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Research Article

EFFECTIVENESS OF BALLOON BLOWING EXERCISE ON IMPROVEMENT OF RESPIRATORY PATTERNS AMONG CHILDREN WITH BRONCHIAL ASTHMA AT SELECTED HOSPITAL IN KANCHEEPURAM DISTRICTS TAMILNADU

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ABSTRACT

The purpose of the study was to evaluate the effectiveness of balloon blowing exercise among children with age group of 5 to 15 years who were attended in out patient department and admitted in pediatric ward, MAPIMS at Melmaruvathur. A pre experimental design was used, total 30 children were selected by using purposive sampling technique and exercise was given for two weeks period and post test was done on 4th and 16th day. The mean, standard deviation, paired "t" test and chi-square were used to analyses the data. the result of the study stated that the pre intervention mean values was 27.0 with standard deviation 4.61 and in post test I the mean value was 22.2 with standard deviation 5.78 and in post test II the mean value was 16.2 with standard deviation is about 0.752. The calculated t value is 6.467 in post test I and 10.09 in post test II, is more than the critical t value, which is 2.042 at p<0.05 level. There was a significant improvement of respiratory patterns among children with bronchial asthma by using balloon blowing exercise. Hence, the post test II score is more comparable rate than post test I score. The conclusion of the study shows that the balloon blowing exercise has positive effect on respiratory patterns.

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INTRODUCTION

Asthma is a major non communicable disease characterized by recurrent attacks of breathlessness and wheezing which vary in severity and frequency from person to person. During an asthma attack, the lining of the bronchial tubes swell, causing the airway to narrow and reducing the flow of air into and out of the lungs. Recurrent asthma symptoms frequently cause sleeplessness, day time fatigue, reduced activity levels and school absenteeism. Asthma is the third ranking cause of hospitalization among children with asthma under 15 years.¹

The study was reported by Tim Clark M.D stated that the rate of asthma increases as communities adopt western lifestyles and become urbanized with the projected increase in the proportion of the world's population, that is in urban from 45% to 59% in 2025, there is likely to be a marked increase in the number of asthmatic worldwide over the next two decades. It is estimated that there may be an **additional 100 million person with asthma by 2025.**²

A purpose of the study was to evaluate the effectiveness of balloon therapy on respiratory status of patients with lower respiratory tract disorders. A pre experimental design was used for this study total 20 sample selected using purposive

sampling technique and therapy was given for two weeks. Among 20 patients 15 (75%) of patients had poor respiratory rate patients have poor lung capacity, 15(75%) had poor dyspnea score before the implementation of balloon therapy where has after the implementation balloon therapy 18 (90%) of patients had normal respiratory rate, 12 (60%) of patient had normal score dyspnea scale and all of them 100% attained normal lung capacity³

The explore the effect of balloon therapy and incentive spirometry in promotion of pulmonary function in children and with a acute respiratory infections and also compared the effect of both intervention. The Quasi experimental two group pre test and post test were used the sample size was 40 in the age between 2 to 6 years with acute respiratory infection. The result of the study was the balloon therapy seems to more effective in reducing respiratory symptoms in children with respiratory problem in comparison with spirometry⁴

Statement of the Problem

"Effectiveness of Balloon Blowing Exercise on Improvement of Respiratory Patterns among Children with Bronchial Asthma"

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Objectives of the Study

1. To determine the health status of children with bronchial asthma
2. To evaluate the effectiveness of balloon blowing exercise among children with bronchial asthma
3. To find out the association between of the improvement of respiratory patterns among children with bronchial asthma with demographic variables.

Hypothesis

H₁ _There is a significant relationship between pre and post test balloon blowing exercise among children with bronchial asthma.

H₂ _There is a significant association between of demographic variable with improvement of respiratory pattern among children with bronchial asthma.

METHODS AND MATERIAL

Research Approach

The quantitative research approach was used in this study.

Research Design

A pre- experimental research design was used for in this present study.

Setting of the study

The study was conducted in MAPIMS.

Population

The population included in this study consisted of children with bronchial asthma and in the age group of 5-15 years.

Sample

In this study the total sample would be 30

Sampling technique

The purposive sampling technique would be adopted for this study. Who fulfilled in the inclusion criteria.

Criteria for sample selection

Inclusion criteria

- Children in the age group of 5- 15 years
- Children with both sexes
- Children who understand Tamil and English

Exclusion criteria

- Children with severe Exacerbation of asthma
- Children who are admitted with other complication
- Children who are previously trained
- Children who are unable to do blowing the balloon.

Description of the tools

In this study the data collection instruments are;

1. Demographic variable
2. Observational checklist for assessment of respiratory pattern among children with bronchial Asthma.

Data Collection procedure

Data was collected from December 01- 2015 to January 31- 2016. Formal permission was obtained from the concerned authorities and participants after explaining the purpose of the study by the investigator. Confidentiality was ensured. Prior to data collection, the pre test would be conducted by administering socio demographic variables and observational checklist regarding improvement of respiratory pattern among children with bronchial asthma, each assessment took around 45 mts.



Balloon Blowing

Intervention was started by the same day. Practices this exercise twice a day for 16 days, during data collection adequate privacy had been provided to the children and post test was done on 4th and 16th day.

Plan for data analysis

Data was analyzed by using descriptive and inferential statistics.

1. Mean, Standard Deviation to analyzed the percentage distribution and frequency of demographic variables.
2. Paired "t" test was used for to assess the effectiveness of balloon blowing exercise on improvement of respiratory pattern among children with bronchial asthma
3. Chi square were used for find out the association between the effectiveness of balloon blowing exercise on improvement of respiratory patterns among children with bronchial asthma with demographic variables.

RESULTS

Table 1 Frequency and Percentage Distribution of Demographic Variables

S. No.	Description	Frequency	Percentage
1.	Age in years		
	a. 5-8 years	10	33.33
	b. 9-12 years	14	46.67
	c. 13-16 years	6	20.00
2	Gender of the child		
	a. Male	16	53.33
	b. Female	14	46.67
3	Religion		
	a. Hindu	18	60.00
	b. Christian	4	13.33
	c. Muslim	8	26.67
	d. Others	0	0.00
4.	Educational Status of Parents		
	a. Non Literature	8	26.67
	b. Primary Education	4	13.33
	c. Secondary Education	12	40.00
	d. Graduate	6	20.00

Table 1 Frequency and Percentage Distribution of Demographic Variables

S. No.	Description	Frequency	Percentage
5.	Type of family		
	a. Nuclear Family	18	60.00
	b. Joint family	12	40.00
6.	Number of children		
	a. One	6	20.00
	b. Two	22	73.33
	c. Above two	2	6.67
7.	Family history of		
	a. Asthma	12	40.00
	b. Atopy	6	20.00
	c. Both	4	13.33
	d. None of the above	8	26.67
8.	Family History of smoking		
	a. Yes	8	26.67
	b. No	22	73.33
9.	Occupational status of parents		
	a. Unskilled	9	30.00
	b. Skilled	7	23.33
	C. Professional	4	13.34
	d. Technical	10	33.33
10.	Total Family income per month		
	a. Rs. <2500/-	-	-
	b. Rs.2500 – Rs.5000/-	9	30.00
	c. Rs.5001 – Rs.7500	14	46.67
	d. > Rs.7500/-	7	23.33
11.	Area of residence		
	a. Urban	18	60.00
	b. Rural	12	40.00
12.	Location of residence		
	a. Cotton factory		
	b. Building constriction	8	26.67
	c. Agriculture	16	53.33
	d. leather factory	-	-
	e. Others	6	20.00
13.	Types of drainage		
	a. Open method	16	53.33
	b. Closed method	14	46.67
14.	Diagnosis as asthma since		
	a. < year	8	26.67
	b. 1-3 years	9	30.00
	c. 3-5 years	6	20.00
	d. > 5 years	7	23.33
15.	Episode of occurrence		
	a. Once in year	10	33.33
	b. 2 – 3 times in year	12	40.00
	c. 4 – 5 times in year	8	26.67
	d. above 5 times	-	-
16.	History of personnel allergy		
	a. Food	10	33.33
	b. Dust / Pollen	15	50.00
	c. Medication	3	10.00
	d. None of the above	2	6.67
17.	Associated history Of asthma		
	a. Eczema	8	26.67
	b. Urticaria	4	13.33
	c. Allergic Rhinitis	13	43.33
	d. Non of the above	5	16.67
18.	Seasonal variation		
	a. Winter	12	40.00
	b. All season	18	60.00
19.	Pheno type of Asthma		
	a. Virus induced	4	13.33
	b. Allergy induced	14	46.67
	c. Obesity	2	6.67
	d. Multifactor's	10	33.33
20.	Typical symptoms present at		
	a. Early morning	12	40.00
	b. Night	18	60.00
21.	Types of Asthma		
	a. Mild asthma	8	26.67
	b. Moderate asthma	14	46.66
	c. Severe asthma	8	26.67

Table 2 Distribution of frequency and percentage of balloon blowing exercise among children with bronchial asthma

Sl. No	Interpretation	Score	Assessment of Health Status					
			Pre test		Post test I		Post test II	
			No	%	No	%	No	%
1	Normal (or) Mild health deterioration	16	-	-	5	16.7	27	90.0
2.	Moderately health deterioration	17-23	5	16.7	12	40.00	3	10.0
3.	Server health deterioration	24-32	25	83.3	13	43.3	-	-

Table 3 Mean and Standard deviation score of balloon blowing exercise on improvement respiratory patterns among children with bronchial asthma in pre and post test.

Balloon blowing exercise	Pre test Mean ± SD	Post test I Mean± SD	Post test II Mean± SD
t value	27.0 ± 4.61	22.2 ±5.78	16.2 ±0.752
		6.466	10.090

p<0.05 level, df – 29 critical value = 2.042

DISCUSSION

Asthma is considered an important problem in children and influences on their every day functioning. Pathologically there is mucosal inflammation, production of inflammatory mediators, bronchio constriction with edema and excess mucus production, airway obstruction and air trapping which lead to ventilation perfusion alteration can cause increased work of breathing, hypercapnia and hypoxemia. Presently it is difficult to control all the triggers in a single patients. But it is always possible to improve the respiratory pattern by therapeutic interventions. Therefore, the present study was carried out in the asthmatic children to evaluate the effectiveness of balloon blowing exercise among children with bronchial Asthma

The first objective was to assess the health status among children with bronchial asthma

While assessing the health status of children with bronchial asthma, it was found to be among 30 samples, 25 (83.3%) had severe health deterioration and remaining five (16.7%) had moderately health deterioration in pre test. Improvement was found in post test I, 13 (43.3%) had severely health deterioration, 12(40%) had moderately health deterioration and five (16.7%) had normal or mild health deterioration and post test II, 27 (90.0%) had normal or mild health deterioration and remaining three(10.0%) children had moderately health deterioration and no one comes under in severe health deterioration.

The second objective was to evaluate the effectiveness of balloon blowing exercise on improvement of respiratory patterns among children with bronchial asthma in pre and post test

In the present study the analyzing the effect of balloon blowing exercise on the respiratory patterns among children with bronchial asthma. The result revealed that in pre intervention mean values was 27.0 with standard deviation 4.61 and in post test I the mean value was 22.2 with standard deviation 5.78 and in post test II the mean value was 16.2 with standard deviation is about 0.752. The calculated t value is 6.467 in

posttest I and 10.09 in post test II, is more than the critical t value, which is 2.042 at $p < 0.05$ level. This indicates that, the differences between the scores obtained from the pre and post test value intervention are highly significant. So we accept the research hypothesis H_1 . So there was significant improvement of respiratory pattern among children with bronchial asthma by using balloon blowing exercise. Hence, the post test II score is more comparable rate than post test I score.

Breathing exercise in the present study were based on the expiratory phase of respiration. This is because the expiration in the breathing process is greatly affected and it is also shallow in nature. This exercise work out the intercostals muscle responsible for spreading and elevating of diaphragm and ribcage. This allows lungs to absorb oxygen, alter its chemical composition while still in the lungs and expel carbon dioxide as exhaling is commenced. Balloon blowing while effectively exercising the lungs ability to expand and take in air, does not affect the size or number of alveoli contained in the lungs. Alveoli are air sacs that disperse carbon dioxide during exhalation and oxygen into the blood during inhalation⁵. The results of present study are well in line with the findings of an experimental study was to determine the lung capacity in balloon blowing exercise used to increase patients lung function. The result showed that pulmonary functions of the balloon blowing training group were significantly improved as compared to those of the non-training groups⁶.

The third objective was to find out the association between the effectiveness of balloon blowing exercise on improvement of respiratory pattern among children with bronchial asthma with selected demographic variables.

While the finding out the association between the demographic variables with improvement of respiratory patterns among children with bronchial asthma by using balloon blowing exercise.

The result founded to be the age of children $\chi^2=1.92$, gender of the child $\chi^2=0.2379$, family history of asthma, atopy and both $\chi^2=7.3035$, family history of smoking $\chi^2=2.7272$, income of family per month $\chi^2=0.2018$, Diagnosis as asthma since $\chi^2=4.874$, episode of occurrence of disease $\chi^2=1.748$, seasonal variation $\chi^2=0.9875$, Phenotype of asthma $\chi^2=0.9522$ and type of asthma $\chi^2=0.9489$. The calculated chi-square value is less than the critical value. So we reject the research Hypothesis H_2 at $p < 0.05$ level. It indicates that the improvement of respiratory patterns among children with bronchial asthma by using balloon blowing exercise is not significant associated with demographic variables.

CONCLUSION

The conclusion of this study was the balloon blowing exercise has highly positive effect on respiratory patterns.

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