

A Study of Comparison of Outcome of Active Play Exercise Intervention Inchildren with Asthma

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I. Introduction:

- Asthma is the most common chronic illness of childhood, affecting approximately 10% of children, Worldwide, the prevalence of childhood asthma and hospitalization for it are increasing.⁽¹⁾
- Like many other chronic disorders, and childhood asthma is likely to have an impact on the social and emotional aspects of life of children and parents.
- Children with asthma, particularly those who are newly diagnosed and/or have poor disease control, may be less physically active than healthy children.⁽²⁾
- Physical activity (PA) is recommended for children with asthma and a physically active lifestyle is feasible when the disease is controlled by the optimal use of asthma medication.⁽³⁾
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- Physical activity (PA) is recommended for children with asthma and a physically active lifestyle is feasible when the disease is controlled by the optimal use of asthma medication.⁽³⁾
- The purpose of this study is to compare outcome of active play exercise intervention in children with asthma.

- **AIMS:-**

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- **OBJECTIVE:-**

To study the effect of active play exercise intervention on pulmonary functions in children with asthma.

To study the effect of active play exercise intervention on health related quality of life in children with asthma.

II. Materials & Methods

- **STUDY TYPE:** Hospital based case control study
- **STUDY SETTING:** Tertiary care hospital
- **STUDY PERIOD:** study was conducted for period of 6 months and data analysis was done over a period of 6 months.
- **SAMPLE SIZE:** To calculate sample size a small pilot survey was conducted. Sample size was 50 patients of intervention group of asthma in whom active play exercise was done and 50 controls asthma patients
- **Inclusion criteria:**
 1. Age 6-16 years.
 2. A diagnosis of asthma according to GINA guidelines.
 3. Patients having intermittent and mild persistent asthma.
 4. Use of asthma medications; beta 2 agonists, corticosteroids and/or combination of long acting beta 2 agonists and corticosteroids.

Exclusion criteria:

1. Patients on leukotriene antagonists medications.
2. Patients with moderate persistent & severe persistent asthma.
3. Patients with chest deformities.

The patients were assigned to either exercise group = intervention group (Group A, n=50) or control group (Group B, n=50) as per the consent given by patients caretakers.

- Paediatric asthma quality of life questionnaire (PAQLQ) was also performed on both the groups.
- Both interviewer administered and self administered forms of questionnaire were used.
- PAQLQ is a disease- specific questionnaire administered to evaluate health related quality of life of asthma children. The instrument includes 23 items in 3 domains; activity limitation(n=5), symptoms (n=10) and emotional functions(n=8).

Case group underwent a specific designed active exercise program including both upper extremity and lower extremity activities. This active play exercise program was designed for 30 minutes, including following exercises

- 1 minutes squats
- 10 minutes flexibility exercise
- 1 minute jumping
- 2 minute crawling between legs
- 6 minutes walking
- 5 minutes obstacle relay
- 5 minutes relaxation exercise

This exercise was designed for total duration of 6 months, during which the sessions were performed twice in a week for 30 minutes in each session.

STATISTICAL METHOD

- Descriptive analyses for intergroup comparison were done student t test, paired t test and chi square test used to analyze PEFr, FEV1/FVC, PAQLQ score, daytime symptoms and night time symptoms.
- A p value of <0.05 was considered significant.

III. Result

Table 1:DEMOGRAPHIC PROFILE OF PATIENTS

Patients characteristics	Group A (n=50)	Group B (n=50)	Test Applied	P value
Age(Years) Mean ± SD	8.6 ± 2.09	9.28± 2.07	Student t test	0.1
Gender (male/female)	30/20	35/15	Pearson chi square test	0.25
Weight(Kg)	24.07 ± 7.17	24.74± 6.34	Student t test	0.61

Table 2: COMPARISON OF PEFr(L/sec) BY MONTHS IN BETWEEN GROUP A & GROUP B (INTERGROUP COMPARISON)

	Group A	Group B	p value
0 month	3.76 ± 1.46	3.34 ± 1.22	0.12
2 month	3.83 ± 1.43	3.42 ± 1.22	0.12
4 month	4.09 ± 1.39	3.59 ± 1.21	0.06
6 month	4.34 ± 1.34	3.61 ± 1.20	0.005*

Table3: COMPARISON OF FEV1/FVC (%) BY MONTHS IN BETWEEN GROUP A & GROUP B (INTERGROUP COMPARISON)

	Group A	Group B	p value
0 month	89.44 ± 2.26	88.98 ± 2.20	0.3
2 month	90.28 ± 2.34	88.98 ± 2.10	0.004*
4 month	90.76 ± 1.79	89.34 ± 1.70	0.0001*
6 month	90.82 ± 1.56	89.36 ± 1.22	0*

Table 4: COMPARISON OF PAQLQ SCORE BY MONTHS IN BETWEEN TWO GROUPS (INTERGROUP COMPARISON)

	Group A	Group B	p value
0 month	5.40 ± 0.76	5.18 ± 0.77	0.16
2 month	5.67 ± 0.74	5.34 ± 0.78	0.03*
4 month	5.9 ± 0.78	5.38 ± 0.79	0.001*
6 month	6.11 ± 0.75	5.43 ± 0.79	0*

Table 5: COMPARISON OF PATIENT’S CHARACTERISTICS WITH OTHER SIMILAR STUDIES

Patient’s	Present study (n=100)	Basaran S (12)	AbdelbassetWK (47)	Lima EV (48)	Neder JA(32)
Characteristics		(n=62)	(n=38)	(n=50)	(n=42)
Age (years)	8.9	10.4	9.9	9.6	12.4
Mean					
Gender (M/F)	65/35	64.5/35.5	60.5/39.5	32/68	57.2/42.8
%					
Weight (kg)	24.3	-	39.8	28.42	40.4
Mean					

Table 6: COMPARISON OF PULMONARY FUNCTION TEST, PAQLQ SCORE AND SYMPTOM SEVERITY(IN TERMS OF P VALUE) WITH OTHER SIMILAR STUDIES

Patient's parameters	Present study (n=100) p value		Basaran S (12) (n=62) p value		Abdelbasset WK (47) (n=38) p value		Lima EV (48) (n=50) p value		Neder JA (32) (n=42) p value	
	a	b	a	b	a	b	a	b	a	b
PEFR	<0.05*	<0.05*	>0.05	<0.05*	(-)	(-)	<0.05*	<0.05*	(-)	(-)
FEV1/FVC	<0.05*	<0.05*	>0.05	>0.05	(-)	(-)	(-)	(-)	(-)	(-)
FEV1	(-)	(-)	>0.05	>0.05	>0.05	<0.05*	(-)	(-)	>0.05	<0.05*
FVC	(-)	(-)	>0.05	>0.05	>0.05	<0.05*	(-)	(-)	(-)	(-)
PAQLQ	<0.05*	<0.05*	<0.05*	<0.05*	>0.05	<0.05*	(-)	(-)	(-)	(-)

IV. Discussion

- In present study M:F ratio was 1.8:1, age gender and weight were comparable in both the groups with p value >0.05 which is not significant.
- Parameters of age and weight were comparable to other studies. Prevalence was more in boys as compared to girls, which was seen our study as well as other study except study of neder et al⁽⁸⁾ which showed more number of girls as compared to boys. Other study didn't take allergen history and family history into consideration.
- The present study and Lima EV et al⁽⁹⁾ (both intergroup and intervention group) showed statistically significant improvement in PEFR in intervention group as compared to control group after an intervention training program, while, Basaram S et al⁽¹⁰⁾ showed statistically significant improvement in PEFR within the intervention group only posy intervention.
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- In present study PAQLQ score showed significant improvement in intervention group as compare to control group and also same result seen in Basaran S et al⁽¹⁰⁾.
- While Abdelbasset WK et⁽¹¹⁾ al showed statistically significant improvement in PAQLQ score with in intervention group only post intervention.

V. Summary

- Baseline demographic profile of the two groups in term of sex, age, weight was comparable.
- All patients enrolled under intermittent and mild persistent asthma by following GINA guideline. The intervention group from this patients formed by taking patients parents consent for intervention training program
- Among patients initially at starting of study there is no statistically significant difference in comparison in PEFR, FEV1/FVC and PAQLQ score.
- As shown in study after 2nd month follow up there is statistically significant difference shown in intervention group intragroup comparison as compared to control group there is no improvement in any of this.

VI. Conclusion

- The present study suggest that the intervention focusing on active play exercise designed to be performed twice in a week with 30 minutes duration per each session of exercise has beneficial effects on quality of life as suggested by PAQLQ score.
- improvement in PEFR, FEV1/FVC ratio over a period of 6 months is seen in 6-16 years children having intermittent and mild persistent asthma. So children with asthma should be encouraged to engage in sports and lifetime exercise.as seen in this study that exercise doesn't worsen asthma and it help in improvement in children all over life quality.

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