings in which internal and external nasal dilators were effective in the relief of symptoms of nasal obstructions and demonstrated an alternate to surgical treatment.<sup>19,20</sup>

**CONCLUSION**

Nozovent (internal) and Breathe right (external) nasal dilators are very effective for the management of snoring and obstructed sleep apnoe. We found majority of patients had 50% to 100% relief of symptoms after using

mechanical nasal dilators. Breathe right is better tolerated by most of the patients.

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