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"Quasiexperimental Study to Evaluate the Effectiveness of Respiratory Care Bundle on Dyspnea among Patients with Bronchial Asthma at Selected Hospitals in Haryana".

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KEYWORDS:

Bronchial asthma, dyspnoea, respiratory care bundle, incentive spirometry, deep breathing exercises, non-pharmacological management.

ABSTRACT:

Background: Bronchial asthma is a chronic inflammatory airway disorder characterized by airway hyper-responsiveness, mucosal edema, and excessive mucus production, leading to breathlessness and reduced quality of life. Non-pharmacological interventions such as respiratory care bundles may play an important role in improving respiratory function and alleviating dyspnoea.

Aim: To evaluate the effectiveness of a respiratory care bundle on dyspnoea among patients with bronchial asthma and to determine its association with selected demographic variables.

Methods: A quasi-experimental pre-test and post-test control group design was adopted. The study was conducted among 60 patients with bronchial asthma, with 30 participants each in the experimental and control groups, selected using non-probability purposive sampling. The respiratory care bundle, comprising oral care, deep breathing exercises, and incentive spirometry, was administered to the experimental group for three consecutive days. Dyspnoea levels were assessed using the Modified Borg Dyspnoea Scale before and after the intervention.

Results: Post-intervention findings revealed that patients in the experimental group predominantly experienced mild to moderate dyspnoea, indicating improvement compared to baseline levels. Although the difference between the experimental and control groups was not statistically significant, a reduction in dyspnoea levels was observed in the experimental group following the intervention. Additionally, a significant association was found between dyspnoea levels and selected demographic variables in the experimental group.

Conclusion: The respiratory care bundle demonstrated a positive effect in reducing dyspnoea among patients with bronchial asthma. It can be considered a safe, simple, and cost-effective non-pharmacological approach in respiratory rehabilitation.

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INTRODUCTION

The children of today will make up the future population. If the next generation is healthy, theirs. One of the most important aspects in determining a child's health and happiness is the pattern of their growth and development throughout the course of their whole life. There are around 105 million kids below the age of five in the world's population of 6 billion people, and over 10.5 million of them die every year. Most of these fatalities happen in the first year or so of life owing to issues like poor nutrition and lack of care from parents. Children exposure to sickness in non-parental child care is a major concern for parents, and it has been widely discussed in the media, beginning with a flurry of coverage in 1980s and 1990s. As a consequence, public health professionals have accumulated substantial evidence that child health care centres, and to a lesser extent, family-day care centres, expose children to a variety of common infectious diseases, Mal-nutrional deficiency and lack of elementary education in childhood age (0-5 years).

Initial childhood development is considered most critical stage of life and determines quality of lifelong health, well-being, learning and behaviour. It is both a time of great opportunity and a vulnerable period of negativity, representing a unique time to harness developmental forces to prevent or minimize the likelihood of disability and sequel. Each individual's developmental process is highly dependent on the quality of stimulation, support, and encouragement a child experiences in the family, neighbourhood, and care environment. If these are lacking or unsupported, a child's development can be severely impaired. However, conclusive evidence indicates that early and appropriate interventions that address risk factors can modify growth, cognitive and social-emotional development in ways that improve long-term health, well-being, and performance. Despite strong evidence that investment is more effective early on, the response to investment has been slow, especially in the poorest countries. Improving early childhood care is fundamental to achieving the Millennium Development Goals. **(WHO, 2015).[1]**

Children are an urgent value to the country. Children might be the absolute best guide for any country whenever created, created and utilized well, while a solid collection of head and the body is a significant component to be taken a gander at in human turn of events. Working on the wellbeing particularly that of a child will be a financially savvy strategy for the improvement of country just as at Globe. Kids include the strong major for the powerful and sound country. **(Donovan JJ. 1989)[2].**

Children and Child Welfare. Since children are our country's backbone, the government should prioritise their health and welfare. The government has begun to provide child welfare programmes in order to promote the holistic growth of children. Child welfare programmes can be provided in two ways: by providing appropriate assistance to families in order for them to successfully care for their children, or by focusing on and intervening directly with children. ***Wong DL. (1998).[3]***

Objectives

- To assess the pre -test and post- test level of dyspnoea among the patients with bronchial asthma in the experimental group and control group.
- To evaluate the effectiveness of the respiratory care bundle on dyspnoea among patients with bronchial asthma in the experimental group.
- To find out the association between the post-test level of dyspnoea among the patients with bronchial asthma and the selected demographic variables in the experimental group.

Research hypothesis

H1 - The mean post-test level of dyspnoea will be significantly lower than the pre -test level of dyspnoea in the experimental group.

H2 - The mean post-test level of dyspnoea in the experimental group will be significantly lower than the post-test level of dyspnoea in the control group.

H3 - There will be a significant effect of the respiratory care bundle on dyspnoea among patients with bronchial asthma in the experimental group

H4 - There will be a significant association between the level of dyspnoea and the selected demographic variables among the patients with bronchial asthma

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REVIEW OF LITERATURE

For the present study, the related literature was reviewed and organised as follows:

- Literature related to Bronchial asthma.
- Literature related to the Respiratory Care Bundle.
- Literature related to the effectiveness of the Respiratory Care Bundle on dyspnoea among patients with Bronchial Asthma.

RESEARCH METHODOLOGY

Research approach

A Quantitative approach is adopted by the researcher to evaluate the effectiveness of the respiratory care bundle on dyspnoea among patients with bronchial asthma.

Research design

Quasi-experimental, pre-test, post-test control group design is adopted for this study.

Group	Pre Test	Intervention	Post Test
Experimental	O_1	X	O_2
Control	O_1	-	O_2

O_1 –Assessment of Pre-test level of dyspnoea in the experimental group and control group

O_2 –Assessment of Post-test level of dyspnoea in the experimental group and control group

X - Respiratory care bundle

Variable

Independent variable: An independent variable is that stands alone or not dependent on any other. In this study, the independent variables refer to the Respiratory care bundle

Dependent variable: The dependent variable is the variable that the researcher is interested in understanding, explaining or predicting. In this study, the dependent variable refers to the Level of dyspnoea among patients with bronchial asthma.

Settings: The study was conducted at selected Hospitals in Hisar, Haryana.

Population: The population for the study is the patients with bronchial asthma who will be admitted to selected hospitals in Hisar.

Sample and sampling techniques: Sampling refers to the process of selecting a portion of the population to represent the entire population. In this study, the sample is clients with bronchial asthma who are all admitted in selected hospital in Hisar

Sample size: 60 samples (30 samples in the Experimental group and 30 samples in the Control group).

Sampling techniques: On Probability Purposive sampling technique was adopted.

Inclusion criteria:

- Clients with bronchial asthma in a selected hospital in Hisar.
- Clients who were willing to participate in the study.
- Clients who were available during the time of the study.
- Clients who can read and write English

Exclusion criteria:

- Patients who have cardiac, renal diseases, recent surgeries or any co-morbid illness.
  Clients who were not willing.

DATA ANALYSIS AND INTERPRETATION

Section A: Description of Demographic Variables of Patients with Bronchial Asthma in the Experimental and Control Groups

Table 1: Frequency and percentage distribution of demographic variables of patients with bronchial asthma in the experimental and control groups

N = 60 (Experimental Group = 30, Control Group = 30)

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Demographic Variables	ExperimentalGroup		Control Group	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Agein years				
31-35years	4	13.33	3	10.00
36-40years	5	16.67	7	23.33
41-45years	11	36.67	13	43.33
46-50years	10	33.33	7	23.33
Gender				
Male	18	60.00	21	70.00
Female	12	40.00	9	30.00
Maritalstatus				
Married	29	96.7	30	100.0
Unmarried	0	0.00	0	0.00
Separated	1	3.3	0	0.00
Widower/ Widow	0	0.00	0	0.00
Religion Hindu	16	53.33	19	63.33
Christian	9	30.00	7	23.33
Muslim	5	16.67	4	13.33
Others	0	0.00	0	0.00
Educational status				
No Formal Education	9	30.00	11	36.67
Primary Education	14	46.67	10	33.33
High School & Higher Secondary	5	16.67	4	13.33

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Graduate	2	6.66	5	16.67
Occupation				
Un employed	6	20.00	3	10.00
Self-employed	7	23.33	16	53.33
Private Employee	13	43.33	9	30.00
Government employee	4	13.33	2	6.67
Monthly Income				
Less thanRs.5000	15	50.00	13	43.33
Rs.5001-Rs.10000	6	20.00	9	30.00
Rs.10001-Rs.15000	7	23.33	5	16.67
More thanRs.15000	2	6.67	3	10.00
Duration of illness				
Less than 6 months	16	53.33	18	60.00
6 months -1 year	9	30.00	9	30.00
More than 1 year	5	16.67	3	10.00
Family history of respiratory illness				
Maternal	3	10.00	4	13.33
Paternal	2	6.67	2	6.67
Nil Parity	25	83.33	24	80.00
Type of treatment taken for respiratory Illness				
Medications	24	80.00	20	66.67
Inhalers	6	20.00	7	23.33
Others	0	0.00	3	10.00
Smoking Habits				
Non-Smoker	12	40.00	9	30.00
Occasionally Smokes	14	46.67	16	53.33
Chain Smoker	4	13.33	5	16.67

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History of doing Physical Exercise				
Regular	2	6.67	6	20.00
Irregular	10	33.33	10	33.33
Not following	18	60.00	14	46.67
Previous exposure to the incidental education regarding breathing exercise				
Educated by health care professional	4	13.33	6	20.00
Educated by allied health professional	9	30.00	10	33.33
Not received any incidental education	17	56.67	14	46.67

Table 1 reveals that in the experimental group, the majority of participants, 11 (36.67%), belonged to the age group of 41–45 years. Most participants, 18 (60%), were male. With regard to religion, the majority, 16 (53.33%), were Hindus. Considering educational status, 14 (46.67%) had primary education. In terms of occupation, 13 (43.33%) were private employees. Half of the participants, 15 (50%), had a monthly income of less than Rs. 5000. A majority, 16 (53.33%), had been suffering from illness for less than 6 months. Most participants, 25 (83.33%), had no family history of respiratory illness. Regarding treatment, 24 (80%) were taking medications for respiratory diseases. In relation to smoking habits, 14 (46.67%) were occasional smokers. The majority, 18 (60%), were not performing any exercise. Furthermore, 17 (56.7%) had not received any incidental education regarding breathing exercises.

In the control group, the majority of participants, 13 (43.33%), were in the age group of 41–45 years. Most participants, 21 (70%), were male. The majority, 19 (63.33%), were Hindus. Regarding educational status, 11 (36.67%) had no formal education. In terms of occupation, 16 (53.33%) were self-employed. A total of 13 (43.33%) had a monthly income of less than Rs. 5000. Most participants, 18 (60%), had been suffering from illness for less than 6 months. A majority, 24 (80%), had no family history of respiratory illness. Regarding treatment, 20 (66.67%) were taking medications for respiratory diseases. In terms of smoking habits, 16 (53.33%) were occasional smokers. Half of the participants, 15 (50%), were irregular in performing exercises. Additionally, 14 (46.67%) had not received any incidental education regarding breathing exercises.

	No Evidence of Dyspnea		**Mild Dyspnea**		**Moderate Dyspnea**		**Severe Dyspnea**	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Pre test	0	0	0	0	11	36.67	19	63.3
Post test	4	13.3	9	30	16	53.3	1	3.33

Table 2 reveals the percentage distribution of pretest and post-test levels of dyspnoea in the experimental group.

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The analysis of pre-test level of dyspnoea in the experimental group, revealed that the majority 19(63.33%), had severe dyspnoea, and 11(36.67%) had a moderate level of dyspnoea.

Whereas, the post-test level of dyspnoea in the experimental group, revealed that the majority 16(53.33%), had moderate dyspnoea, 9(30%) had mild level of dyspnoea, 4(13.33%) had evidence of dyspnoea, and 1(3.33%) had severe dyspnoea.

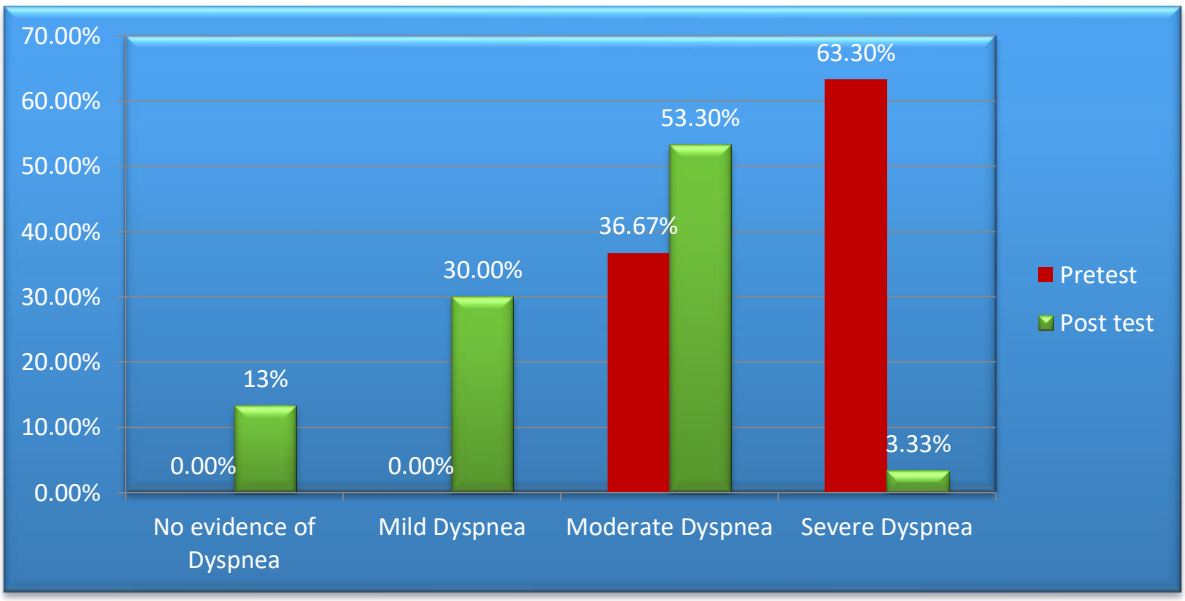

Fig.1. Percentage distribution of pre-test and post-test level of dyspnea among patients with bronchial asthma in the experimental group.

Table 3: Frequency and Percentage distribution of pre-test and post-test level of dyspnoea among patients with bronchial asthma in the control group.

	No Evidence of Dyspnea		**Mild Dyspnea**		**Moderate Dyspnea**		**Severe Dyspnea**	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Pre test	0	0	1	3.33	7	23.33	22	73.3
Post test	1	3.33	2	6.67	8	26.67	19	63.3

Table 3. reveals the percentage distribution of pre-test and post-test levels of dyspnoea in the control group.

The analysis of pre-test level of dyspnoea in the control group, revealed that the majority 22(73.33%), had severe dyspnoea, 7(23.33%) had moderate level of dyspnoea, and 1(3.33%) had mild level of dyspnoea.

Whereas, the post-test level of dyspnoea in the control group, revealed that the majority 19(63.33%) had severe dyspnoea, 8(26.67%) had a moderate level of dyspnoea, 2(6.67%) had mild dyspnoea, and 1(3.33%) had no evidence of dyspnoea.

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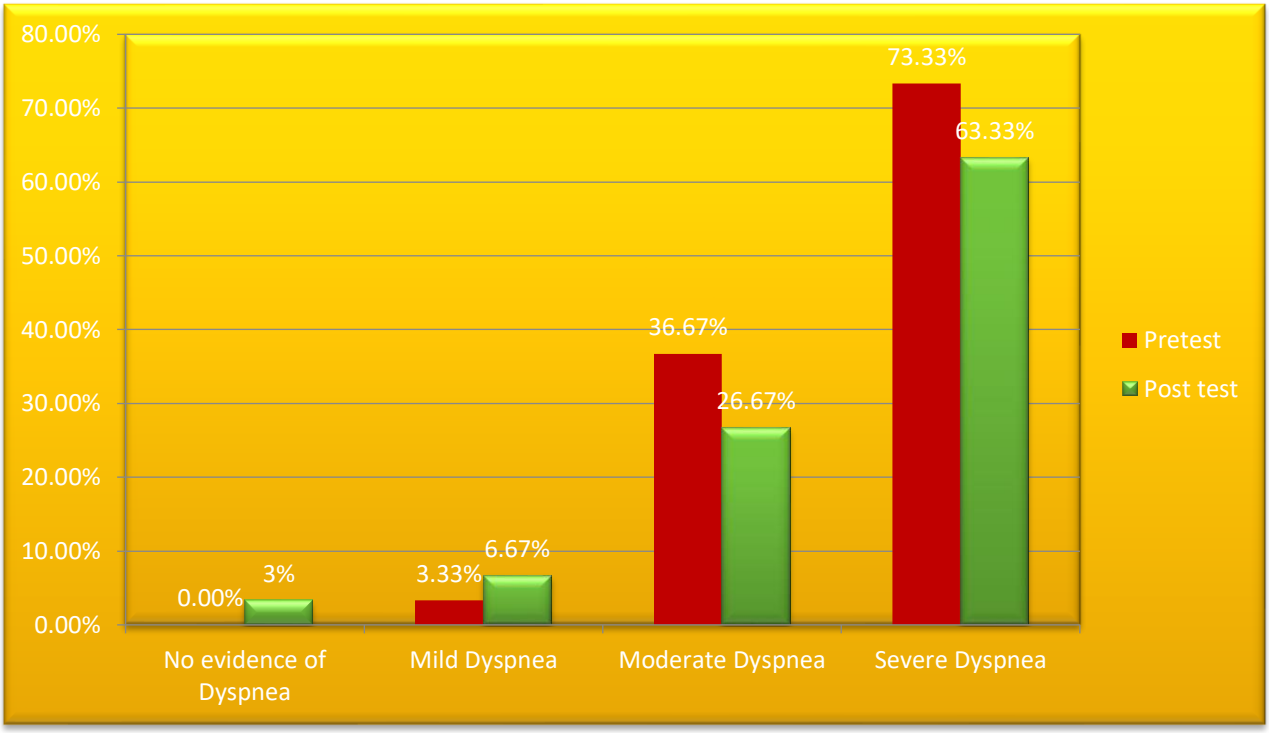

Fig.2. Percentage distribution of pre-test and post-test level of dyspnoea among patients with bronchial asthma in the control group.

Section c: comparison of pre-test and post-test level of dyspnea among patients with bronchial asthma in the experimental and control groups.

Table 4: Comparison of pre-test and post-test levels of dyspnea among patients with bronchial asthma in the experimental group.

	MEAN	**SD**	**PAIRED t- value**
PRETEST	1.36	0.482	t = 6.926**
POST TEST	2.5	0.763	

**p<0.05, Significant

Table 4 shows the comparison of pre-test and post-test levels of dyspnea among patients with bronchial asthma in the experimental group.

The mean pre-test value of level of dyspnea was 1.36 with S.D 0.482, and the mean post-test value of level of dyspnea was 2.5 with S.D 0.763. The calculated paired "t" value of 6.926 was found to be statistically significant at p<0.05 level.

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

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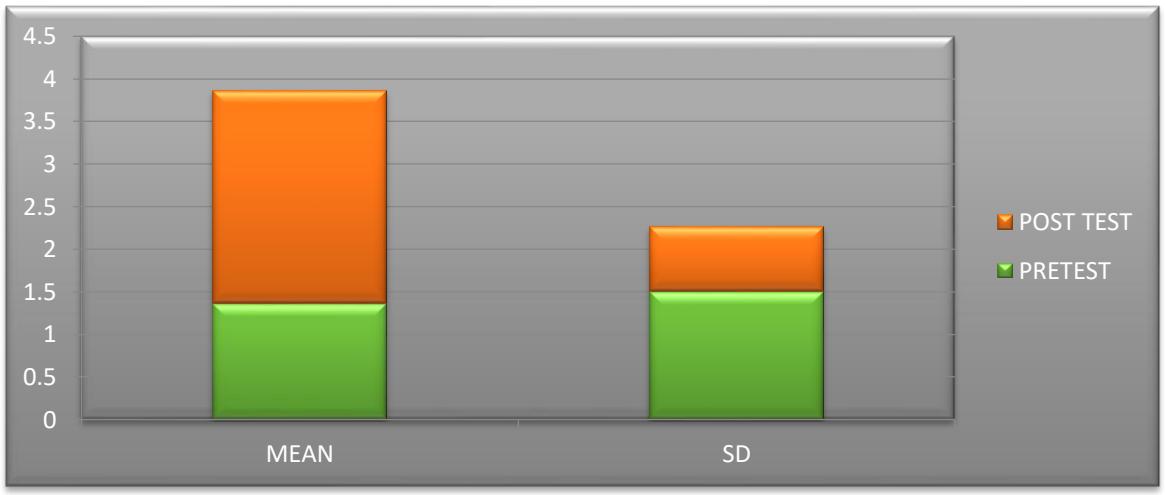

Fig.3. Comparison of pre-test and post-test levels of dyspnea among patients with bronchial asthma in the experimental group.

Table 5: Comparison of pre-test and post-test levels of dyspnea among patients with bronchial asthma in the control group.

	Mean	**Sd**	**paired t- value**
Pretest	1.3	0.53	t = 1.1
Post test	1.5	0.86	

**p<0.05, Not Significant

Table 5 shows the comparison of pre-test and post-test levels of dyspnea among patients with bronchial asthma in the control group.The mean pre-test value of the level of dyspnea was 1.3 with S.D 0.53, and the mean post-test value of the level of dyspnea was 1.5 with S.D 0.86. The calculated paired "t" value of 1.1 was not found to be statistically significant.

This clearly shows that there was no significant change in the pre-test and post-test levels of dyspnea among patients with bronchial asthma in the control group.

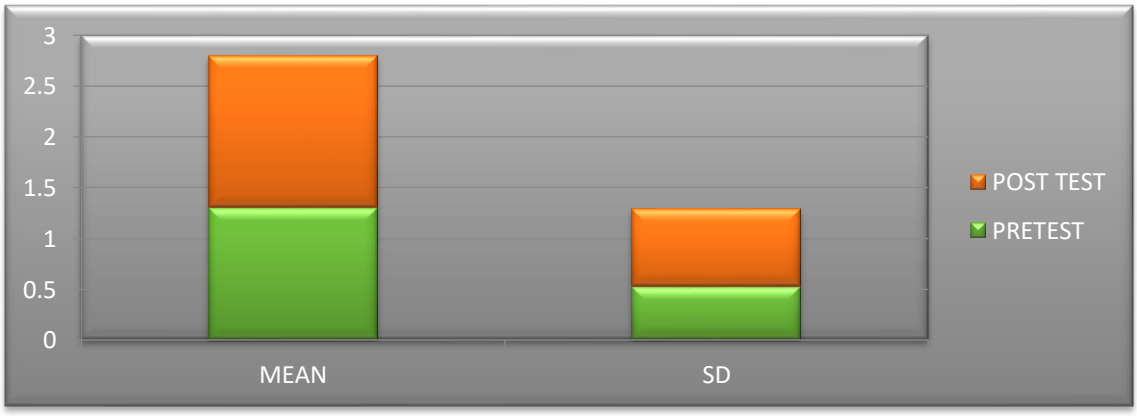

Fig.4. Comparison of pre-test and post-test levels of dyspnea among patients with bronchial asthma in the control group.

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Table 6: Comparison of post-test level of dyspnea among patients with bronchial asthma between the experimental and control groups.

	MEAN	**SD**	**PAIRED t- value**
experimental	2.5	0.763	t = 4.762*
control	1.5	0.86	

*p<0.05, Significant

Table 6 shows the comparison of the post-test level of dyspnea between the experimental and control groups.When comparing the post-test level of dyspnoea between the experimental and control group, the mean post-test score in the experimental group was 2.5 with S.D 0.763, and the mean post-test score in the control group was 1.5 with S.D 0.86. The calculated unpaired "t" value 4.762 was found to be statistically significant at a p<0.05 level.

This clearly indicates that after the provision of the respiratory care bundle, there was a significant reduction in the post-test level of dyspnoea among patients with bronchial asthma in the experimental group than in the control group.

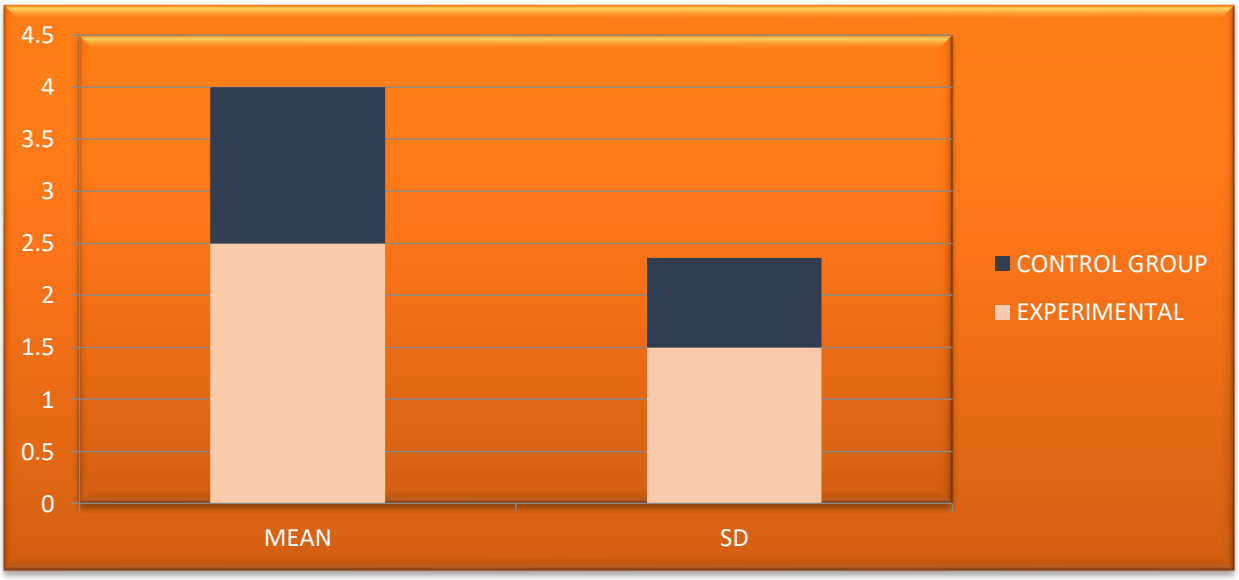

Fig. 5. Comparison of post-test level of dyspnoea among patients with bronchial asthma between the experimental and control groups.

DISCUSSION

The analysis of the pre-test level of dyspnea in the experimental group revealed that the majority of participants, 19 (63.33%), had severe dyspnea, while 11 (36.66%) had a moderate level of dyspnea. In contrast, the post-test level of dyspnea in the experimental group showed improvement, with the majority, 16 (53.33%), having moderate dyspnea, 9 (30%) having mild dyspnea, 4 (13.33%) showing no evidence of dyspnea, and only 1 (3.33%) having severe dyspnea.

In the control group, the pre-test level of dyspnea revealed that the majority, 22 (73.33%), had severe dyspnea, 7 (23.33%) had moderate dyspnea, and 1 (3.33%) had mild dyspnea. The post-test findings in the control group showed that 19 (63.33%) continued to have severe dyspnea, 8 (26.66%) had moderate dyspnea, 2 (6.66%) had mild dyspnea, and 1 (3.33%) had no evidence of dyspnea.

Comparison of pre-test and post-test levels of dyspnea in the experimental group revealed that the mean pre-test score was 1.36 (SD = 0.482), whereas the mean

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post-test score increased to 2.5 (SD = 0.763). The calculated paired t-value of 6.926 was found to be statistically significant at the $p < 0.05$ level. This indicates that the implementation of the respiratory care bundle significantly reduced the level of dyspnea among patients with bronchial asthma in the experimental group.

In contrast, the control group showed a mean pre-test score of 1.3 (SD = 0.53) and a mean post-test score of 1.5 (SD = 0.86). The calculated paired t-value of 1.1 was not statistically significant. This suggests that there was no significant change in the level of dyspnea among patients in the control group.

Further comparison of post-test dyspnea levels between the experimental and control groups revealed that the mean post-test score in the experimental group was 2.5 (SD = 0.763), while in the control group it was 1.5 (SD = 0.86). The calculated unpaired t-value of 4.762 was statistically significant at the $p < 0.05$ level. This clearly indicates that the respiratory care bundle was effective in significantly reducing dyspnea in the experimental group compared to the control group.

The chi-square analysis demonstrated a significant association between the level of dyspnea and demographic variables. Among these, the duration of illness showed a statistically significant association with the post-test level of dyspnea at the $p < 0.05$ level, whereas other demographic variables were not significantly associated. Therefore, the stated Hypothesis 4 was accepted.

Conclusion:

The respiratory care bundle was found to be highly effective in reducing the level of dyspnea among patients with bronchial asthma. The findings of the present study are consistent with those of previous clinical studies, which also support the effectiveness of respiratory care bundle interventions in improving respiratory outcomes and reducing dyspnea in patients with bronchial asthma.

IMPLICATIONS

Nursing Practice: The findings of the study demonstrate that the respiratory care bundle is an effective intervention for reducing the level of dyspnea among patients with bronchial asthma. These results support its inclusion as a comprehensive nursing care strategy in the management of such patients. The study also emphasizes the need for creating awareness among patients regarding breathing exercises and the role of health education combined with respiratory rehabilitation. Regular practice of the respiratory care bundle can help patients prevent further respiratory complications and improve their overall respiratory health.

Nursing Education: The effectiveness of the respiratory care bundle in reducing dyspnea should be disseminated through nursing journals to enhance awareness among nursing professionals. The findings of this study can be used by nurse educators as teaching material while explaining the care of patients with bronchial asthma. Additionally, nursing students can play an important role in educating patients about the importance and proper implementation of the respiratory care bundle to reduce dyspnea.

Nursing Administration: Nurse administrators can promote awareness among staff nurses and patients regarding the importance of the respiratory care bundle in reducing dyspnea. They can also organize in-service education programs to train nursing personnel in the proper use and implementation of the respiratory care bundle in clinical practice, thereby improving patient outcomes.

Nursing research: The findings of this study contribute to the existing body of scientific knowledge and support evidence-based nursing practice. Nurse researchers are encouraged to conduct further studies comparing the effectiveness of the respiratory care bundle with other therapeutic interventions. This study also serves as a foundation and motivation for future research in this area.

RECOMMENDATIONS:

- A similar study can be conducted on a larger sample size to enhance the generalizability of the findings.
- A similar study can be carried out on patients with other diseases using the same teaching programme.
- Comparative studies can be undertaken to evaluate the effectiveness of the respiratory

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care bundle in comparison with other therapeutic interventions.

CONCLUSION:

This study was conducted to assess the effectiveness of the respiratory care bundle in reducing the level of dyspnea. The major findings of the study revealed a significant reduction in the level of dyspnea among patients with bronchial asthma following the implementation of the respiratory care bundle.

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Declarations

Ethics Conflict**:** All financial and non-financial conflicts, ASI feel.

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