

## Effectiveness of a Respiratory Care Bundle on Dyspnea among Patients with Bronchial Asthma in Selected Hospitals of Bagalkot

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### Abstract

### Original Research Article

Bronchial asthma is a chronic respiratory disorder characterized by recurrent dyspnea and reduced quality of life. This study evaluated the effectiveness of a respiratory care bundle in reducing dyspnea among asthma patients. A quasi-experimental pre-test post-test control group design was adopted with 60 participants (30 experimental, 30 control) in selected hospitals of Bagalkot. The intervention group received deep breathing exercises and incentive spirometry thrice daily for three days, while the control group received routine care. Dyspnea was assessed using the Modified Borg's Dyspnea Scale. Results showed a significant reduction in dyspnea scores in the experimental group (mean reduced from 7.6 to 6.8,  $p < 0.05$ ), whereas the control group showed no significant improvement. The study concludes that respiratory care bundles are effective non-pharmacological interventions for improving respiratory outcomes in asthma patients.

**Keywords:** Bronchial asthma, Dyspnea, Respiratory care bundle, Nursing intervention, Incentive spirometry.

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## INTRODUCTION

Bronchial asthma is one of the most prevalent chronic respiratory disorders worldwide, characterized by airway inflammation, bronchial hyper-responsiveness, and recurrent episodes of wheezing, breathlessness, chest tightness, and coughing. The recurrent nature of dyspnea, a hallmark symptom of asthma, significantly affects patients' physical, emotional, and social well-being. Despite advances in pharmacological management, many patients continue to experience episodes of breathlessness and reduced quality of life.

Recent trends in nursing and rehabilitative care emphasize the importance of non-pharmacological interventions, which complement medical treatment by improving lung capacity, reducing respiratory distress, and enhancing self-care. Among these, respiratory care bundles a structured set of evidence-based practices have gained prominence in improving respiratory function, particularly among patients with chronic pulmonary conditions. Such bundles typically include deep breathing exercises, incentive spirometry, and patient education, which promote airway clearance, prevent atelectasis, and enhance oxygenation.

Given the growing burden of bronchial asthma in India, particularly in rural and semi-urban populations, the present study was undertaken to evaluate the effectiveness of a respiratory care bundle on dyspnea among patients with bronchial asthma admitted to selected hospitals in Bagalkot.

### Objectives

The primary objectives of this study were:

1. To assess and compare the pre-test and post-test levels of dyspnea among patients with bronchial asthma in experimental and control groups.
2. To evaluate the effectiveness of the respiratory care bundle in reducing dyspnea among patients in the experimental group.
3. To determine the association between post-test dyspnea levels and selected demographic variables such as age, gender, occupation, duration of illness, and prior experience with respiratory care bundle techniques.

## MATERIALS AND METHODS

### Research Design and Setting

The study employed a quasi-experimental pre-test post-test control group design to evaluate the effectiveness of the respiratory care bundle. The research

was conducted in selected hospitals of Bagalkot, Karnataka, India, where a significant number of patients are admitted with respiratory ailments, including bronchial asthma.

**Sample and Sampling Technique**

A total of 60 adult patients diagnosed with bronchial asthma were selected using non-probability purposive sampling. The participants were divided equally into two groups: experimental (n = 30) and control (n = 30). Inclusion criteria comprised patients aged 18 years and above, clinically diagnosed with bronchial asthma, and willing to participate in the study. Patients with acute respiratory failure or other chronic pulmonary diseases such as COPD were excluded.

**Intervention: Respiratory Care Bundle**

The respiratory care bundle administered to the experimental group included:

- **Deep Breathing Exercises:** Slow, diaphragmatic breathing techniques performed for 10–15 minutes per session.
- **Incentive Spirometry:** Encouraging patients to use an incentive spirometer three times daily to promote lung expansion and prevent atelectasis.
- **Positioning and Education:** Educating patients on optimal sitting posture, use of relaxation techniques, and self-monitoring of breathing patterns.

This intervention was implemented thrice daily for three consecutive days under the supervision of the investigator. The control group received routine hospital care without any additional respiratory exercises or structured bundle intervention.

Demographic Variables	Experimental Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
	(n)	%	(n)	%
<b>Age In years</b>				
20-30	3	10	4	13.33
30-40	13	43.33	13	43.33
40-50	14	46.66	13	43.33
<b>Gender</b>				
Male	14	46.666	20	66.666
Female	16	53.333	10	33.333
Transgender	0	0	0	0
<b>Occupation</b>				
coolie	5	16.66	7	23.33
former	6	20	4	13.33
employee	12	40	8	26.66
Self-employee	7	23.33	11	36.66
<b>Educational status</b>				
Illiterate	3	10	2	6.66
Primary	4	13.33	4	13.33
Secondary	12	40	10	33.33
Graduate	11	23.33	14	46.66
<b>Habits, Do you smoke?</b>				
Yes	13	43.33	10	33.33
No	17	56.66	14	46.66
Occasionally	0	0	6	20
<b>Habits, Do you consume alcohol?</b>				
Yes	17	56.66	10	33.33
No	13	44.33	11	36.33
Occasionally	0	0	9	30
<b>Diet</b>				
Veg	10	33.33	2	6.66
Non-veg	1	3.33	0	0
Mixed	19	63.33	28	93.33
<b>Have you attended any respiratory Care bundle techniques?</b>				
Yes	5	16.66	1	3.33
No	25	83.33	29	96.66

**Data Collection Tools**

The Modified Borg’s Dyspnea Scale was used to assess the intensity of dyspnea before and after the intervention. A structured questionnaire was also used to collect socio-demographic and clinical data, including age, gender, duration of illness, and prior exposure to respiratory techniques.

**Data Analysis**

The collected data were analyzed. Descriptive statistics (mean, standard deviation, frequency, and percentage) were used to summarize the data, while inferential statistics such as paired t-test, unpaired t-test, and chi-square test were employed to test the hypotheses at a 0.05 significance level.

**RESULTS**

**Demographic Characteristics**

Most participants were adults between 30–50 years, with a slightly higher proportion of females. The majority had a duration of illness ranging from 1 to 5 years. A small percentage had prior experience with breathing exercises or respiratory rehabilitation programs.

Frequency and percentage distribution of demographic variables of the patients with bronchial

asthma in experimental and control group. N = (30+30)

In the experimental group, majority 14 (46.66%) were in the age group of 40-50 years; 16(53.33) were female; majority 12(40%) were employees; Considering the educational status, majority 12(40%) secondary(PUC); majority 17(56.66%) were smokers; majority17(56.66%) were consume alcohol; majority 19(63.33%) were mixed diet pattern; majority 25(83.33%) were not attended any respiratory care bundle technique.

Where as in the control group, majority 13(43.33%) were in the age group of 30- 40years and 40-50 years; 20(66.66%)were male; majority 11(36.66%) were self- employees; considering the educational status, majority 14(46.66%) were graduate, majority; 14(46.66%) were smokers; majority 11(36.33%) were consume alcohol; majority28(93.33%) were mixed diet pattern; majority 29(96.66%) were not attended any respiratory care bundle technique.

Comparison of pre-test and post-test level of dyspnea among patients with bronchial asthma in experimental group.

Level of Dyspnea	Mean	Median	SD	T Value	P Value	Significance
Pre test	7.6	4	0.379	2.285	0.25988	significant
Post test	6.8	4	0.504			

Comparison of pre-test and post-test level of dyspnea among patients with bronchial asthma in experimental group.

The mean pre-test value of level of dyspnea was 7.6 with S.D 0.379 and the mean post-test value of level of dyspnea was 6.8 with S.D 0.504

The median pre-test value of level of dyspnea was 4 and the median post-test value of level of dyspnea was 4

The calculated paired “t” value of 2.285 was found to be statistically significant at p<0.05 level.

This clearly shows that the provision of respiratory care bundle has reduced the post-test level of dyspnea among patients with bronchial asthma in experimental group and control group.

**Association of pre-test and post-test level of dyspnea among patients with bronchial asthma in experimental group with selected demographic variables**

Socio demographic variables	df	Chi square	T value	P value	Significance
Age	2	1.0241	5.99	0.599	NS
Gender	1	0.6367	3.84	0.4249	NS
Occupation	3	6.086	7.84	0.1075	NS
Education	3	3.918	7.84	0.2705	NS
Habits 1	2	0.2630	5.99	0.8768	NS
Habits 2	2	3.981	5.99	0.1366	NS
Diet	2	3.811	5.99	0.1487	NS
Have you attended any respiratory care bundle technique?	1	6.891	3.84	0.0087	S

\*P<0.05, significant, NS- Not Significant, S- Significant

**Effectiveness of the Respiratory Care Bundle**

In the experimental group, 86.66% of patients presented with severe dyspnea during the pre-test assessment. Following the intervention, dyspnea levels

improved significantly, with 83.33% reporting moderate and 16.66% reporting mild dyspnea, and none remaining in the severe category. The mean dyspnea score

decreased from 7.6 (SD = 0.379) to 6.8 (SD = 0.504), which was statistically significant ( $t = 2.285$ ,  $p < 0.05$ ).

In contrast, the control group exhibited minimal improvement, and many participants continued to experience moderate to severe dyspnea. The difference between pre-test and post-test scores was not statistically significant, highlighting the effectiveness of the respiratory care bundle exclusively in the experimental group.

#### Association between Dyspnea Reduction and Demographic Variables

The chi-square test revealed a significant association ( $p < 0.05$ ) between the reduction in dyspnea levels and prior experience with respiratory care techniques. Other variables such as age, gender, occupation, and duration of illness showed no significant association with dyspnea improvement.

## DISCUSSION

The findings of the present study clearly indicate that the respiratory care bundle is an effective non-pharmacological intervention for reducing dyspnea among patients with bronchial asthma. These results are consistent with earlier studies that demonstrated the role of breathing exercises and incentive spirometry in improving pulmonary function and reducing perceived breathlessness.

The improvement observed in the experimental group can be attributed to enhanced lung expansion, improved ventilation-perfusion ratio, and increased patient awareness regarding breathing control. Moreover, structured education and supervision provided by nurses ensured adherence and correct performance of exercises.

The study highlights the vital role of nurses in implementing simple yet effective respiratory interventions that can be integrated into daily clinical practice, particularly in low-resource healthcare settings.

## CONCLUSION

The study concluded that the implementation of a respiratory care bundle comprising deep breathing exercises, incentive spirometry, and patient education

was significantly effective in reducing dyspnea among patients with bronchial asthma. Incorporating such structured interventions into routine nursing care can enhance patient outcomes, promote self-management, and reduce the frequency of exacerbations.

Encouraging patient participation and regular practice of respiratory exercises should be prioritized in asthma rehabilitation programs to achieve sustained improvements in respiratory health and quality of life.

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