A Comparative Study to Assess the Effectiveness of Pap worth method Vs Active play exercise on the respiratory outcome and Biochemical Parameters among asthmatic children

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Abstract

Introduction: Asthma is among the top 20 chronic conditions for global ranking of disability-adjusted life years in the mid-childhood ages 5–14years it is among the top 10 causes.Current guidance from the National Institute for Health and Care Excellence (NICE) recommends that children with asthma engaging in an hour of moderate to vigorous intensity physical activity per day but focus on managing their asthma while being active. The Pap worth breathing technique consists of a series of diaphragmatic breathing and relaxation exercises which also helps to increase the respiratory outcome of the child. **Objective:** The aim of the study was to assess and compare both papworth and active play exercise which is more effective in improving the respiratory outcome among asthmatic children. To achieve this aim the objective is to assess the level of respiratory outcome after intervention group –I (Pap worth method) and Group –II (Active Play exercise) for both the groups among asthmatic children. **Design:** Quasi

experimental research design (Pretest and posttest design) was obtained for the study. The sample size was 90 children with mild and moderate asthma. A standardized tool consists of Pulmonary Function test was used to assess the respiratory outcome in experimental groups and control group. Experimental group I received Papworth Breathing Exercise and Experimental Group II received Active Play Exercise. The results were analyzed and tabulated by using Sigma plot software. **Conclusion:** The finding of the study suggested that Active play exercise was more effective and the respiratory outcome was improved when comparing the papworth breathing method.

Key words: Pap worth Method; Active Play Exercise; Asthma.

Introduction

The prevalence of Bronchial Asthma has increased continuously since the 1970s, and now affects an estimated 4 to 7% of the people worldwide. Childhood Bronchial Asthma varies widely fromcountry to country. At the age of six to seven years, the prevalence ranges from 4 to 32%. The same range holds good for ages 13 and 14. It has also increased the number of preventable hospitalemergency visits and admissions. Apart from being the leading cause of hospitalization for children, it is one of the most important chronic conditions causing elementary school absenteeism. Childhood Bronchial Asthma has multifactor causation. Geographical location, environmental, racial, as well as factors related to behaviours and life-styles are associated with the disease [1, 2].

Asthma is a leading cause of chronic illness in children,India has an estimated 15-20 million asthmatics.In the Western Pacific Region of WHO, the incidence varies from over 50% among children inthe Caroline Islands to virtually zero in Papua New Guinea.In Brazil, Costa Rica, Panama, Peru and Uruguay, prevalence of asthma symptoms in childrenvaries from 20% to 30%.In Kenya, it approaches 20%.In India, rough estimates indicate a prevalence of between 10% and 15% in 5-11 year oldchildren.Asthma is quiet prevalent around the world with about 300 million people sufferingfrom this disease. In India it is estimated to be around 3 – 38% in children and 2-12% amongadults, commonest in children. National burden is around 18 million [2, 3].

Asthma cannot be cured, but could be controlled. The strongest risk factors for developingasthma are exposure, especially in infancy, to indoor allergens (such as domestic mites inbedding, carpets and stuffed furniture, cats and cockroaches) and a family history of asthma orallergy. A study in the South Atlantic Island of Tristan da Cunha, where one in three of the 300inhabitants has asthma, found children with asthmatic parents were much more likely to developthe condition. Exposure to tobacco smoke and exposure to chemical irritants in the workplaceare additional risk factors. Other risk factors include certain drugs (aspirin and other non-steroidanti-inflammatory drugs), low birth weight and respiratory infection. The weather (cold air), extreme emotional expression and physical exercise can exacerbate asthma. Urbanizationappears to be correlated with an increase in asthma **[**4].

The nature of the risk is unclear becausestudies have not taken into account indoor allergens although these have been identified assignificant risk factors.Experts are struggling to understand why rates world-wide are, on average, rising by 50% everydecade. And they are baffled by

isolated incidents involving hundreds of people in a city, whosuffer from allergies such as hay fever but who had never had asthma, suddenly being struckdownby asthma attacks so severe they needed emergency hospital treatment.Urbanisation with its high levels of vehicle emissions, industrial pollution, burning of wastein the open is contributing to the increase in incidence and worsening of symptoms of asthma.Studies have shown that breathing in polluted air causes 40 percent of asthmatics to have anacute attack requiring them to visit emergency room. Indoor air pollution in the form ofbiomass fuel in rural areas is also contributing to this condition.Childhood allergy and asthma are among the chronic diseases on which action is imperative andthey have increasing prevalence across the world .In the last two decades, extensive clinicepidemiological studies have been conducted, mostly in North America and Europe, to obtain aglobal picture of the disease pattern along with identification of its potential risk factors. The International Study of Asthma and Allergy in Childhood (ISAAC) reports demonstrated a widerange of potential factors, including outdoor and indoor air pollution and exposure toenvironmental tobacco smoke .Along with these environmental factors, migration has also beefound to link with allergy and asthma morbidity [6].

Recently, the ISAAC Indian collaboratorsreported that maternal smoking also contributed to the development of asthma symptoms amongchildren of 6–7 years of age .However, the report included children mainly from urban areas;therefore, the prevalence in the suburban and rural areas remains obscure.Children with asthma may experience frustration because of the limitations imposed by theirdisease, and they wish to have peer support and young role models to enhance their ability toparticipate in regular PA and to live a normal life. Previous research suggests that the interpretationof normal breathlessness during exercise as being dangerous asthma symptoms may preventchildren from being physically active **[7].**

Need for the study:

Systematic review by various experts and consulting theliterature about Breathing, Address several other breathingretraining exercises, including pranayama techniques ,inspiratory muscle training, technology-assisted breathingretraining exercises, the Papworth breathing method and physical therapy**.** The Pap worth breathing technique consists of a series of diaphragmatic breathingand relaxation exercises, and teaches patients which muscles to use when breathing and how toavoid breathing too deeply or too fast by emphasising nose breathing. The technique is altered tosuit activity; this allows the technique to be integrated by patients into their everyday lives withsubsequent improvementsinqualityoflife. The technique is most effective when used in combination with asthma medications. It will notreplace the need for asthma medications, but may reduce reliance upon, and frequency which theyare required.The Papworth breathing technique relieves symptoms of respiratory conditions through thefollowing benefits:Making breathing more controlled and efficientReducing anxiet Teaching how important it is for breathing to be suited to activityMay reduce reliance on medicationsThese effects ultimately lead to a better quality of life, in which you are less reliant on medications,and better able to carry out activities of daily living. [5]

Children with asthma, particularly those who are newly diagnosed and have poor disease control, may be less physically active than healthy children. 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. Increased Physical Activity is associated with enhanced psychological functioning and quality of life, improved cardiorespiratory fitness, and decreased morbidity physical activity programmes improve peak flow, reduceexercise-induced bronchoconstriction (exercise-induced asthma) and improve physical fitness anquality of life among children with asthma. For example, there are studies that have shown thathealth promotion programmes can reduce asthma exacerbations through encouraging physicalactivity,pilot study level evidence of the potential utility of active play as a physical activityintervention for childrenCurrent guidance from the National Institute for Health and Care Excellence (NICE) recommendthat children with asthma follow the general public health guidance of engaging in an hour ofmoderate to vigorous intensity physical activity per day but focus on managing their asthma whilebeing active [6, 7].

To control the prevalence of asthma among children thegrowing interest in complementary treatment methods tomanage asthma symptoms, a systematic review focusing onthis topic should prove useful for clarifying the evidenceregarding the effectiveness of various breathing therapiesand the context in which they may be effective [6].

Statement of the problem

"Comparative study to assess the effectiveness of Pap worth method Vs Active play exercise on respiratoryoutcome among asthmatic children".

Objectives

1. To assess the level of respiratory outcome among asthmatic children before intervention

2. To determine and compare the effectiveness of pap worth method and active play exercise on

respiratory outcome among asthmatic children

3.To correlate the level of biochemical parameters on respiratory outcome during pre-test and post-test among asthmatic children

3.To associate the level of respiratory outcome with selecteddemographic variables

Inclusion Criteria

- Inhaler using children between the ages of 6-18years of both gender.
- Inhaler using asthmatic children consulting in SMCH Pediatric Asthmatic clinic.
- Inhaler using asthmatic children who are under the category of mild to moderate asthma.
- Inhaler using children who are all willing to participate.

Exclusion criteria

- Inhaler using children below 5 years
- Inhaler using children are coming under the category of severe asthma.

Materials and Methodology

Study Design

This study used to evaluate the effectiveness Pap worth method Vs Active play exercise among children with Mild to Moderate asthma. Participants were randomly assigned to the control group and experimental group. Tools containing demographic variable,Pulmonary function test was used for pre and post assessment for both the groups was studied to assess the level of respiratory outcome prior and after interventions.

Settings and Samples:

Participants were recruited from Saveetha Medical College and Hospital, Chennai. Asthmatic Children who met the inclusion criteria were included. The sample size of the study is 30 ineach group.So totally 90 participants. Experimental Group I -30, Experimental Group II-30 and Control Group -30

Data Collection Procedure

Before commencing the data collection, authorized setting permission has obtained from the Saveetha Medical College and Hospital.Samples are segregated into Experimental and control group by using convenientsampling. Informed consent will be obtained from the participants in experimental group for the study.Pre-test level of respiratory outcome will be assessed using PFT Child who have mild and moderate asthma, will be included for the study.Information about exercise will be given individually to the parents .Demonstration of pap worth method and Active play exercise will be demonstrated individually based on the availability of the samples and parents.Video Demonstration of the papworth method and Active play exercise will be Given to the Parents to practice at home.Daily Exercise Activity log will be given to the Samples and parents.The Papworth breathing method and Active play exercise method will administer for a 3 month period with 3 sessions per week for 1 hour. In case of any difficulty in the continuing exercise**.**

Intervention

- Step-1:

  Make the child in a sitting position and become relaxed

- Step-2

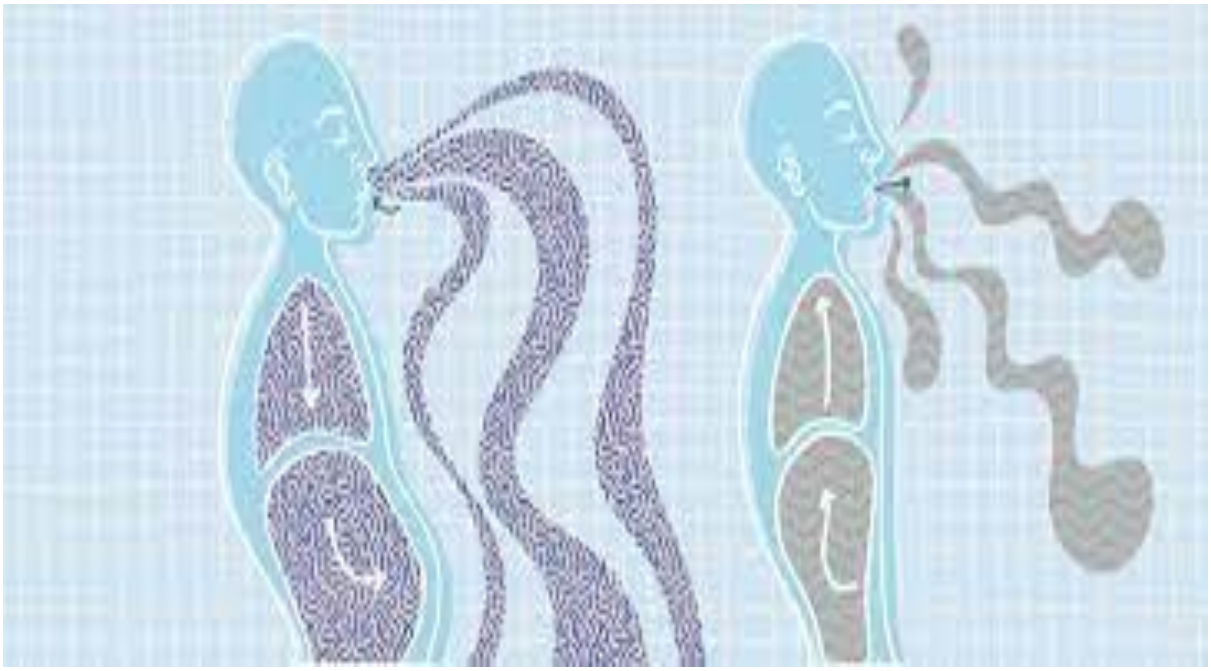
  Ask the child to take deep breath slowly with the use of diaphragmatic muscle holding for 08-10seconds.

- Step-3

  Ask the child to exhale the breath through pursed lip very slowly which is double the time of taken for inhale

  Continue the exercise for 30 seconds with 10 repitation

  The duration of the exercise is totally 30 minutes



Active play exercise –Circuit training aerobic program

It consists of 3 sessions

1. Warm up session-Squats10mts
2. Main session -20mts (any four)
    - Sit Ups
    - Push Ups
    - Jumping Jacks
    - Running In Place
    - Step-ups.
3. Cool down session -10mts -relaxing and hearing music

Results

The aim of the study was to assess and compare both pap worth and active play exercise which is more effective in improving the respiratory outcome among asthmatic children.

Statistical analysis

The data are represented as mean $\pm$ SEM and analysed by two-way repeated measures analysis of variance (RM ANOVA) for one factor repetition, and Bonferroni 't' test for post hoc multiple comparisons. Factor A, was groups (between group comparison – Control, Papworth and Active play), Factor B, was tests (within group comparison i.e., repetition factor – Pre-test, Post-test 1 and Post-test 2) and the group X test interaction. A probability of 0.05 and less was considered as statistically significant. SigmaPlot 14.5 version (Systat Software Inc., San Jose, USA) was used for statistical analysis.

Table -1 Demographic variables for homogeneity

S.No.	Variable	Category	Con	Exp 1	Exp 2	Statistics
1	Gender	Male	16	16	16	$\chi 2 = 0$
		Female	14	14	14	P = 1.0
2	Age (years)	< 10	12	12	12	$\chi 2 = 0$
		11 – 13	11	11	11	P = 1.0
		> 14	7	7	7	
3	School status	Middle	16	15	16	$\chi 2 = 0.0891$
		High	14	15	14	P = 0.956
4	Type of family	Nuclear	16	16	16	$\chi 2 = 0$
		Joint	14	14	14	P = 1.0
5	Family history of asthma	Yes	17	16	17	$\chi 2 = 0.0900$
		No	13	14	13	P = 0.956
6	Family history of inhaler use	Yes	14	14	14	$\chi 2 = 0$
		No	16	16	16	P = 1.0

n = 30 each in group

Con = Control

Exp 1 = Papworth

Exp 2 = Active play

The association of demographic variables viz., gender, age, educational status, type of family, family history of asthma and history of inhaler use were analysed for homogeneity in Control, Papworth and Active play groups by $\chi 2$ test. For simplicity the variables were categorised in to two or three only. A probability of 0.05 and less was considered as statistically significant. Sigmaplot 14.5 version (Systat Software Inc., San Jose, USA) was used for statistical analysis.

Table 2: Comparison of control and experimental groups on Pulmonary Function Test by two-way RM ANOVA with Bonferroni 't' test.

Groups and comparisons	Tests	FVC	FEV1	FEV1/FVC
Control	Pre-test	70.167±1.0	63.533±0.4	91.005±1.3
Papworth	Pre-test	73.100±1.1	65.367±0.7	89.990±1.6
Active play	Pre-test	70.367±1.4	64.633±0.7	92.561±1.5
Control	Post-test 1	75.133±2.4	75.233±1.9	101.001±1.7
Papworth	Post-test 1	77.933±0.8	72.567±0.9	93.451±1.6
Active play	Post-test 1	77.433±1.0	75.333±0.7	97.735±1.5
Control	Post-test 2	74.667±1.0	65.667±0.6	88.434±1.4
Papworth	Post-test 2	84.400±0.8	82.367±0.9	97.849±1.4
Active play	Post-test 2	91.833±1.7	90.767±1.9	99.177±1.8
Significance among groups (Control/Papworth/Active play)		F = 12.468 P = <0.001	F=34.305 P=<0.001	F=1.991 P=0.143
Significance among tests (Pre-test/Post-test 1/Post-test 2)		F = 90.935 P =<0.001	F=189.667 P=<0.001	F=20.812 P<0.001
Significance in the interaction (groups X tests)		F = 16.949 P =<0.001	F=58.196 P=<0.001	F=14.735 P=<0.001
Significance between Pre-test (Control/Papworth)		t = 4.741 P = <0.001	t = 1.190 P =0.706	F=0.469 P=1.000
Significance between Pre-test (Control/Active play)		t = 3.729 P =0.001	t = 0.714 P =1.000	F=0.719 P=1.000
Significance between Pre-test (Papworth/Active play)		t = 1.013 P =0.942	t = 0.476 P =1.000	F=1.189 P=0.708
Significance between Post-test 1 (Control/Papworth)		t = 1.473 P =0.427	t = 1.731 P =0.254	F=3.491 P=0.002
Significance between Post-test 1 (Control/Active play)		t = 1.210 P =0.683	t = 0.0649 P =1.000	F=1.510 P=0.398

Significance between Post-test 1 (Papworth/Active play)	t =0.263 P =1.000	t = 1.795 P =0.222	F=1.981 P=0.147
	t = 5.120 P =<0.001	t = 10.838 P =<0.001	F=4.353 P=<0.001
Significance between Post-test 2 (Control/Active play)	t = 9.030 P =<0.001	t =16.289 P= <0.001	F=4.967 P=<0.001
Significance between Post-test 2 (Papworth/Active play)	t = 9.030 P =<0.001	t = 5.451 P =<0.001	F=0.614 P=1.000
Significance within Control (Pre-test and Post-test 1)	t = 3.108 P =0.007	t = 8.585 P =<0.001	F=5.920 P=<0001
Significance within Control (Pre-test and Post-test 2)	t = 2.816 P =0.016	t = 1.565 P =0.358	F=1.522 P=0.389
Significance within Control (Post-test 1 and Post-test 2)	t = 0.292 P =1.000	F = 7.019 P = <0.001	F=7.442 P=<0.001
Significance within Papworth (Pre-test and Post-test 1)	t =3.025 P =0.009	F = 5.283 P =<0..001	F=2.050 P=0.126
Significance within Papworth (Pre-test and Post-test 2)	t =7.072 P =<0.001	F =12.474 P =<0.001	F=4.654 P=<0.001
Significance within Papworth (Post-test 1 and Post-test 2)	t = 4.047 P =<0.001	t = 7.191 P = <0.001	F=2.604 P=0.030
Significance within Active play (Pre-test and Post-test 1)	t = 4.423 P =<0.001	t = 7.851 P =<0.001	F=3.064 P=0.008
Significance within Active play (Pre-test and Post-test 2)	t = 13.435 P =<0.001	t = 19.175 P =<0.001	F=3.918 P=<0.001
Significance within Active play (Post-test 1 and Post-test 2)	t = 14.400 P =<0.001	t = 11.324 P =<0.001	F=0.854 P=1.000

Table -2 shows the the mean and standard error of Pulmonary function test – The means of FVC,FEV1,FVC/FEV1 control pretest, experimental –I pretest, experimental –II pretest are70.167,63.533.91.005,73.100,65.367,89.990 70.367,64.633,92.561and control post-test,Papworth group posttest1& and Active play exercise group post-test I are 75.133,75.233,101.001,77.933,72.567,93.451,77.433,75.333,97.735.control post-test,Papworth group posttest II& and Active play exercise group post-test II are74.667,65.667,88.434,84.400,82.367,97.849,91.833,90.767 and 99.177.Comparing the mean value in post test –II there is a greater improvement of respiratory outcome.Two way RM ANOVA revealed significant difference among the groups (control and experimental), among the tests (pretest and posttest), and groupXtest interaction (P < 0.001 respectively).

Table -3Comparison of control and experimental groups on Biochemical parameters by two-way RM ANOVA with Bonferroni 't' test.

Groups and comparisons	**Tests**	**Total count**	**Esinophil**	**Ig E**
Control	Pre-test	11196.067+188.3	529.567+38.0	633.933+22.4
Papworth	Pre-test	12117.067+171.9	789.433+10.0	796.133+6.2
Active play	Pre-test	12187.400+176.3	795.800+9.8	793.600+6.3
Control	Post-test 1	10184.667+122.4	527.800+33.4	654.633+22.4
Papworth	Post-test 1	10293.667+132.2	603.333+10.5	610.267+16.7
Active play	Post-test 1	10276.000+142.0	610.333+10.0	599.600+16.5
Control	Post-test 2	9864.000+52.5	521.367+33.4	637.433+22.0
Papworth	Post-test 2	8495.333+133.5	339.000+12.1	213.500+15.5
Active play	Post-test 2	7948.667+130.0	333.767+12.0	154.567+9.1
Significance among groups (Control/Papworth/Active play)		F = 1.689 P = 0.191	F = 2.131 P = 0.125	F = 27.384 P = <0.001
Significance among tests (Pre-test/Post-test 1/Post-test 2)		F = 513.838 P =<0.001	F = 850.876 P =<0.001	F =1148.967 P =<0.001
Significance in the interaction (groups X tests)		F = 44.655 P =<0.001	F = 201.390 P =<0.001	F = 254.104 P =<0.001
Significance between Pre-test (Control/Papworth)		t = 4.529 P = <0.001	t = 8.337 P = <0.001	t = 5.673 P = <0.001
Significance between Pre-test		t = 4.875	t = 8.541	t = 5.565

(Control/Active play)	P =<0.001	P =<0.001	P =<0.001
Significance between Pre-test (Papworth/Active play)	t = 0.346 P =1.000	t = 0.204 P =1.000	t = 0.109 P =1.000
Significance between Post-test 1 (Control/Papworth)	t = 0.536 P =1.000	t = 2.423 P =0.051	t = 1.904 P =0.176
Significance between Post-test 1 (Control/Active play)	t = 0.449 P =1.000	t = 2.648 P =0.028	t = 2.362 P =0.058
Significance between Post-test 1 (Papworth/Active play)	t = 0.0869 P =1.000	t = 0.225 P =1.000	t = 1.904 P =0.176
Significance between Post-test 2 (Control/Papworth)	t = 6.730 P =<0.001	t = 5.850 P =<0.001	t = 18.193 P =<0.001
Significance between Post-test 2 (Control/Active play)	t = 9.418 P =<0.001	t = 6.018 P =<0.001	t = 20.722 P =<0.001
Significance between Post-test 2 (Papworth/Active play)	t = 2.688 P =0.023	t = 0.168 P =1.000	t = 2.529 P =0.037
Significance within Control (Pre-test and Post-test 1)	t = 6.108 P =<0.001	t = 0.136 P =1.000	t = 0.605 P =1.000
Significance within Control (Pre-test and Post-test 2)	t = 8.045 P =<0.001	t = 0.633 P =1.000	t = 1.723 P =0.260
Significance within Control (Post-test 1 and Post-test 2)	t = 1.937 P =0.163	t =0.496 P =1.000	t = 1.118 P =0.795
Significance within Papworth (Pre-test and Post-test 1)	t = 11.012 P =<0.001	t = 14.358 P =<0.001	t = 12.082 P =<0.001
Significance within Papworth (Pre-test and Post-test 2)	t = 21.872 P =<0.001	t = 34.751 P =<0.001	t = 37.873 P =<0.001
Significance within Papworth (Post-test 1 and Post-test 2)	t = 10.860 P =<0.001	t = 20.393 P =<0.001	t = 25.791 P =<0.001
Significance within Active play	t = 11.543	t = 14.309	t = 12.611

(Pre-test and Post-test 1)	P =<0.001	P =<0.001	P =<0.001
Significance within Active play (Pre-test and Post-test 2)	t = 25.598 P =<0.001	t = 35.646 P =<0.001	t = 41.539 P =<0.001
Significance within Active play (Post-test 1 and Post-test 2)	t = 14.055 P =<0.001	t = 21.337 P =<0.001	t = 28.929 P =<0.001

Table -3 shows the table show the mean value of pretest, post test –I and post test –II .The means of pretest of Total Count,Esinophil and IgE for control ,group-I and group –II are11196.067, 529.567, 633.933, 12117.067789.433796.13312187.400, 795.800,793.600 , .The means of Post test -Ifor control,group-Iand group–II are 10184,667 527.800 ,654.633,10293.667, 603.333,610.267,10276.000, 610.333,10276.000,610.333 and 599.600.The means of Post test-II For control group I and group II are 9864.000,521.367,637.433,8495.333,339.000,213.500, 7948.667,333.767 and 154.567. Comparing the mean value in post test –II there is a greater improvement of respiratory outcome.Two way RM ANOVA revealed significant difference among the groups (control and experimental), among the tests (pretest and posttest), and groupXtest interaction ($P < 0.001$ respectively).

Disscussion

The study's aim was to evaluate how well both pap worth and active play exercise works for the asthmatic children. Although the intervention is acknowledged as an effective treatment for the inhaler asthmatic children. There are three group -I received Papworth breathing exercise which shows a improvement in the respiratory outcome and the Group –II received Active play exercise which shows a greater improvement in the respiratory outcome comparing the papworth method by means of finding the FVC,FEV1 ,FVC/FEV1 value and the biochemical markers such as total count ,Esinophil and IgE.The children well enjoyed in participating without any limitations by asthma or serious asthma attacks, and they perceived that their respiratory outcome and fitness had improved. In the study, the small study sample may have contributed to a stronger sense of commitment to attend the sessions of both methods by the respective groups The reports from the children in the present study indicate that active play exercise and enjoyment may be essential to increasing the effort and thereby intensity. The present intervention may be perceived as resource demanding. However Active play exercise is associated with several positive outcomes in asthma

Thomas Westergren,[1] Liv Fegran,[1,2] Tonje Nilsen,[1,3] Kristin Haraldstad,[1] Ole Bjørn Kittang,[2] and Sveinung Berntsen[1] (2016) conducted a pilot study aimed to provide 6-week exercise intervention designed as active play to examine attendance rate, exercise intensity and children's perceptions of participating 6 children with asthma (4 boys, 2 girls) aged 10–12 years, participated in 60 min of active play exercise twice weekly. A mixed-methods design was applied. The exercise intervention focusing on active play had a high attendance rate, relatively

high exercise intensity, and satisfaction; the children perceived that their fitness and asthma had improved [9].

Thalita MF Macêdo, Diana A Freitas, Gabriela SS Chaves, Elizabeth A Holloway, Karla MPP Mendonça, 2016 conducted a systematic review To assess the effects of breathing exercises in children with asthma.The search methods used are Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, PsycINFO, CINAHL and AMED and handsearched respiratory journals and meeting abstracts and also consulted trial registers and reference lists of included articles. This analysis included randomised controlled trials of breathing exercises alone versus control or breathing exercises as part of a more complex intervention versus control in children with asthma. The review included three studies involving 112 participants. All the included studies performed the comparison breathing exercises as part of a more complex intervention versus control.. The studies measured: quality of life, asthma symptoms, reduction in medication usage, number of acute exacerbations and lung function. Breathing exercise techniques used by the included studies consisted of lateral costal breathing, diaphragmatic breathing, inspiratory patterns and pursed lips.. The control groups received different interventions: one received placebo treatment, one an educational programme and doctor appointments, and one was not described.The is a reduction of asthma symptoms and serious adverse events. The secondary outcomes were reduction in medication usage, number of acute exacerbations, physiological measures (lung function (especially low flo\w rates) and functional capacity), days off school and adverse events [10].

Conclusion

According to the research, the papworth method and Active play exercise is an effective strategy for asthma control. The study was conducted on asthmatic children to investigate the impact of participating in intervention on papworth and active play exercise on respiratory outcome Children are participated both interventions are effective when comparing with control group. This finding of the studies suggested that Active play exercise was more effective when comparing papworth breathing method.

References

1. Asher, I., & Pearce, N. (2014). Global burden of asthma among children. *The International Journal of Tuberculosis and Lung Disease: The Official Journal of the International Union Against Tuberculosis and Lung Disease*, *18*(11), 1269–1278.
2. Paul. (2023, June 24). *Prevalence of childhood bronchial asthma in India*. Annals of Tropical Medicine and Public Health (ATMPH). https://www.atmph.org/prevalence-of-childhood-bronchial-asthma-in-india/
3. Crosbie, A. (2012). The effect of physical training in children with asthma on pulmonary function, aerobic capacity and health-related quality of life: A systematic review of randomized control trials. *Pediatric Exercise Science*, *24*(3), 472–489. https://doi.org/10.1123/pes.24.3.472
4. Jindal A, Suriyan S, Sagadevan S, et al. Comparison of Oral Montelukast and Intranasal Fluticasone in Patients with Asthma and Allergic Rhinitis. *J Clin Diagn Res*. 2016;10(8):OC06-OC10.

5. Holloway EA, West RJ. Integrated breathing and relaxation training (the Papworth method) for adults with asthma in primary care: a randomised controlled trial. *Thorax*. 2007;62(12):1039-1042.
6. Asher MI, Weiland SK. The International Study of Asthma and Allergies in Childhood (ISAAC). ISAAC Steering Committee. *Clin Exp Allergy*. 1998;28 Suppl 5:52-91.
7. Bhattacharjee, S., Haldar, P., Gopal Maity, S., Debnath, S., Moitra, S., Saha, S., Mitra, R., Annesi-Maesano, I., Garcia-Aymerich, J., & Moitra, S. (2018). Prevalence and Risk Factors of Asthma and Allergy-Related Diseases among Adolescents (PERFORMANCE) study: Rationale and methods. *ERJ Open Research*, *4*(2), 00034–02018. https://doi.org/10.1183/23120541.00034-2018
8. National Institute for Health & Clinical Excellence. *NCE quality standards [QS25]: Asthma*. Manchester: National Institute for Health and Clinical Excellence, 2013.
9. Westergren, T., Fegran, L., Nilsen, T., Haraldstad, K., Kittang, O. B., & Berntsen, S. (2016). Active play exercise intervention in children with asthma: A PILOT STUDY. *BMJ Open*, *6*(1), e009721. https://doi.org/10.1136/bmjopen-2015-009721
10. Macêdo, T. M. F., Freitas, D. A., Chaves, G. S. S., Holloway, E. A., &Mendonça, K. M. P. P. (2016). Breathing exercises for children with asthma. *The Cochrane Database of Systematic Reviews*, *4*(4), CD011017. https://doi.org/10.1002/14651858.CD011017.pub2