Research Article **ISSN: 2581-8015**

International Journal of Nursing and Healthcare Research

Journal home page: www.ijnhr.com

https://doi.org/10.36673/IJNHR.2020.v04.i02.A08

THE EFFECTIVENESS OF BUTEYKO BREATHING TECHNIQUE VS BALLOON THERAPY ON RESPIRATORY PARAMETERS AMONG SCHOOL AGE CHILDREN WITH ASTHMA IN SELECTED HOSPITALS AT COIMBATORE

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ABSTRACT

This present study was done to evaluate the effectiveness of buteyko breathing technique vs balloon therapy on respiratory parameters among school age children in selected hospitals in Coimbatore. A quasi experimental pretest and post-test design without randomization design was used in this study and 60 samples selected by using non probability convenient sampling technique in Masonic Medical Center for children and Siva Meds Hospital, Coimbatore. Data was collected before and after intervention by using Modified Pediatric Respiratory Assessment Scale was used. Both descriptive and inferential statistics were used for the analysis of data. The findings of the study reveal that the experimental group I, the mean Post-test score were 3.8 < 5.1 of the mean Post-test score experimental group II and the obtained unpaired't' value is 5.98 was significant at $p<0.05$ level. The mean post-test respiratory parameter score in experimental group I, have been lesser than the mean post-test respiratory parameter score in experimental group II. The study Concludes that the experimental group I, received Buteyko breathing technique is significantly effective than the experimental group II received Balloon therapy.

KEYWORDS

Problem based learning, Problem solving ability, Skills and Nursing students.

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INTRODUCTION

A kid may be a matchless human being he or she is not a small adult, not a diminutive male or women. The childhood stage is essential due to socialization development by the transmission of feelings way of life and behavior through the influence of the family and community. Consistent with Maslow's hierarchy of needs the primary and foremost essential

necessitate of an individual is air. Unless the necessity of air is balanced the persons mind do not specialize in any activity. The respiratory structure brings oxygen throughout the airways of lungs into the alveoli where it diffuse into the blood for transport to the tissues. This procedure is very important that difficulty in breathing is experienced as a risk of life itself.

Asthma is not a community ill health crisis for developed countries. In developing countries, nevertheless the occurrence of the disease vary greatly. In India, rough estimates specifies an occurrence of between 10% and 15% in 5-11 year old children.

The U.S. Centers for sickness Control and Prevention (2016) finds that a projected 24.6 million people, including 6.1 million children, contain asthma. Quite 11.5 million citizens with asthma, counting nearly 3 million children, report shows one or more asthma attacks in 2015. In 2016, the occurrence of asthma in children was 8.3 percent; implication about 1 in 12 children have asthma.

The Buteyko system is neither a medical treatment nor practice it does not engage any medication, homeopathy or herbs. It is sequence of lectures linked to breathing which enable persons to know a concept of 'normal breathing' or breathing according to physiological norms. It contains easy breathing techniques and logical instructions to pursue. It also gives the way of controlling breathing parameters without any technical appliances. Buteyko method brings the physiological parameters of the body to the norm.

Strong persons with normal breathing method usually capable to grasp their breath after inhalation for 40-60 seconds without any uneasiness Majority of contemporary persons enclose temporary halt within 20-40s, still if they have no current problems with their physical condition according to Buteyko they are liable to expand them in future. Persons with control break below 10s certainly have one or the other chronic problems with their physical condition.

Buteyko breathing aims to assist individuals manage their breathing to increase up the level of carbon dioxide in their blood. This method is focus on things such as breath-holding and relaxing the muscles used in breathing. Persons frequently be taught the Buteyko process through classes, which last four or five days. Additional classes are conducted for children among asthma and their parents.

The American Academy of Allergy Asthma and immunology (2016) describes that the dominance of asthma between children amplified from 8.7% in 2001 to 9.4% in 2010 and after that reduced to 8.3% in 2016. Even though not all changes were statistically important, a related pattern was witnessed among sub demographic groups studied, with the exception of Mexican/Mexican-American kids along with whom asthma occurrence increased from 5.1% in 2001 to 6.5% in 2016.

Jeannie K. Giese, (2018)[1] done an integrative analysis of evidence-based pediatric asthma interventions and outcome measures in a vigorous homes program declared asthma excessively impacts and has not as good as outcomes in low-income, minority, and inner-city children. Followed by utilizing uniform evaluation tools an excellence evaluation was done. Therefore the result shows that, Home-based asthma methods can be favorable to children with badly prohibited asthma and contain the possible to be cost-effective.

Samuel N U, *et al*, (2018) defines that rigorous asthma or therapy-resistant asthma among children is a varied disease that affect all age-groups. Authors reviewed the available literature on few biomarkers and their feasible position in bridging this investigative gap. They also tinted the cellular and molecular mechanisms implicated in severe asthma, in order to illustrate the beginning for the original biomarkers. PubMed data base articles was used to gather baseline data on the subject. The search for literature extended to articles published within the previous 40 years. Hence the study concludes that, quite a few biomarkers remain valuable in recognizing diverse asthma phenotypes.

OBJECTIVES OF THE STUDY

1. To measure the pre-test and post-test respiratory parameter between school age

children with asthma in experimental group I and II.
2. To discover the effectiveness of buteyko breathing practice in getting better respiratory parameters of the school kids with asthma.
3. To locate the usefulness of balloon therapy in recovering respiratory parameters of the school age children with asthma.
4. To evaluate the helpfulness of buteyko breathing technique and balloon therapy in recovering respiratory parameters of the school children with asthma.
5. To resolve the relationship on the respiratory parameters of the school age children with asthma with their particular demographic variables.

HYPOTHESES

H1

The mean post-test respiratory parameter score among school age children with asthma after the buteyko breathing technique will be lesser than the mean pre-test respiratory parameter score.

H2

The mean post-test respiratory factor score between school kids with asthma after the balloon therapy will be smaller than the mean pre-test respiratory factor count.

H3

The mean post-test respiratory constraint score along with school age children with asthma who inward buteyko breathing technique will be smaller than the post-test respiratory factor score of the children who inward balloon therapy.

H4

There will be a considerable relationship among the respiratory parameters of the school age children with asthma with their particular demographic variables in both groups.

ASSUMPTIONS

The assumptions of the study were,

1. The buteyko breathing training will be helpful on the school age children with asthma. The breathing exercise will supply console for the children.
2. Buteyko breathing exercises are effortless to perform, cost efficient and encompass constructive effects on asthma.
3. Mothers of school age kids contain some facts concerning breathing training on children with asthma.

DELIMITATIONS

The study is delimited to

- Children aged between 6-12 years and diagnosed to have asthma
- A sample size of 60
- Data collection period for 6 weeks.

RESEARCH DESIGN

Nancy Burns, (2011) "the research design is the blue print for conducting the study that control over factors that could interfere with the validity of findings".

The research design chosen for this study was a quasi-experimental pre-test post-test design without randomization. Modified Pediatric Respiratory Assessment Scale was used to assess the respiratory parameters among school age children with asthma before and after administration of buteyko breathing technique and balloon therapy.

DATA ON DEMOGRAPHIC VARIABLES OF SCHOOL AGE CHILDREN

Table No.2 reveals that regard to age, 25(41.6%) belonged to 6-7 years, among 12(40%) and 13(43.3%) belonged to Experiment Group-I and Experiment Group-II, 20 (33.3%) were 8-9 years, among 11(36.6%) and 9(30%) belonged to Experiment Group-I and Experiment Group-II, 10(16.6%) were 10-11 years, among 5(16.6%) and 5(16.6%) belonged to Experiment Group-I and Experiment Group-II, 5(8.3%) were 12 years, among 2(6.6%) and 3(10%) belonged to Experiment Group-I and Experiment Group-II respectively.

Regarding gender, 32(53.3%) of them were males, among 17(56.6%) and 15(50%) belonged to Experiment Group-I and Experiment Group-II, 28(46.6%) of them were females, 13(43.3%) and 15(50%) belonged to Experiment Group-I and Experiment Group-II respectively.

Regarding family history of asthma, 29(48.3%) of them had family history of asthma, among 13(43.3%) and 16(53.3%) belonged to Experiment Group-I and Experiment Group-II, 31(51.6%) of them had no family history of asthma, among 17(56.6%) and 14(46.6%) belonged to Experiment Group-I and Experiment Group-II respectively.

Regarding diagnosis as asthma since, 1(1.66%) of them belonged to less than a year, among 0(0%) and 1(3.3%) belonged to Experiment Group-I and Experiment Group-II, 39(65%) of them belonged to 1-3 years, among 19(63.3%) and 20(66.6%) belonged to Experiment Group-I and Experiment Group-II, 17(28.3%) of them belonged to 3-5 years, among 11(36.6%) and 6(20%) belonged to Experiment Group-I and Experiment Group-II, 3(5%) of them belonged to above 5 years, among 0(0%) and 3(10%) belonged to Experiment Group-I and Experiment Group-II respectively.

Data on respiratory parameters among school age children with asthma

Table No.3 shows that the level of respiratory parameters among school age children with asthma in experimental group-I. On day 1, 8(26.6%) had severe respiratory parameters and 22(73.3%) had moderate respiratory parameters. On day 2, 14(46.6%) had moderate respiratory parameters and 16(53.3%) had mild respiratory parameters. On day 3, 24(80%) had mild respiratory parameters and 6(20%) had normal respiratory parameters. On 4th day, 4(13.3%) had mild respiratory parameters and 26(86.6%) had normal respiratory parameters.

Data on respiratory parameters among school age children with asthma in experimental Group-II

Table No.4 shows that the level of respiratory parameters among school age children with asthma in experimental group-II. On day 1, 2(6.66%) had severe respiratory parameters and 28(93.3%) had moderate respiratory parameters. On day 2, 17(56.6%) had moderate respiratory parameters and 13(43.3%) had mild respiratory parameters. On day 3, 2(6.66%) had moderate respiratory parameters and 28(93.3%) had mild respiratory parameters. On 4th day, 23(76.6%) had mild respiratory parameters and 7(23.3%) had normal respiratory parameters.

Data on effectiveness of buteyko breathing technique in school age children with asthma

Table No.5 reveals that among experimental group-I, the mean Post-test score was 3.8 with Standard deviation 0.74 was less than the mean Pre-test score was 12.2 with Standard deviation 1.81. The calculated mean difference was 8.4. The obtained Paired't' value is 27.5 was significant at $p<0.05$ level.

Data on effectiveness of balloon therapy in school age children with asthma

Table No.6 reveals that among experimental group-II, the mean Post-test score was 5.1 with Standard deviation 0.90 was less than the mean Pre-test score was 11.9 with Standard deviation 1.31. The calculated mean difference was 6.8. The obtained Paired't' value is 24 was significant at $p<0.05$ level.

MAJOR STUDY FINDINGS

- In this study, the experimental group-I pre-test findings revealed that 22(73.3%) had moderate respiratory parameters and 8(26.6%) had severe respiratory parameters. In post-test, 26(86.6%) had normal respiratory parameters and 4(13.3%) had mild respiratory parameters.
- In the experimental group-II, pre-test findings revealed that 27(90%) had moderate respiratory parameters and 3(10%) had severe respiratory parameters. In post-test, 8(26.6%) had normal respiratory parameters and 22(73.3%) had mild respiratory parameters.
- In the experimental group-I, the mean Post-test score was 3.8 with Standard deviation 0.74 was less than the mean Pre-test score was 12.2 with Standard deviation 1.81. The calculated mean difference was 8.4. The obtained Paired't' value is 27.5 was significant at $p<0.05$ level.
- In the experimental group-II, the mean Post-test score was 5.1 with Standard deviation 0.90 was less than the mean Pre-test score was 11.9with Standard deviation 1.31. The calculated mean difference was 6.8. The obtained Paired't' value is 24 was significant at $p<0.05$ level.

- In the experimental group-I, the mean Post-test score was 3.8 with Standard deviation 0.74 and in the experimental group-II, the mean Post-test score was 5.1 with Standard deviation 0.90. The calculated mean difference was 1.3. The obtained unpaired't' value is 5.98 was significant at $p<0.05$ level.
- There was no statistical association found between demographic variables and the respiratory parameters of school age children with asthma in experimental group-I and experimental group-II.

Table No.1: Research design

Group	Pre Test Day 1	Intervention Day1-Day4	Post Test Day4
Group- I	O1	X1	O2
Group- II	O3	X2	O4

Key

O1, O3 - Pre-test respiratory parameters in group-I and group-II respectively.
X1 - Administration of buteyko breathing technique.
X2 - Administration of balloon therapy.
O2, O4 - Post-test respiratory parameters in group-I and group-II respectively.

Table No.2: Demographic Variables among School Age Children with Asthma

S.No	Demographic Variables	Experiment Group-I (Buteyko breathing technique)		Experiment Group-II (Balloon therapy)		Total	
		f	%	f	%	f	%
Age							
1	6-7 years	12	40	13	43.3	25	41.6
2	8-9 years	11	36.6	9	30	20	33.3
3	10-11 years	5	16.6	5	16.6	10	16.6
4	12 years	2	6.6	3	10	5	8.3
Gender							
5	Male	17	56.6	15	50	32	53.3
6	Female	13	43.3	15	50	28	46.6
Family history of asthma							
7	Yes	13	43.3	16	53.3	29	48.3
8	No	17	56.6	14	46.6	31	51.6
Diagnosis as asthma since							
9	Less than a year	0	0	1	3.3	1	1.6
10	1-3 years	19	63.3	20	66.6	39	65
11	3-5 years	11	36.6	6	20	17	28.3
12	>5 years	0	0	3	10	3	5

Table No.3: Respiratory parameters among school age children with asthma in experimental group-I (Buteyko Breathing Technique) N=30

S.No	Level of respiratory parameters	Experimental group-I (Buteyko Breathing Technique)							
		D1		D2		D3		D4	
		f	%	F	%	f	%	f	%
1	Severe	8	26.6	-	-	-	-	-	-
2	Moderate	22	73.3	14	46.6	-	-	-	-
3	Mild	-	-	16	53.3	24	80	4	13.3
4	Normal	-	-	-	-	6	20	26	86.6

Table No.4: Respiratory parameters among school age children with asthma in experimental group-II (Balloon Therapy) N=30

S.No	Level of respiratory parameters	Experimental group-II (Balloon Therapy)							
		D1		D2		D3		D4	
		f	%	F	%	f	%	f	%
1	Severe	2	6.66	-	-	-	-	-	-
2	Moderate	28	93.3	17	56.6	2	6.66	-	-
3	Mild	-	-	13	43.3	28	93.3	23	76.6
4	Normal	-	-	-	-	-	-	7	23.3

Table No.5: Comparison of Mean, Standard deviation, Mean difference and 't' value on pre-test and post-test level in Experimental group-I N=30

S.No	Groups	Mean	Standard deviation	Mean difference	Paired 't' value
Experimental group-I					
1	(Buteyko Breathing Technique)				
2	Pre test	12.2	1.81		
3				8.4	27.5*
4	Post test	3.8	0.74		

*significant p<0.05 level

Table No.6: Comparison of Mean, Standard deviation, Mean difference and 't' value on pre-test and post-test level in Experimental group-II N=30

S.No	Groups	Mean	Standard deviation	Mean difference	Paired 't 'value
Experimental group-II					
1	(Balloon Therapy)				
2	Pre test	11.9	1.31		
3				6.8	24*
4	Post test	5.1	0.90		

*significant p<0.05 level

CONCLUSION

The main conclusion drawn from this present study was that most of the school age children with asthma has moderate to severe respiratory parameters. After buteyko breathing technique and balloon therapy, it was found that there had been a significant improvement in the respiratory parameters of school age children with asthma after using buteyko breathing technique. This shows that imperative need to understand the alternate therapies and it will improve the respiratory parameters of school age children with asthma in related to assessment cautiously. It is concluded that, buteyko breathing technique is an effective, simple, easy and in expensive method in improving respiratory parameters of the school age children with asthma.

ACKNOWLEDGEMENT

The authors wish to express their sincere gratitude to Department of Medical Surgical Nursing, Sree Abirami College of Nursing, Coimbatore, Tamil Nadu, India for providing necessary facilities to carry out this research work.

CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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Please cite this article in press as: Shyla Isaac *et al*. The effectiveness of buteyko breathing technique vs balloon therapy on respiratory parameters among school age children with asthma in selected hospitals at Coimbatore, *International Journal of Nursing and Healthcare Research,* 4(2), 2020, 44-50.