



## An Experimental Study to Evaluate the Effectiveness of Pursed Lip Breathing Exercises on Bronchial Asthma Patients in a Selected Hospital at Udaipur to Develop an Information Pamphlet

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### ABSTRACT

Asthma is a condition where your airways narrow and swell and may produce extra mucus. These can make breathing troublesome and trigger hacking, a whistling sound (wheezing) when inhaling, and windedness. Pursed lip breathing is a technique that helps individuals living with asthma or COPD when they experience windedness. The pursed-lip breathing helps to control the shortness of breath and provides a quick and easy way to slow your breathing pace, making every breath more compelling. The present study aims to evaluate the effectiveness of pursed lip breathing exercises on 100 (50 for the experimental group or 50 for the control group) bronchial asthma patients in a selected hospital at Udaipur to develop an information pamphlet. The quantitative research approach and true experimental-randomized pre-test and post-test control group research design were adopted for this study. The probability-simple random sampling technique was used for sample collection. The data collection tool consists of 6 demographic variables and a modified breathing pattern assessment scale. The data were analyzed through descriptive and inferential statistics. The result showed that in the pre-test, the experimental group majority of participants i.e. 40% had moderate respiratory problems, while 35% had severe respiratory problems, 25% had mild respiratory problems and 0% had normal breathing patterns. Whereas in the post-test majority of participants i.e. 47% had mild respiratory problems, while 35% had normal breathing patterns, 18% had moderate respiratory problems and 0% had severe respiratory problems after administering the pursed lip breathing exercises. In the pre-test the control group majority of participants i.e. 38% had moderate respiratory problems, while 36% had mild respiratory problems, 26% had severe respiratory problems and 0% had normal breathing patterns. Whereas in the post-test majority of participants i.e. 56% had moderate respiratory problems, 32% had mild respiratory problems, 10% had severe respiratory problems and 2% had normal breathing patterns without any intervention. Hence,  $H_1$  was accepted and proven. In the experimental group, the pre-test breathing patterns score mean and SD was  $16.30 \pm 4.32$  and the post-test breathing patterns score mean and SD were  $7.73 \pm 1.05$  with a mean difference of 8.57. The mean pre-test and post-test were compared and tested by using a paired t-test (t-value = 9.23 df = 49 and p-value=0.05) and were highly significant at the

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p-value <0.05 level of significance. Whereas in the control group the pre-test breathing patterns score mean and SD was  $17.53 \pm 5.11$  and the post-test breathing patterns score mean and SD was  $15.32 \pm 3.22$  with a mean difference of 2.25. The mean pre-test and post-test were compared and tested by using paired t-test (t-value = 1.32 df = 49 and p-value = 0.05) and were not significant at the p-value <0.05 level of significance. The study findings showed that the pursed lip breathing exercises were effective in improving the breathing patterns of bronchial asthma patients. In the experimental group, there was a significant association between the pre-test breathing pattern score with selected demographic variables such as age ( $\chi^2 = 7.06$ ), gender ( $\chi^2 = 18.85$ ), religion ( $\chi^2 = 9.02$ ), residence ( $\chi^2 = 7.00$ ), and duration of hospital stay ( $\chi^2 = 17.80$ ), and no significant association with duration of illness. Whereas, in the control group there was a significant association between the pre-test breathing patterns score with selected demographic variables such as age ( $\chi^2 = 9.62$ ), duration of illness ( $\chi^2 = 11.01$ ), and no significant association with gender, religion, residence, and duration of hospital stay. Hence,  $H_2$  was accepted and proven.

**KEYWORDS** *Effectiveness; Pursed Lip Breathing Exercises; Bronchial Asthma; An information Pamphlet*



## INTRODUCTION

Asthma is a disease of the respiratory system in which the airways constrict, become inflamed, and are lined with excessive amounts of mucus, frequently in light of at least one 'triggers' like openness to natural energizers or cold air, workout, or profound pressure<sup>1</sup>. Bronchial Asthma Infection is a preventable and treatable sickness state portrayed via wind stream impediment that isn't completely reversible<sup>2</sup>. The wind stream constraint is normally moderate and connected with an unusual fiery reaction of the lungs to poisonous particles or vaporous it is brought about via air contamination, word-related openness to aggravating exhaust, and serious repeating respiratory disease<sup>3</sup>.

Childhood asthma can cause troublesome everyday side effects that impede play, sports, school, and rest. In certain kids, unmanaged asthma can cause risky asthma assaults<sup>4</sup>. Youth asthma is certainly not an alternative illness to asthma in grown-ups, however, kids face special difficulties. The condition is the main source of crisis division visits, hospitalizations, and missed school days. Sadly, youth asthma can't be restored, and side effects can go on into adulthood. In any case, with the right treatment, you and your kid can monitor side effects and forestall harm to developing lungs<sup>5</sup>.

Asthma signs and side effects fluctuate from one kid to another and could deteriorate or better over the long haul. Your youngster could have just a single sign, for example, a waiting hack or chest clog. It very well may be hard to tell whether your youngster's side effects are brought about by asthma. Intermittent or enduring wheezing and other asthma-like side effects can be brought about by irresistible bronchitis or another respiratory issue<sup>6</sup>.

## NEED FOR STUDY

The incidence of asthma is about 3% to 7% in adults. It is found more often in individuals under age 40. Asthma causes approximately 1000 details each year. The WHO estimates that between 15 and 20 million asthmatics in India. Universally asthma is responsible for around 1,80,000 deaths annually. For the resolution of dyspnea, physiotherapy is done<sup>7</sup>. The actions to determine the dyspnea incorporate unwinding positions, oxygen treatment, bronchodilators, IPPB, breathing activities recuperation techniques (e.g. diaphragmatic breathing activity, tightened lip breathing activity) alongside bronchodilators ease bronchospasm, development of ventilation, oxygenation, diminish the work breathing and breathing control<sup>8</sup>. The main therapeutic outcomes of these breathing exercises are to alleviate dyspnea and to increase tolerance<sup>9</sup>. The physiological outcomes are to increase alveolar ventilation and reduce their work of breathing<sup>10</sup>.

## PROBLEMS STATEMENT

“An experimental study to evaluate the effectiveness of pursed lip breathing exercises on bronchial asthma patients in a selected hospital at Udaipur to develop an information pamphlet”

## OBJECTIVES



- To evaluate the pre-breathing patterns of the patients with bronchial asthma in the experimental and control group.
- To provide pursed lip breathing exercises among the patients with bronchial asthma in the experimental group.
- To reevaluate the breathing patterns of the patients with bronchial asthma in the experimental and control group.
- To compare the pre & post-breathing patterns of the patients with bronchial asthma in both the experimental and control group.
- To find out the association between pre-breathing patterns with the selected demographic variables in both the experimental and control group.

## **HYPOTHESIS**

**H<sub>1</sub>:** There will be a significant difference between pre and post-breathing patterns of the patients with bronchial asthma patients in the experimental group.

**H<sub>2</sub>:** There will be a significant association between pre-breathing patterns of the experimental or the control group with selected demographics.

## **MATERIALS AND METHOD**

**Research Approach:** A quantitative research approach was used in the study.

**Research Design:** The true experimental randomized pre-test and post-test control group research design were used in the study.

**Sample:** In the present study, the sample comprises 100 bronchial asthma patients (50 for the experimental group and 50 for the control group) in a selected hospital in Udaipur.

**Sampling Technique:** In the present study, the samples were selected through a probability-simple random sampling technique.

**Setting:** In the present study, the settings were Bhandari Hospital & Jivanta Hospital, Udaipur.

**Population:** In the present study, the target population consisted of bronchial asthma patients who belong to the age group of 5-16 in selected hospitals.

**Description of the tool:** It consisted of two parts:

**Section A:** Demographic data consists of 6 items seeking information about age, gender, religion, place of residence, duration of illness, and duration of hospital stay.



**Section B:** Modified breathing patterns assessment scale consists of 10 features- respiratory rate, pulse rate, body temperature, chest retraction, use of accessory muscles, cough, air entry, dyspnea, breathing sounds, and O<sub>2</sub> saturation. Each feature has three categories 0, 1, and 2 marks with total marks range of 0-20.

### **Ethical consideration**

- Approval from the ethical committee of Venkateshwar College of Nursing Udaipur.
- Before data collection, written permission was obtained from the concerned authority of Bhandari Hospital & Jivanta Hospital, Udaipur.
- Anonymity and confidentiality of subjects were maintained.
- Informed consent was obtained from the subjects.

### **Plan for data analysis**

The data analyses will be done according to the study objectives using descriptive and inferential statistics. The plan of data analysis would be as follows:

- Frequency, percentage, mean, and standard deviation will be calculated.
- Paired t-test will be used to test the hypothesis.
- Chi-square test will be used for association with demographic variables.

## **RESULTS AND DISCUSSION**

The data obtained was divided into sections for easy and accurate interpretation of data. The data finding has organized under the following section:

**Section I:** Description of the demographic variables of the experimental and control group participants.

**Section II:** Assessment of the pre and post-breathing patterns of bronchial asthma patients in the experimental and control group.

**Section III:** Comparison of the pre and post-breathing patterns of bronchial asthma patients after pursed lip breathing exercises in the experimental and the control group.

**Section IV:** Finding related to the association between pre-test breathing patterns score with selected demographic variables in the experimental and the control group.

### **Section I: Description of the demographic variables of the experimental and control group participants:**

The demographic data consists of 6 items seeking information about age, gender, religion, place of residence, duration of illness, and duration of hospital stay.



**Table 1** Description of the demographic variables of the experimental and control group participants N = 100

S. N.	Demographic variable	Experimental Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
<b>1</b>	<b>Age</b>				
a	5-8 years	36	36%	44	44%
b	9-12 Years	38	38%	25	25%
c	13-16 Years	26	26%	31	31%
<b>Total</b>		<b>100</b>	<b>100%</b>	<b>100</b>	<b>100%</b>
<b>2</b>	<b>Gender</b>				
a	Male	46	46%	52	52%
b	Female	54	54%	48	48%
<b>Total</b>		<b>100</b>	<b>100%</b>	<b>100</b>	<b>100%</b>
<b>3</b>	<b>Religion</b>				
a	Hindu	41	41%	46	46%
b	Muslim	40	40%	42	42%
c	Christian	16	16%	12	12%
d	Other	3	3%	0	0%
<b>Total</b>		<b>100</b>	<b>100%</b>	<b>100</b>	<b>100%</b>
<b>4</b>	<b>Residence</b>				
a	Urban	56	56%	48	48%
b	Rural	44	44%	52	52%
<b>Total</b>		<b>100</b>	<b>100%</b>	<b>100</b>	<b>100%</b>
<b>5</b>	<b>Duration of illness</b>				
a	< 15 days	32	32%	52	52%
b	16 days -1 month	46	46%	42	42%
c	> 1 month	22	22%	6	6%
<b>Total</b>		<b>100</b>	<b>100%</b>	<b>100</b>	<b>100%</b>
<b>6</b>	<b>Duration of Hospital Stay</b>				
a	< 1 month	40	40%	56	56%
b	1-2 month	48	48%	42	42%
c	> 2 months	12	12%	2	2%
<b>Total</b>		<b>100</b>	<b>100%</b>	<b>100</b>	<b>100%</b>

**Age:** Table 1 revealed that in the experimental group majority of participants i.e. 38 (38%) belonged to the age group of 9-12 years, while 36 (36%) belonged to the age group of 5-7 years, and 26 (26%) belonged to the age group of 13-16 years. Whereas, in the control group majority of participants i.e. 44 (44%) belonged to the age group of 5-7 years, while 31 (31%) belonged to the age group of 12-16 years, and 25 (25%) belonged to the age group of 9-12 years.

**Gender:** Table 1 depicts that in the experimental group majority of participants i.e. 54 (54%) were female, while 46 (46%) were male. Whereas, in the control group majority of participants i.e. 52 (52%) were male, while 48 (48%) were female.



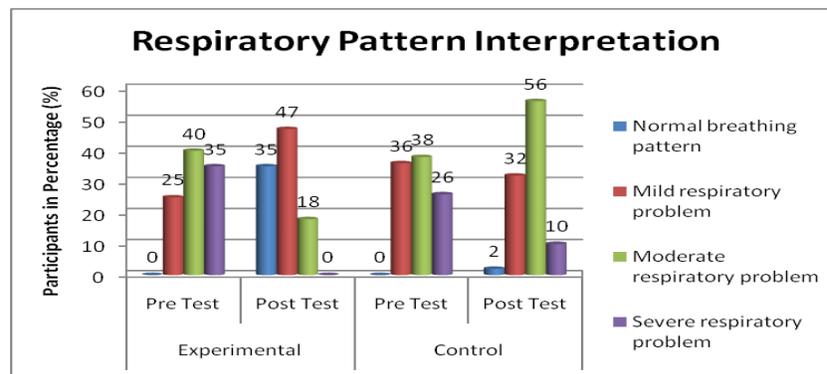
**Religion:** Table 1 depicts that in the experimental group majority of participants i.e. 41 (41%) belonged to the Hindu religion, 40 (40%) belonged to the Muslim religion, 16 (16%) belonged to the Christian religion, and 3 (3%) belonged to other. Whereas in the control group majority of participants i.e. 46 (46%) belonged to the Hindu religion, 42 (42%) belonged to the Muslim religion, 12 (12%) belonged to the Christian religion, and none belonged to other.

**Residence:** Table 1 depicts that in the experimental group majority of participants i.e. 56 (56%) belonged to urban areas, while 44 (44%) belonged to rural areas. Whereas in the control group majority of participants i.e. 52 (56%) belonged to rural areas, while 48 (48%) belonged to urban areas.

**Duration of illness:** Table 1 depicts that in the experimental group majority of participants 46 (46%) belonged to 16 days – 1 month, while 32 (32%) belonged to <15 days, and 22 (22%) belonged to > 1 month. Whereas in the control group majority of participants i.e. 52 (52%) belonged to <15 days, while 42 (42%) belonged to 16 days – 1 month, and 6 (6%) belonged to > 1 month.

**Duration of hospital stay:** Table 1 depicts that in the experimental group majority of participants 48 (48%) belonged to 1-2 months, while 40 (40%) belonged to <1 month, and 12 (12%) belonged to > 2 months. Whereas in the control group majority of participants i.e. 56 (56%) belonged to < 1 month, while 42 (42%) belonged to 1-2 months, and 2 (2%) belonged to > 2 months.

## Section II: Assessment of the pre and post-breathing patterns of bronchial asthma patients in the experimental and control group: N = 100



**Figure 1** Assessment of the pre and post-breathing patterns of bronchial asthma patients in the experimental and control group

**H<sub>1</sub>:** There will be a significant difference between the pre and post-breathing patterns of the patients with bronchial asthma in the experimental group.

Figure 1 shows that in the pre-test the experimental group majority of participants i.e. 40% had moderate respiratory problems, while 35% had severe respiratory problems, 25% had mild



respiratory problems and 0% had normal breathing patterns. Whereas in the post-test majority of participants i.e. 47% had mild respiratory problems, while 35% had normal breathing patterns, 18% had moderate respiratory problems and 0% had severe respiratory problems after administering pursed lip breathing exercises.

In the pre-test the control group majority of participants i.e. 38% had moderate respiratory problems, while 36% had mild respiratory problems, 26% had severe respiratory problems and 0% had normal breathing patterns. Whereas in the post-test majority of participants i.e. 56% had moderate respiratory problems, while 32% had mild respiratory problems, 10% had severe respiratory problems and 2% had normal breathing patterns without any intervention. Hence,  $H_1$  was accepted and proven.

### Section III: Comparison of the pre and post-breathing patterns of bronchial asthma patients after pursed lip breathing exercises in the experimental and the control group. N= 100

**Table 2** Comparison of the pre and post-breathing patterns of bronchial asthma patients after pursed lip breathing exercises in the experimental and the control group

Group	Test	Mean	SD	Mean Difference	df	Calculated t-value	Tabular t-value / Inference
Experimental	Pre-test	16.30	4.32	8.57	49	9.23	1.671* (0.05 Level)
	Post-test	7.73	1.05				
Control	Pre-test	17.53	5.11	2.25	49	1.32	1.671 (0.05 Level)
	Post-test	15.32	3.22				

Significant\*

Table 2 revealed that in the experimental group, the pre-test breathing patterns score mean and SD was  $16.30 \pm 4.32$  and the post-test breathing patterns score mean and SD were  $7.73 \pm 1.05$  with a mean difference of 8.57. The mean pre-test and post-test were compared and tested by using a paired t-test (t-value = 9.23 df = 49 and p-value=0.05) and were highly significant at the p-value <0.05 level of significance. Whereas in the control group the pre-test breathing patterns score mean and SD was  $17.53 \pm 5.11$  and the post-test breathing patterns score mean and SD was  $15.32 \pm 3.22$  with a mean difference of 2.25. The mean pre-test and post-test were compared and tested by using paired t-test (t-value = 1.32 df = 49 and p-value = 0.05) and were not significant at the p-value <0.05 level of significance. The study findings showed that the pursed lip breathing exercises were effective in improving the breathing patterns of bronchial asthma patients.

### Section IV: Finding related to the association between pre-test breathing patterns score with selected demographic variables in the experimental and the control group. N = 100

**Table 3** Association between pre-test breathing patterns score with demographic variables in the experimental and the control group

S.N.	Demographic Variables	Df	P-value (0.05 level)	The experimental		The control	
				Calculated $\chi^2$ Value	Inference	Calculated $\chi^2$ Value	Inference



1	Age in years	2	5.99	7.06	S	9.62	S
2	Gender	1	3.841	18.85	S	1.41	NS
3	Religion	3	7.815	9.02	S	0.62	NS
4	Residence	1	3.841	7.00	S	4.08	NS
5	Duration of illness	3	7.815	4.08	NS	11.01	S
6	Duration of hospital stay	3	7.815	17.80	S	6.30	NS

NS: Non Significant / S: Significant

**H<sub>2</sub>:** There will be a significant association between the pre-breathing patterns of the experimental group and the control group with selected demographics.

Table 3 revealed that in the experimental group there was a significant association between the pre-test breathing patterns score with selected demographic variables such as age ( $\chi^2 = 7.06$ ), gender ( $\chi^2 = 18.85$ ), religion ( $\chi^2 = 9.02$ ), residence ( $\chi^2 = 7.00$ ), and duration of hospital stay ( $\chi^2 = 17.80$ ), and no significant association with duration of illness. Whereas, in the control group there was a significant association between the pre-test breathing patterns score with selected demographic variables such as age ( $\chi^2 = 9.62$ ), duration of illness ( $\chi^2 = 11.01$ ), and no significant association with gender, religion, residence, and duration of hospital stay. Hence, **H<sub>2</sub>** was accepted and proved that there was a significant association between the pre-breathing patterns score of the experimental or the control group with the selected demographic variables.

## CONCLUSION

The present study aims to evaluate the effectiveness of pursed lip breathing exercises on 100 (50 for the experimental group or 50 for the control group) bronchial asthma patients in a selected hospital at Udaipur to develop an information pamphlet. The quantitative research approach and true experimental-randomized pre-test and post-test control group research design were adopted for this study. The probability-simple random sampling technique was used for sample collection. The data collection tool consists of 6 demographic variables and a modified breathing pattern assessment scale. The data were analyzed through descriptive and inferential statistics. The study findings showed that pursed lip breathing exercises were effective in improving breathing patterns among bronchial asthma patients. There was a significant association between the breathing patterns score of the experimental and control group with the selected demographic variables.



## REFERENCES

1. Burke, B. L., Robbins, J. M., et al. (2009). Trends in hospitalizations for neonatal jaundice and kernicterus in the United States, 1988-2005. *Pediatrics*, 123(2), 524-532. <https://doi.org/10.1542/peds.2007-2915>
2. Hockenberry MJ, Wilson D (2009). Wong's nursing care of infants and children (8<sup>th</sup> ed.) New Delhi: Mosby; 128-129.
3. Gupta R (2005). Neonatal surgical asthma revisited (4<sup>th</sup> ed.) New Delhi: Jaypee publishers.
4. Mary Fran Huczynski (1984). Nursing care of the critically ill child (1<sup>st</sup> ed.) Princeton: Mosby publication.
5. Marlow R. Dorothy and Redding A. Barbara (1998). Textbook of pediatrics nursing (6<sup>th</sup> ed.) Tokyo: W B Saunders Company.
6. Avery G B Fletcher and Mac Donald M G (1994). Neonatology pathology and Management of new-born. London: Mosby publications.
7. Achar and Vishwanath (1992). Book of pediatrics (2<sup>nd</sup> ed.) Orient hangman, Bombay.
8. Suraj Gupte (2001). The short textbook of pediatrics (9<sup>th</sup> ed.) New Delhi: Jaypee publications.
9. Whaley and Wong (2004). Essentials of pediatric nursing (7<sup>th</sup> ed.) St Louis: Mosby publications.
10. Robertson (1992). Textbook of Neonatology (2<sup>nd</sup> ed.) Churchill living stone: Tokyo.