

**“EFFECTIVENESS OF PEAKFLOW SELF MANAGEMENT PLAN
ON QUALITY OF LIFE FOR ASTHMA PATIENTS IN
SELECTED COMMUNITY, COIMBATORE”**

By

Mrs. NEETHI SELVAM. T, M.Sc (N)



A thesis submitted to

THE TAMIL NADU DR.M.G.R MEDICAL UNIVERSITY, CHENNAI

In fulfillment of the requirement for award of the degree of

DOCTOR OF PHILOSOPHY IN NURSING

JANUARY 2018

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CERTIFICATE

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DECLARATION

I hereby declare that this thesis entitled “**EFFECTIVENESS OF PEAKFLOW SELF MANAGEMENT PLAN ON QUALITY OF LIFE FOR ASTHMA PATIENTS IN SELECTED COMMUNITY, COIMBATORE**” is my own work carried out under the guideship of **Research Guide Dr. JANANI SANKAR, M.B.B.S., DNB, PhD, MA,MS. Pedia Senior Consultant, Kancha kamakoti CHILDS Trust Hospital, Chennai** which is approved by the Research Committee, The Tamil Nadu Dr. M.G.R Medical University, Guindy, Chennai.

I further declare that to the best of my knowledge the thesis does not contain any part of any work which has been submitted for the award of any degree either in this University or in any other University / Deemed University without proper citation.

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'There are many plans in a man's heart; but the counsel of the LORD, alone that shall stand'

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Abstract

ABSTRACT

The present study was intended to assess the Effectiveness of Peakflow Self Management plan on Quality of life for Asthma Patients in a Selected Community at Coimbatore.

The objectives of the study were:

1. To assess the quality of life and general well being before and after peak flow self management plan in control and experimental group of asthma patients.
2. To assess the effectiveness of peak flow self management plan among asthma patients by comparing the quality of life and general well being between control and experimental group of asthma patients.
3. To assess the acceptability of asthma patients regarding peak flow self management plan.
4. To find out the correlation between quality of life and its domain among control and experimental group of asthma patients in pre test and post test.
5. To find the association between demographic variables with pre test and post test quality of life in control and experimental group.
6. To find the association between clinical variables with pre test and post test quality of life in control and experimental group.

Methods

The conceptual frame work of the current research was based on Bandura's self efficacy theory. The sample size of the study was 200 asthma patients in a community at Coimbatore. A quasi experimental study with time series design was used. The samples were selected through purposive sampling technique and selected samples were assigned to control and experimental group (100,100). The subjects in the

experimental group received peak flow self management plan. A pre test and post test assessment at the time of interview, 2 months, 4 months and 6 months were done for the asthma patients in control and experimental groups which was compared before and after the intervention to test the effectiveness of the nursing intervention (peak flow self management plan)

The instruments used for the study consisted of proforma to assess demographic and clinical variable proforma, standardized Asthma Quality of Life Questionnaire to assess symptoms, activity limitation, emotional function and environmental stimuli ultimately assessing the quality of life as well as well being Index to assess the well being of asthma patients in control and experimental group and satisfaction scale to assess level of acceptability of asthma patients and observation schedules of peak flow diary and peak flow graph for experimental group.

Descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (chi square, paired, independent t-test, repeated measures of ANOVA and Karl pearson's correlation) were used to summarize the data and to test the research hypothesis.

Major findings of the study

- With regard to demographic variables, majority of the asthma patients were males (54%, 72%), married (57%,66%), from rural back ground (69,74), from joint family (84%,79%) in control group and experimental group respectively. Among clinical variables, majority of the asthma patients had industry around home (81%, 77%), used LPG Gas for cooking (71%,82%), had family history of first degree relative with asthma (67%,72%), had no habit of smoking (61%, 48%), with

moderate asthma (49%,64%), had consultation with physician one month back (58%,51%), had no presence of co-morbid illness (46%,57%) and had not used peak flow metre (77%, 94%),

- In pre-test, the mean AQLQ scores of control group and experimental group were almost same (95.90, 96.6/224) with t' value 0.88 showed that there is no significant difference at ($P>0.05$), however in post test I, II, III, with the interval of 2 months, there was marked increase in AQLQ score only in experimental group (127.73, 144.14, 161.17) and it was statistically significant at ($P<0.001$). There was also significant difference between control and experimental group.
- With regard to general well-being index scores also, during pretest, the experimental group had $M=29.32/100$ that gradually increased to 49.4, 61.2, 80.8 during post test I, II, III respectively and it was statistically significant at ($P<0.01$).
- On comparison of AQLQ score of pre-test, post-test 1, post-test II and post-test III, repeated measures of ANOVA showed significant difference between the two groups. The experimental group had an improvement in AQLQ score and well being that was statistically significant ($P<0.001$).
- During pretest, no demographic variables had association with quality of life ($P>0.05$) in both groups, and among clinical variables asthma severity, habit of smoking and whether or not they had industries around their homes at that time in control group were statistically strongly significantly associated with quality of life ($P<0.01$). And in

experimental group, only the severity of asthma was statistically significantly associated with their quality of life ($P<0.05$).

- During post test II also, no demographic variables had association with quality of life ($P>0.05$), except with age that had statistically strongly significant association with the quality of life with age of both the control and experimental groups and occupation status was statistically significant only in control group. Among the clinical variables, the asthma patients' habit of smoking and asthma severity had statistically very highly significant associations with their quality of life and medications had a statistically significant association with their quality of life in control group ($P<0.01$). And in experimental group, the asthma patients' time of last consultancy with a physician, whether or not they had industries around their homes, what kind of cooking fuel they used had statistically highly significant associations with their quality of life, and the presence of co-morbid illnesses had a statistically significant association with their quality of life ($P<0.01$).
- With regard to homogeneity, except gender all other demographic variables such as age, education, occupation, marital status, monthly income, residence and type of family were not statistically significantly differed ($P>0.05$). The two groups (control and experimental) were homogeneous groups and they were comparable groups in respect of their demographic characteristics.

In this study, with regard to Quality of Life among asthma patients was poor before intervention on peak flow self management plan in control ($M=95.90/224$) and

experimental group ($M=96.6/224$) that showed no significant difference at ($P>0.05$). However during post test I, II, III after intervention, the AQLQ scores determining the quality of life of asthma patients were higher in experimental group ($M=127.7$, $M=144.1$, $M=161.1$) than the control group ($M=98.3$, $M=100.7$, $M=103.09$) that was statistically significant ($P <0.001$). This attributes to the effectiveness of peak flow self management plan in improving the quality of life for asthma patients.

With respect to the well being of asthma patients, the well being was poor before intervention on peak flow self management plan in control ($M=30.36/100$) and experimental group ($M=29.3/100$) that showed no significant difference at ($P>0.05$). However during post test I, II, III after intervention, the well being scores determining the well being of asthma patients were higher in experimental group ($M=49.48$, $M=61.28$, $M=80.80$) than the control group ($M=35.52$, $M=40.96$, $M=45.20$) which was statistically significant ($P <0.001$). This attributes to the effectiveness of peak flow self management plan in improving the well being of asthma patients.

There was no significant correlation between quality of life (AQLQ) and its domains during pretest and post test I and was significantly correlated among the domains in post test II and III in control group. Same way there was no significant correlation between quality of life (AQLQ) and its domains during pretest, post test I (except activity with emotional), post-test II, as well as post-test III among the domains in experimental group.

Thus the findings of the present study attributed to the effectiveness of peak flow self management plan in improving the quality of life and well being of asthma patients. This stresses the importance of peak flow self management for better asthma control that can be included in asthma care and strategy.

Conclusion

Peak flow self management is an effective method for monitoring the lung status and record symptoms for moderate to severe asthma who require daily asthma medications. It helps to detect an attack and begin treatment early thereby prevent asthma episode and severity as well as the physical and emotional effects such as breathing difficulty or panic state. The findings of the present study has generated knowledge in the field of nursing practice in asthma care and treatment. The study findings are also supported by the studies conducted in India and abroad. Thus self managing asthma correctly allow asthma patients to avoid serious attack and avoid a severe asthma emergency enabling them to lead an active, healthy and improved quality of life.

Key words: Peak flow Self management, Asthma control, Quality of life,

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ABBREVIATIONS

1.	DALYs	Disability-Adjusted Life Years
2.	PFM	Peak Flow Meters/Peak Flow Monitoring
3.	GINA	Global Burden of Asthma Report
4.	COPD	Chronic Obstructive Pulmonary Disease
5.	AQLQ	Asthma Quality of Life Questionnaire
6.	WBI	Well Being Index
7.	EMBASE	Excerpta Medica Data BASE
8.	PRISMA	Preferred Reporting Items for Systematic Reviews and Meta –
9.	ACS	Asthma Control Score
10.	OR	Odds Ratio
11.	PEFR	Peak Expiratory Flow Rate
12.	CUE	Computer Using Educator
13.	CI	Confidence Interval
14.	RR	Relative Risk
15.	RCT	Randomized Controlled Trial
16.	FEV1	Forced Expiratory Volume in one second
17.	WHO	World health organization
18.	ICS	Inhaled Corticosteroid
19.	ASQ	Asthma Status Questionnaire
20.	GINA	Global Initiative for asthma
21.	SFC	Salmeterol/ Fluticasone Combination
22.	SAL	Salmeterol
23.	ER, ED	Emergency Room / Department

- 24. CINAHL Cumulative Index to Nursing and Allied Health Literature
- 25. BMI Body Mass Index
- 26. US United States of America
- 27. UK United Kingdom
- 28. PFB Peak Flow Based
- 29.. NAP No Action Plan
- 30. SB Symptom Based

Chapter – I
Introduction

CHAPTER - I

INTRODUCTION

Back Ground of the Study

Human beings have number of basic needs that are vital for his living, and the most essential need is oxygen. They can live without food or water for few hours or even days but cannot live without air. But in asthma airway spasm and airflow restriction makes breathing difficult leading to air hunger. Bronchial asthma was officially named as specific respiratory disorder by Hippocrates in 450 BC. In fact the term Asthma comes from Greek *Aazein*, meaning to pant, to exhale with the open mouth, sharp breath.¹ Asthma has puzzled and confused physicians from the time of Hippocrates to the present day.

Asthma is a chronic disease of the small airways. The hallmarks of asthma are chronic inflammation, reversible obstruction and airflow limitation. It is a potentially life-threatening or serious airway disease that imposes a substantial burden on patients, their families and the community. Maintaining patent airway has always been vital to life, but asthmatic patients are incapable of keeping their airways clear though air is available in the atmosphere.

While communicable diseases describes mortality and morbidity from major diseases and risk factors to health, "Chronic non communicable diseases are bringing greater disease burden, accounting for more than half of the global mortalities and global morbidity".² Sir George Alleyne, calls it the silent tsunami." WHO Director-General warned that asthma is on the rise "everywhere" and referred to it as a festering sore.² Asthma is also an epidemic. It has become a disease of interest worldwide because of its impact on individuals and societies.

Asthma is a familiar and growing disease today, and has increasing prevalence, but its story goes back to the ancient world, as we know from accounts in ancient texts from China, India, Greece and Rome. It was treated with acupuncture and Ayurveda.³ There is higher prevalence of asthma in developed than in developing countries and its prevalence increases by 50% every decade. Globally, it affects 5-10% of population.⁴ In Saudi Arabia, asthma prevalence has been reported in the proximity of 20% with regional variations. About 8-14% of Saudi children have asthma, and physician-diagnosed asthma in adolescent age of 16 – 18 years is 19.6%.

In Australia, where asthma was made a national health priority, the 2010 statistics showed that its prevalence in children under 14 years of age reached 18.4%. About 8.3% of US population have asthma and the number of asthmatic patients has increased from 20 million in 2001 to 26 million in 2011. In North America, 10% of the population have asthma.⁵

In developing regions, Africa, Central and South America, Asia, and the Pacific however, asthma prevalence is rising sharply with increasing urbanisation and westernisation. High prevalence rates have been reported in Peru (13.0%), Costa Rica (11.9%), and Brazil (11.4%). Most of the Asian countries including India and China, although reporting relatively lower prevalence rates than those in the West, account for a huge burden in terms of absolute numbers of patients.⁶

In Asia, increased prevalences are likely to be particularly dramatic in India and China. For example, a 2% increase in prevalence in China would lead to an additional 2 million asthma sufferers. Asthma incidences in India have increased significantly over the years in the country. India has an estimated 15-20 million asthmatics. As per National Family Health Survey of India, 2468 persons per 100,000 population are reported to be suffering from asthma, which is considerably higher in

rural areas (2649 per 100,000 population) than in urban areas (1966 per 100,000 population).⁷ During the world Asthma Day (May 3' 2011), city Pulmonologists said the prevalence of asthma has increased by 7% in Coimbatore over the last decade. It has shot up from one to seven percent across India. The industrial city of Coimbatore dotted with spinning mills, dyeing units, foundries, automobile spare parts and manufacturing units, has recorded highest increase.⁸

The increased incidence of asthma worldwide has been attributed to the modernization of societies. Changes in lifestyle, food habits, environmental exposure and cigarette smoking are contributing factors to increased number of asthmatic patients. The percentage of children with asthma has increased over the last few years. Overall, females have higher current asthma prevalence than males, although among children aged 0–17, boys seem to have a higher prevalence than girls.⁸

The number of disability-adjusted life years (DALYs) lost due to Asthma worldwide have currently been estimated at about 15 million per year. Worldwide, asthma accounts for around 1% of all DALYs lost, thus reflecting the high prevalence and severity of asthma. Asthma continues to be a serious public health problem. The burden of illness from asthma is high and increasing. Asthma is under diagnosed and poorly treated, although the use of inhaled corticosteroids has made a positive impact on outcomes.⁹

Nevertheless there are problems with the delivery of care, which include under-treatment with corticosteroids, limited knowledge, and poor asthma management skills amongst patients with severe asthma. There has been a great interest in developing treatment guidelines for asthma in many countries. The focus in all asthma treatment guidelines is to control asthma symptoms by involving patients in their treatment planning and execution. Though effective screening, evaluation, and

management strategies for asthma are well established in high-income countries, these strategies have not been fully implemented in India as evidence had previously suggested that asthma is not to be treated independently but fitted into the general spectrum of respiratory diseases. Therefore, asthma education has become the main component of the treatment plan. Studies have shown that simple educational sessions for asthmatics could have positive impacts on patients' adherence to treatment and control of symptoms.

According to a review conducted to analyze costs and the cost-effectiveness of self-management based on peak flow monitoring interventions in asthma, home peak flow monitoring increases patients' self-management and could lead to cost savings. Twenty-one studies were included in this review. Data were extracted, and methodological and economic quality were assessed. These studies presented economic information regarding self-management interventions based on peak flow monitoring in asthmatics. The mean methodological quality was 4.6 (maximum 8), and the mean economic quality was 12.0 (maximum 15). In eighteen studies, the interventions led to net savings compared with usual care or less intensive intervention. Only three studies found the total costs to be higher in the intervention group. In thirteen of the seventeen studies that analyzed health outcomes, at least one of the reported health outcomes improved statistically significantly after the intervention. The results emphasize the need for guidelines to increase the comparability of cost-effectiveness evaluations relating to asthma.¹⁰

The management of asthma relies on a patient's ability to monitor their asthma regularly. Self-monitoring includes assessing the frequency and severity of symptoms such as wheezing and shortness of breath and measurement of lung function with a peak flow meter. Patients are required to take their regular

medications along with the home monitoring of peak flow. There are two types of medicines for asthma: anti-inflammatory drugs used as controllers and quick relief or emergency drugs used as bronchodilators. Education is a light that shows the mankind the right direction to surge. Education directed toward asthma self-management emphasizes patient participation in symptom monitoring and control. Educational programs on self management can reduce morbidity.

Self management is to empower patients with the knowledge and skills they need to treat their own illness. Self-management support programs assume a complex sequence of effects. Developers expect these programs to change patients' behavior by increasing the patients' self-efficacy and knowledge. Improved behavior is expected to lead to better disease control which should, in turn, lead to better patient outcomes and reduced utilization of health care services, particularly preventable emergency room visits and hospitalizations, and ultimately to reduced costs.

Peak flow monitoring of asthma came into vogue with the advent of asthma self-management programs. Because it offered an objective way to gauge asthma severity, it promised improvement in the accuracy of asthma monitoring over that attainable by symptom monitoring.¹¹ The benefits of peak flow monitoring in asthma self-management provide, at best, no more than a small increment in effectiveness beyond that afforded by symptom monitoring.

Benefits of using a peak flow meter include: Patients can tell what is going on in his bronchial tubes rather than just guessing how he feel. He can find out if the treatment is effective. He will know whether he need to change his treatment. It's a written record he can show his health professional.

These benefits can help patients feel more in control, have fewer emergency visits, and spend less money on uncontrolled asthma. In managing chronic asthma, long-term daily peak flow rate monitoring may assist with the following measures: Detecting early changes in asthma that may require therapy, Evaluating responsiveness to changes in therapy, Giving a quantitative measurement of improvement and Identifying temporal relationships between environmental and occupational exposures and bronchospasm.

The most frequent use of peak flow rate measurement is in home monitoring of asthma, where it can be beneficial in patients for both short- and long-term monitoring. When properly performed and interpreted, peak flow rate measurement can provide the patient and the clinician with objective data upon which to base therapeutic decisions.

Guided self-management is a cornerstone of asthma care for all age groups. When compared with “usual care” in a recent systematic review, self-management training backed by a written action plan reduced hospitalizations, unplanned doctor visits, emergency room attendance, work absence, and nocturnal asthma in adults. The introduction of self-management training programs reduces direct and indirect health-related costs.

Research studies to compare the use of patient-performed peak expiratory flow (PEFR) and symptom monitoring as asthma self-management tools have shown that PEFR self-monitoring is a more useful asthma tool than symptom self-monitoring.

The study recommends the use of peak flow meters (PFM) as an important part of self-management plans after a trial with 92 adult asthma patients in a primary

care setting to compare the effectiveness of action plans using either peak flow monitoring or symptoms to guide self-management. The study has found significant improvements within groups for FEV1.¹²

Management of asthma based on PEFR measurements can result in early recognition and prompt treatment of asthma exacerbations and PEFR monitoring in the setting of a comprehensive self-management program can lead to fewer symptoms of asthma, fewer emergency examinations, fewer hospitalizations, lower requirements of inhaled β-antagonists and oral corticosteroid therapy, and better pulmonary function.¹³ As a nurse it is important to help the asthma patients in order to improve the quality of life and promote their health to the fullest of living. So the investigator would like to apply the knowledge in the field of improvement in asthma control, outcomes and management.

Need For The Study

Asthma is a chronic inflammatory condition that makes it hard to get air in and out of lungs during asthma attacks. Asthma can be a life-threatening disease if not properly managed. In an asthma attack, 3 things happen: the wall of the airway gets swollen and inflamed, the muscles surrounding the airway have spasm and mucus fills the air passages. These 3 things make the airway narrower, so it is harder to get air through, and less oxygen reaches the blood. When people have an asthma attack, they can feel chest tightness, throat tightness, wheezing and can cough a lot. The resulting airway obstruction and bronchial constriction may lead to oxygen insufficiency and respiratory failure.^{14,15}

Wilson, et al. took bronchoscopic biopsies from major airways of 12 patients with asthma and 11 control patients and evaluated bronchial vessel numbers and size, using computerized image analysis, the airways of asthmatic patients were significantly more vascular with more vessels than the controls.¹⁶ Despite of advanced studies in asthma causes and pathogenesis the exact cause of asthma is unknown. People with asthma have inflamed and sensitive airways that become clogged with sticky mucus in response to certain triggers.¹⁷

In the recent years, the morbidity and mortality of population due to asthma is increasing despite the advances being made in understanding of this disease and availability of improved medications and information on treatment. World-wide, deaths from this condition have reached over 180,000 annually. Asthma creates a substantial burden on individuals and families as it is more often under-diagnosed and under-treated. Asthma exacerbations result in approximately 5,000 deaths per year and are largely preventable. Death rates are higher among minorities, especially those who live in inner-city housing.

In India, according to WHO an estimated 57,000 deaths were attributed to Asthma in 2004 and it was seen as one of the leading cause of morbidity and mortality in rural India. According to the global burden of asthma report (GINA), over 50 million suffer from asthma in Central and Southern Asia and an absolute 2% increase in the prevalence of asthma in India would result in an additional 20 million people with this disease.¹⁸ According to the Asthma and Allergy Foundation of America, asthma control is difficult for 25 million asthma sufferers in the US alone, it is one of the most common and costly diseases and there is no cure for asthma.¹⁹

With the projected increase in the proportion of the world's urban population from 45% to 59% in 2025, there is likely to be a marked increase in the number of asthmatics worldwide over the next two decades. It is estimated that there may be an additional 100 million persons with Asthma by 2025 suggesting asthma prevalence increase globally by 50% every decade.²⁰

In addition to its prevalence and cost of its treatment asthma represents a world wide socioeconomic burden on health care delivery system. The National Institute of Allergy and Infectious Diseases reports (2007) spending related to asthma at \$19.7 billion. In the US, the cost of asthma is estimated to be around \$56 billion each year.²¹ In a systematic review of the economic burden of asthma, hospitalization costs up to 86% of all asthma-related cost, and poor asthma control was associated with increased cost of care.²² They impose direct costs through consumption of resources through hospitalizations, physician visits, and medications. Although difficult to measure, the indirect cost of asthma is immense. Missed work days, absence from school, low productivity, emotional and social impacts are examples of indirect costs of asthma. During an asthma flare up, patients struggle to breathe in air having sensation of air hunger, that terribly upset and so they experience fear that they are going to die. The very feeling that another asthma episode could start at any time may cause a person to feel anxious constantly.²³

Asthma also affect individual's quality of life. It is associated with poorer quality of life, with disease severity and the level of control both having an impact. It has varying degrees of impact on the physical, psychological and social wellbeing of people living with the condition. People with asthma are more likely to report a poor quality of life. This is more pronounced among people with severe or poorly

controlled asthma.^{24,25} A 2012 survey of 2,686 Australians aged 16 years and older with current asthma found that asthma was not well-controlled in 45% of people with current asthma. More than half of this group were not using a preventer inhaler, or were using it infrequently.

Michele Dunne and Mary Hughes conducted a study where in 31 participated out of which 21 were female aged 22-76 years in 8 venues. They found that asthma had a significant impact on quality of life because of symptoms suffered, amount of medication required and the constant fear of exposure to triggers or events. The unrelenting pressure of managing their asthma took a toll on the participants, as they felt that their lifestyle had changed dramatically and they had lost some or all control over their health and well-being. Many reported high levels of anxiety, and many turned to alternative medicine to regain a sense of control. Many were frustrated that despite following instructions from their doctor, they did not feel better. Symptoms were frequent and could be overwhelming when trying to manage their daily lives.²⁶

Adding personalized care by educating asthma sufferers about how to self-manage their disease could save money, and improve quality of life for asthmatics. Since the disease is complex and may be difficult to manage, active participation of the patient in both the daily self-management of the disease as well as the treatment of acute episodes is critical.

Reduction or complete ablation of asthma symptoms is the goal of therapy. Nevertheless majority of patients with asthma live in rural areas. As poverty levels are higher in rural areas when compared to urban, it is imperative that primary health care providers should focus mainly on preventive rather than curative care of the disease.

Low health literacy has been known as a contributor to poor health access, health outcomes and increased health costs. Hence great emphasis is placed on educating asthmatics to use action plans to achieve better control of symptoms. The use of peak flow meters (PFM) has been recommended as an important part of self-management plans and for steroid resistant patients of age 5 and older with moderate or severe asthma. It is less time consuming as they need not take appointment with physician avoiding emergency consultations and prevents asthma episodes.

Recent studies shows that routine use of peak flow monitoring may be useful, but it is not the only way to guide patients in self-management of exacerbations. In this context the investigator found the necessity to guide in asthma self management plan and in monitoring the effect of peak flow self management in selected community at Coimbatore for patients with asthma thus facilitate patients' improved quality of life.

Statement of the Problem

A study to assess the “Effectiveness of Peak flow Self-Management plan on Quality of life for Asthma Patients in Selected Community” at Coimbatore.

Objectives

7. To assess the quality of life and general well being before and after peak flow self management plan in control and experimental group of asthma patients.

8. To assess the effectiveness of peak flow self management plan among asthma patients by comparing the quality of life and general well being between control and experimental group of asthma patients.
9. To assess the acceptability of asthma patients regarding peak flow self management plan in experimental group.
10. To find out the correlation between quality of life and its domain among control and experimental group of asthma patients in pre test and post test.
11. To find the association between demographic variables with quality of life in control and experimental group of asthma patients.
12. To find the association between clinical variables with quality of life in control and experimental group of asthma patients.

Operational Definitions

Peak Flow Self management Plan

It refers to using and monitoring of self-management of Peak Flow expiratory rate with the use of peak flow metre and asthma information booklet as taught by the investigator and marking of peak flow readings in the peak flow diary and graph and the color zones as follow:

- >80-100% Above 460 EU normal zone, green color
- 50-80% From 287 - 460 EU caution zone, yellow color
- <50% upto 287 EU danger zone. Red color

Peak flow metre

It is a calibrated instrument used to measure lung capacity in monitoring breathing disorders such as asthma.

Asthma patients

It refers to the patients diagnosed by the physician to have current asthma.

Quality of life

It refers to the personal satisfaction obtained by asthma patients with the cultural or intellectual conditions as measured by WHO well being index and asthma quality of life questionnaire.

Effectiveness

It is the desired effect of peak flow self-management plan on quality of life of asthma patients and beneficial outcome expected by the investigator as evidenced by less absenteeism from work place, reduced emergency visits and doctor consultations.

Selected Community

In this study it refers to the semi urban area of Somanur town which the investigator has selected to conduct the study for patients with asthma.

Hypotheses

Null Hypotheses

H₀1: There will be no significant difference between the mean AQLQ score and well being index score between control and experimental group of asthma patients before and after intervention.

H₀2: There will be no significant difference in the mean AQLQ score and well being index score between first and subsequent observations in control and experimental group of asthma patients.

H₀3: There will be no correlation between quality of life and its domains among control and experimental group of asthma patients in pre test and post test.

H₀4: There will not be significant association between AQLQ scores and selected demographic variables in control and experimental group of asthma patients.

H₀5: There will not be significant association between AQLQ scores and selected clinical variables in control and experimental group of asthma patients.

Assumptions

- Asthma is primarily a disease of chronic airway inflammation. Patients with asthma experience breathing difficulty and wheezing due to inflamed, swollen airways.
- Inflammation producing mucus and the muscles of the airway being under spasm blocks the airway leading to narrowed air passages causing respiratory failure.
- Recurrent asthma symptoms frequently cause sleeplessness, daytime fatigue, reduced activity levels and school and work absenteeism.
- People with asthma are more likely to report a poor quality of life. This is more pronounced among people with severe or poorly controlled asthma.
- Peak flow self management plan intervention can influence the outcome of asthma patients such as productivity, fewer asthma episodes, reduced morbidity and disability thus improving the quality of life.

Delimitations

- The study is delimited to only adults with chronic asthma or chronic obstructive pulmonary disease (COPD) not suffering from other serious diseases.
- Only patients with the age group of 20-70 years is selected.
- The study is done among the patients marking on the peak flow diary maintained at home for peak flow monitoring.

Projected Outcome

Though asthma has a significant impact on quality of life because of symptoms suffered, amount of medication required and the constant fear of exposure to triggers or events, a peak flow-based asthma education and self-management plan program would be the most cost-effective alternative in reducing costs associated with emergency visits and hospitalizations due to asthma exacerbation. Use of written action plans, combined with regular contact to reinforce self-management, improves airway reactivity and reduced health care utilization. Therefore the present study findings with simple educational plan for asthmatics could have positive impacts on patients' adherence to treatment and control of symptoms. Further asthma patients will demonstrate better asthma control with few symptoms and no night waking or limitation of activity and thus improved quality of life.

Conceptual Framework

Conceptual framework provides a clear description of variables, suggesting ways or methods to conduct the study and guide the interpretation, evaluation and integration of significant findings. This study is aimed at determining the effect of peak flow self management for asthma patients on quality of life in selected community at Coimbatore.

Self-Efficacy Theory

The study is based on the Bandura's self efficacy model.²⁷ Bandura defines self-efficacy as 'an individual's perception of his/her own capabilities to produce designated levels of performance'. Self-efficacy level has been used as a predictor of health behaviours change in smoking cessation, weight loss and diet control and avoidance of triggers.²⁸

Three implications of self-efficacy theory are of important interest to asthma education.

First, the theory stipulates that individuals will show strong commitment to achieve goals if they believe in their capabilities. Here, the asthma patients on receiving asthma information and peak flow monitoring techniques on how to monitor their lung function will show commitment to follow the instructions provided by the investigator in using the peak flow meter and maintaining the peak flow diary thereby peak flow self-management plan in managing asthma symptoms.

Second, verbal persuasion of individuals about their abilities increases the likelihood of engagement in goal achievement. The investigator on providing the peak flow diary and asthma information booklet motivates the asthma patient providing

positive encouragement so that he will be able to recognize his abilities that would increase chances for goal achievement.

Thirdly, when individuals observe others succeeding in goal attainment, their belief in themselves increases. So in this study the asthma patients were taught in a group enhancing them to attain positive goals on asthma control as individuals succeed when they observe others.

Health behavior change

This is a component in Bandura's self-efficacy model. Social-cognitive models of health behavior change cast self-efficacy as predictor, mediator, or moderator.²⁹

As a predictor, self-efficacy is supposed to facilitate the forming of behavioral intentions, the development of action plans, and the initiation of action. In this study, the asthma patients were given written action plan. The asthma action plan showed daily treatment, such as what kind of medicines to take and when to take them. This plan described how to control asthma long term and how to handle worsening asthma, or attacks. The plan also explained when to call the doctor or go to the emergency room. Patients were taught on using peak flow meter and recording of peak flow readings in a diary.

As mediator, self-efficacy can help prevent relapse to unhealthy behavior. The asthma patients followed the instructions regarding peak flow monitoring and maintained diary. They also followed the education provided by the investigator from information booklet on how to identify triggers and avoid asthma exacerbations in order to prevent and recognize poor lung function. Patient's self-confidence was raised while they practiced the health measures. Hence they are capable of controlling

their disease. In addition, unhealthy behaviors such as activity limitation, absenteeism in school/ work, asthma flare ups, emergency physician visits and hospitalization, improved sleeplessness and night awakenings and fatigue were prevented.

As a moderator, self-efficacy can support the translation of intentions into action. In this study it refers to the improved health behavior and positive image that the asthma patients developed. Thus they had good asthma control, improved quality of life and well-being having less absenteeism, fewer asthma flare ups, less emergency physician visits and less hospitalization, improved sleep and activity and less night awakenings and less fatigue and less fear.

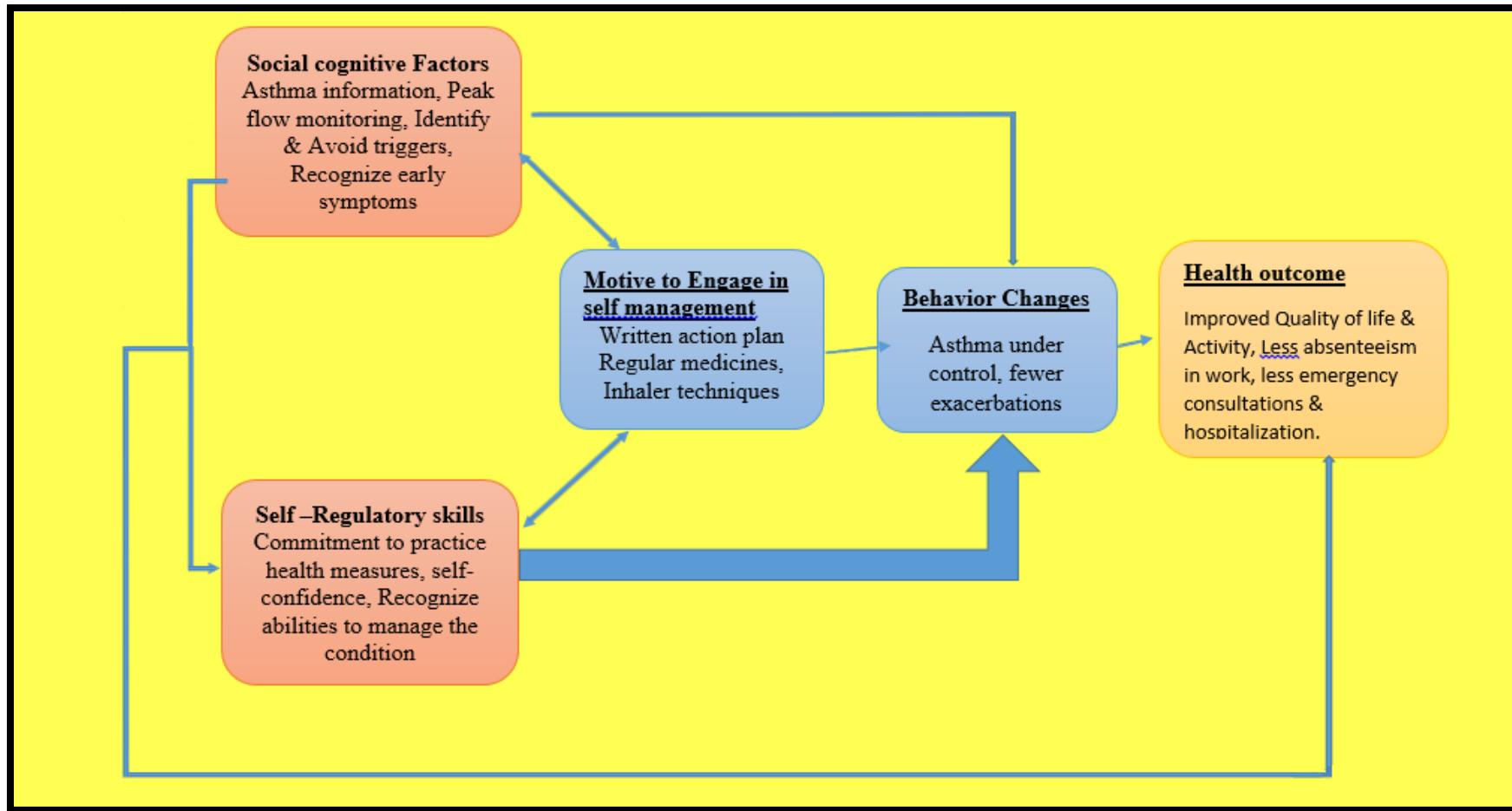


Fig. 1 Conceptual frame work based on Cognitive Theory by Bandura's self-efficacy Model

Summary

This chapter has dealt with the back ground of the study, need for the study, statement of the problem, objectives of the study, operational definitions, null hypothesis, assumptions, delimitations, projected outcome and conceptual frame work.

Chapter -II
Review of Literature

CHAPTER - II

REVIEW OF LITERATURE

The review of literature is a summary of current knowledge about a particular practice problem. A literature review is an organized written presentation of what has been published on a topic by the scholars.

An extensive search of research and non research literature was performed in electronic search engines such as PubMed / Medline, EMBASE, PsychInfo and Cochrane Central Register of Controlled trials for trials / studies reported in English. Also direct searches of specific journals and backward searches through reference lists of related publications were done.

Review of literature for the present study aimed to synthesize existing evidence of studies on various study designs, with a special focus on randomized controlled trials on the use of pharmacologic and non-pharmacologic interventions to manage asthma symptoms and patient's adherence to asthma treatment and written action plan as well as educational intervention for asthmatic patients. The review also focused on peak flow self management intervention in asthma control and quality of life.

Literature reviewed related to the research work and Development of Nursing Evidence Based Practice Protocol was applied. The Nursing Evidence Based Practice Protocol include Nursing Evidence Based Practice question development, PRISMA Flow Diagram, and Individual Evidence Summary.

Review of literature for the present study is also organized under the following headings:

- Prevalence and risk factors of asthma
- Asthma control and management
- Peak flow self management and quality of life
- Online Asthma Information
- Correlation between Asthma symptoms and lung function

Prevalence and risk factors of asthma

Aggarwal et al (2006) estimated the Prevalence and Risk Factors for Bronchial Asthma in Indian Adults. A Multicentre Study was conducted at Chandigarh, Delhi, Kanpur and Bangalore through a two stage stratified urban/ rural sampling and uniform methodology using a previously validated questionnaire on 73605 respondents. Besides demographic data, information on smoking habits, domestic cooking fuel used, atopic symptoms, and family history suggestive of asthma was also collected. Univariate and multivariate logistic regression modelling was performed to calculate odds ratio of various potential risk factors. One or more respiratory symptoms were present in 4.3-10.5% patients. Asthma was diagnosed in 2.28%, 1.69%, 2.05 and 3.47% respondents respectively at Chandigarh, Delhi, Kanpur and Bangalore, with overall prevalence of 2.38%. Female sex, advancing age, residence in urban area, lower socio-economic status, history suggestive of atopy, history of asthma in a first degree relative, and all forms of tobacco smoking were associated with significantly higher odds of having asthma.^{30,31}

Basagaña et al (2004) conducted a study on Socioeconomic Status and Asthma Prevalence in Young Adults of 20-44 years of age in which Asthma prevalence was higher in lower socioeconomic groups, and patients of low

educational levels had a higher risk of asthma. They suggested the role of early-life events such as maternal diet or the fetal and post natal environment is one possibility. Child hood and adult hood obesity, inactivity, and diet are also risk factors for asthma.

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Agrawal et al (2013) estimated the prevalence of self-reported asthma in adult Indians and examined several risk factors influencing disease prevalence. 99, 574 women and 56, 742 men aged 20–49 years were included in India's third National Family Health Survey, 2005–2006. The prevalence of self-reported asthma was 1.8% (95% CI 1.6–2.0) among men and 1.9% (95% CI 1.8–2.0) among women, with higher rates in rural than in urban areas and marked geographic differences. After adjustment for known asthma risk factors, women were 1.2 times more likely to have asthma than men. Daily or weekly consumption of milk or milk products, green leafy vegetables and fruits were associated with a lower asthma risk, whereas consumption of chicken/meat, a lower body mass index (BMI; <16 kg/m², OR 2.08, 95% CI 1.73–2.50) as well as a higher BMI (>30 kg/m², OR 1.67, 95%CI 1.36–2.06), current tobacco smoking (OR 1.30, 95%CI 1.12–1.50) and ever use of alcohol (OR 1.21, 95%CI 1.05–1.39) were associated with an increased asthma risk.³²

Burke et al (2003) conducted a study to assess the Family history as a predictor of asthma risk. Their search identified 33 studies from all geographic regions of the world for review. Family history of asthma in one or more first-degree relatives was consistently identified as a risk factor for asthma. In ten studies, sensitivity and predictive value of a positive Family history of asthma were calculated. Sensitivity ranged from 4%-43%, positive predictive value from 11%-37%, and negative predictive value from 86%-97%. Although a positive Family

history predicts an increased risk of asthma, it identifies a minority of children at risk.³⁴

Ledford et al (2013) conducted a review on Asthma and comorbidities, and it was found that obesity likely affects asthma symptoms and possibly its pathogenesis. Treatment of asymptomatic gastroesophageal reflux does not improve asthma. It was concluded that Evidence-based medicine is lacking as most asthma studies exclude comorbidities; and that additional studies are needed.³⁵

Cerveri et al (2012) conducted a study to investigate changes in smoking habits and their effects on forced expiratory volume in 1 s (FEV₁) in patients with asthma in comparison with the rest of the population, focusing on the healthy smoker effect. Patients were 9092 without asthma and 1045 with asthma at baseline who participated in both the European Community Respiratory Health Survey I (20-44 years old in 1991-1993) and II (1999-2002).

At follow up, smoking was significantly less frequent among patients with asthma than in the rest of the population (26 vs.31%; p<0.001). Patients with asthma who were ex smokers at the beginning of the follow up in the 1990s had the highest mean score (number of reported asthma-like symptoms, range 0-5), probably as a result of healthy smoker effect (2.80 vs. 2.44 in never smokers, 2.19 in quitters and 2.24 in smokers p<0.001). The influence on smoking on (FEV₁) decline did not depend on asthma status. Smokers had the highest proportion of patients with chronic cough/phlegm (p<0.01). One out of 4 patients with asthma continues smoking and reports significantly more chronic cough/phlegm than never smokers and ex-smokers. This stresses the importance of smoking cessation in all patients with asthma, even in those with less severe asthma.³⁶

Saxena T et al (2011) conducted a retrospective study on Mild cool air a risk factor for asthma exacerbations at Mittal Hospital & Research Centre and J. L. N. Medical college hospital at Rajasthan by collecting data for the period of four years from January 2006 to December 2009. This record included symptoms, history of exposure to various risk factors, and PEFR. Environmental data was also collected. On the basis of record monthly attack rate was calculated. Maximum attack rate ($> 90\%$) was found in October, November, early winter and February and March during all the four years studied except in October 2009. A common precipitant present during these months was mild cool air when the environmental temperature of 23-27°. Attack rate was very less above and below of this temperature. No clear association was present with any other known precipitants. It was concluded that inhalation of mild cool air 23-27°C may be an important risk factor besides other risk factors for asthma exacerbation.³⁷

Asthma control and management

Hasegawa et al (2012) conducted a study on Asthma control and management changes in Japan. A questionnaire survey to investigate the changes in asthma control and management for every two-year period using the data from 1998 to 2008. The number of cases surveyed each year was about 3,000 (2,593-3,347 cases). The changes in the data from 1998 to 2008, including asthma attacks and symptoms rate, indicated the improvement of asthma control with the spread of medication according to the guidelines; of particular note, there was a 24.1% increase in the usage rate of inhaled corticosteroids during the study period.³⁸

Andrews et al (2014) conducted a study on Asthma self-management in adults: A review of current literature to establish an understanding of current

published literature on asthma self-management programs in adults and to identify any reported attributes or components which serve to either assist or obstruct the uptake of self-management strategies. Electronic data sources including Scopus, Proquest 5000, CINAHL, PubMed and Web of Science were accessed and literature searches were conducted. Sixty four articles were included in this review due to their relevance to the major components of asthma self management, as defined by the Australian Asthma Management Handbook. A major conclusion from this review was that the uptake of asthma self-management strategies is poor despite global recommendations for over twenty years; and that a likely reason for this is that generic asthma self-management advice does not engage the individual with asthma.³⁹

BoLundbäck and EvaRönmar (2009) conducted a 3-year “real-life” study, during which patients' medication was increased and decreased to achieve sustained asthma control. Patients (282) were randomised to receive treatment with SAL (salmeterol) 50 µg, FP (fluticasone propionate, 250 µg, or SFC (Salmeterol/fluticasone combination) 50/250 µg via a Diskus inhaler, bid. A 12-month double-blind period was followed by a 2-year open phase. The physician increased or decreased patients' medication to achieve and maintain asthma control at regular clinical assessments using criteria based on the asthma treatment guidelines. On completion 73% (168/229) of the patients were receiving SFC to maintain control of their asthma, compared with 21% (49/229) receiving FP and 5% (12/229) receiving SAL. Odds ratio for requiring increased treatment were 2.66 ($p = 0.002$) for patients initially randomised to FP and 9.38 ($p < 0.0001$) SAL, compared with SFC. Time until 25% of patients first required an increase in study medication was 6 months for patients initially treated with SAL compared to 12 months for FP and 21 months for SFC. Symptoms and use of rescue medication improved first, followed rapidly by

PEF with the greatest improvements occurring over the first year. Airway hyper responsiveness continued to improve throughout the study. The majority of patients achieved and maintained control of asthma over a 3-year period with physician-driven medication changes. Patients treated with SFC were more likely to achieve control than patients treated with FP or SAL alone.⁴⁰

Asthma control has been studied in Saudi Arabia. **Al-Jahdali et al** (2008)⁴¹ evaluated asthma control for 1,060 asthmatic patients in five medical centres in Riyadh using Asthma Control Test (ACT) scores. They found that only 5% of surveyed patients had completely controlled asthma, 31% well-controlled and 64% had uncontrolled asthma symptoms. Gender difference in asthma control was evident in this study as only 30% of females had controlled asthma as compared to 44% of male asthmatics. In another study, **Al-Jahdali et al** (2013)⁴² surveyed 450 adult asthmatic patients in two major hospitals in Riyadh and found that 40% of them did not receive any formal education on asthma control. They also reported that about 50% of studied patients were unable to use inhaler devices properly leading to poor asthma control and increased ED visits. Incorrect use of inhalers has been associated with poor asthma control in several studies.^{43,44,45} In another gulf state, Oman, a study by **Al-Busaidi** and **Soriano** (2011)⁴⁶ reported that more than 50% of surveyed patients had poor or not well controlled asthma.

In a retrospective study of more than 100,000 patients with asthma to investigate indicators of asthma control in the US over a 3-year period (2008-2010), **Julia et al** (2014) found that 51% of individuals diagnosed with asthma had at least one exacerbation in the last year, and 46% of asthmatics reported use of a quick-relieve inhaler for asthma symptoms in the last 3 months. Another important finding of this study was that only 22% of asthmatic in the US used long-term control

medications. These results clearly indicate that asthma control in the study sample, and by generalization to the US population, is suboptimal.⁴⁷

Apter et al (2013) studied the association of health literacy to asthma self-management in 284 adult patients and found that higher health literacy was linked to better asthma control and adherence to therapy.⁴⁸ In Canada, asthma was reported to be poorly controlled in 53% of patients.⁴⁹ In Sweden, the proportion of patients who had asthma control was not only low (37%) in 2001, but it did not significantly improve in 2005 (40%).⁵⁰

Rabe et al (2004) conducted a study on World wide severity and control of asthma in children and adults: The global asthma insights and reality surveys. A cross-section of households in 29 countries in North America, Europe, and Asia were surveyed to identify from the general population asthmatic patients with symptoms within the last year or who were taking current asthma medication. A standard questionnaire was administered to 7786 adults, and 3153 children with asthma. Objective and subjective patient perception of asthma control and severity were assessed, including access to medical care, health care use, missed work-school, and medication use.

The current level of asthma control worldwide falls far short of the goals for long-term management in international guidelines. A significant proportion of patients continue to have symptoms and lifestyle restrictions and to require emergency care. The proportion of adult asthmatic patients who were current smokers was also high. However, the use of anti-inflammatory preventative medication, even in patients with severe persistent asthma, was low, ranging from 26% in Western Europe to 9% in Japan, as was the use of objective lung function testing. The correlation between self-

perceived severity of asthma and objective assessment of severity on the basis of GINA criteria was consistently poor in all areas. It was concluded that there is direct evidence for suboptimal asthma control in many patients worldwide, despite the availability of effective therapies, with long-term management falling far short of the goals set in the GINA guidelines.⁵¹

Cazzoletti et al (2007) conducted a study to assess asthma control in several European centers according to the Global Initiative for asthma (GINA) to investigate its determinants. In the European Community Respiratory Health Survey II (1999-2002), 1241 adults with asthma were identified and classified into inhaled corticosteroid (ICS) users and non-ICS users in the last year. Control was assessed in both groups by using the (GINA) proposal (controlled, partly controlled, and uncontrolled asthma), and it was related to potential determinants.

Results were only 15% (95% CI, 12% to 19%) of patients who had used ICSs in the last year and 45 % (95% CI, 41%-50%) of non ICS users had their asthma under control; individuals with uncontrolled asthma accounted for 49% (95%CI, 35%-90%; Italy). Over weight status, chronic cough and phlegm and sensitization to Cladosporium species were associated with poor control in ICS users. About 65% and 87% of ICS users with uncontrolled and partly controlled asthma, respectively, were on a medication regimen that was less than recommended by the GINA guidelines. Six of 7 European asthmatic adults using ICSs in the last year did not achieve good disease control. Majority of poorly controlled asthma were using anti asthma drugs in a suboptimal way.⁵²

Kotwani A and Shendge S (2013) conducted a study on Assessment of Adherence to Inhaled Corticosteroid Treatment for Asthma: A Cross-Sectional Study

from Delhi. The study aims were to (i) evaluate patients' self-reported adherence to ICS therapy, (ii) identify possible reasons for non-adherence, and (iii) identify possible correlations between ICS adherence, medicine beliefs and socio-demographic factors of asthma patients.

Adults with previously diagnosed asthma (n=200) presenting to the emergency room (March 2009–December 2009) of a public chest hospital in Delhi for asthma exacerbation completed an interviewer-administered questionnaire on socio-demographics, clinical history, self-reported adherence, beliefs about causes of disease, medicine beliefs and medication adherence after stabilization of their condition.

The mean duration of registration with the study hospital was 5.4 ± 4.4 years and all were prescribed ICS treatment. Self-report on adherence: 49% took medicines even without symptoms; 91.0% reported they forgot to take their medicine “some or lot of times”; 84.0% avoided medicines “some of the times”. Important reasons for avoiding medicines were no symptoms (59.5%), cost (34.5%), fear of getting dependent (29%), side effects (17%) and social inhibition (14.5%). Correlation between self-reported adherence and demographic factors, such as age, sex, education and income was calculated. The commonly endorsed causes for asthma were pollution (33.5%), poor medical care in the past (15.5%), heredity (8.5%), cold climate (7.5%), and diet (5.5%). Non-adherent behaviors were associated with doubts about the necessity of medication and concerns about its potential side effects with long-term use ($r=-0.299$, $p<0.001$).⁵³

Corsico (2015) and his colleagues conducted an epidemiological study in 12 countries (including USA, UK, Australia and several European countries), to assess

patients adherence to asthma treatment. The study revealed that only 56% of study sample reported adherence to treatment regimen. This study also unveiled two interesting findings about factors related to the issue of adherence. First, negative patient's belief about medications was associated with poor adherence. Second, better patients' follow-up with health-care providers predicts good adherence. The main objective of asthma education programme is to educate patients about his/her asthma medications and clarify common misconceptions about side effects of medications. This, in turn, should improve patient's follow-up with their doctors and their adherence to the prescribed treatment regimens.^{54,55}

In order to help patients follow treatment steps in a standardized manner, the asthma written action plan was introduced as an important component of asthma treatment. Asthma action plan comprises written instructions that help patients understand severity of disease symptoms and act upon the degree of symptoms. According to the National Asthma Council of Australia, the use of written action plan has been found to reduce hospital visits and absenteeism from work.

Douglass et al (2002) interviewed 62 adult patients who visited ED for asthma exacerbation and found that the most common reason for them not to have a written action plan was that their doctors did offer or discuss it with them.⁵⁶

In a randomized controlled trial, **Ducharme et al** (2011) studied the effect of providing a written action plan for 219 children. The experimental group had higher adherence to the treatment regimen and medical follow-up as compared to the group that did not receive asthma action plan.⁵⁷ **Abramson et al** (2001) conducted an interesting research to study contribution of using written action plan to death from asthma. They found that the use of the written action plan was associated with 70% reduction in risk of death.⁵⁸

In Australia, the Centre for Asthma Monitoring reported that in asthmatic patients above 15 years of age, only 14.4% have written asthma control plan. The same centre reported that 88% of south Australian adults with asthma complained of asthma symptoms in 2009.

Horne et al (2002) conducted a study on Self-regulation and Self-management in Asthma: Exploring the Role of Illness Perceptions and Treatment Beliefs in Explaining Non-adherence to Preventer Medication. He evaluated the degree to which variations in reported adherence to preventer medication for asthma could be explained by two sets of beliefs: perceptions of asthma and perceptions of asthma medication (beliefs about its necessity and concerns over its use). It also begins the empirical testing of an extended self-regulatory model, which includes treatment beliefs as well as illness perceptions. Using a cross-sectional design, 100 community-based patients completed validated questionnaires assessing their perceptions of asthma, beliefs about preventer inhalers and reported adherence to them. The findings showed that non-adherent behaviours were associated with doubts about the necessity of medication and concerns about its potential adverse effects and with more negative perceived consequences of illness.⁵⁹

To assess effectiveness of providing education in setting, **Williams et al** (2013) implemented a simple educational intervention for asthmatic patients and their parents during ED visits and found that the group who received an educational session had significant improvement in outpatient follow-up rate (50% vs. 20.8%, $p < 0.001$) as compared with a group of asthmatic children who presented to the ED but did not receive educational intervention.⁶⁰

The interdisciplinary approach of asthma education was assessed by **Walders et al** (2006). They performed a randomized control trial using written

asthma management plan for both study groups. The intervention group received asthma education sessions, asthma risk profile assessment and problem solving therapy to patient's family. Both, experimental and control groups, had significant reduction in asthma symptoms and improved quality of life, but the intervention group showed decreased utilization of medical resources as indicated by 32% reduction in ED or inpatients use of resources. This study showed that involving different health care disciplines in asthma education can be of great benefit to the program.⁶¹

Using a non-traditional approach to teaching during asthma education has been shown to produce positive results. In a randomized control trial, **Watson et al** (2009) compared the effect of small group, interactive asthma education with usual asthma management care as prescribed by patients' primary care physician. Patients who received small group interactive asthma education made fewer ED visits, and the likelihood of requiring emergency care was reduced by 38% (RR 0.62, $p < 0.004$) as compared to the routine care group. Asthma symptoms for patients in the study group and missed work days for their parents were less with comparison to controlgroup.⁶²

Poureslami et al (2012) conducted a randomized Controlled Trial to explore the effectiveness of different formats of culturally relevant information and its impact on asthma patients' self-management within the Punjabi, Mandarin, and Cantonese communities. Using a participatory approach, they developed and tested knowledge and community educational videos (with similar information, but used a different approach, i.e., scientific vs. colloquial) and a pictorial pamphlet. A total of 92 physician-diagnosed adult asthma patients (47 Chinese and 45 Punjabi) were assigned

at random to three experimental groups (watched one or both videos) and one comparison group (read pictorial pamphlet) and participated in three in-person interviews and one telephone interview within a 9-month period. Patients received education on asthma self-management via videos and pamphlet and outcomes, including their knowledge of asthma triggers (environmental-related and behavioral-related triggers) and symptoms; inhaler use skills and patient-reported medication adherence were measured. Knowledge of asthma symptoms, inhaler use, and understanding of physician's instructions improved significantly from pretest to 3 months post-intervention follow-up among all participants. Participants performed significantly better at follow-up than they did at baseline assessment, with the most notable improvements observed in the group that watched both community and knowledge videos.⁶³

Barthwal et al (2009) conducted a non-randomized prospective trial study to assess the impact of optimal asthma education programme on asthma morbidity, inhalation technique and asthma knowledge. Asthma morbidity, (comprising of control of symptoms, unscheduled OPD visits and limitation of physical activities), inhalation technique and asthma knowledge were assessed before and one year after implementation of optimal asthma education programme. One hundred and seventy two patients of persistent bronchial asthma aged 12 years or more, taking daily anti-inflammatory drugs and having not attended any type of asthma education programme before were included in the study. There was significant improvement in asthma morbidity with increase in the number of patients with intermittent and mild persistent asthma and significant decrease in patients with moderate and severe persistent asthma. Before optimal AEP, 30 (17.4%) patients had visited hospital thrice or more

due to asthma sickness, after optimal AEP only 5 (8.6%) patients made unscheduled visits only once to hospital.⁶⁴

Manchana and Mahal (2014) conducted a study to assess the impact of Asthma Education on self care management among Bronchial asthma patients. Objectives were to assess the knowledge on self care management of Bronchial asthma; to develop and administer the Asthma educational intervention on self care management of asthma; and to evaluate the impact of Asthma educational intervention on patient knowledge levels in comparison of pre and post test scores.

Quasi experimental Pre test-post test design was used on thirty patients. Two weeks after administering structured asthma education, post-test was conducted. The Pre-test and Post-test scores were compared to evaluate the effectiveness of the Asthma education. There was significant enhancement on knowledge levels on four areas of assessment and education. After asthma education the knowledge levels on disease process raised from minimum of 10% in the pre test to 77.50% in the post test.

The knowledge scores on asthma triggers and warning signs enhanced 12% to 72%. The area of self monitoring and management records a rise in knowledge levels from 20% minimum scoring in pre test to 82.5% in the post test. The scores in diet, breathing exercises and adherence to drugs rose from 12.5% to 72.5% after asthma education. The findings revealed that educating patients remarkably increased their knowledge levels, which facilitate their behavioral modification thus enhances their self-care.⁶⁵ Effective self care management at home level decreases asthma related morbidity and frequent visit to hospitals.⁶⁵

Osman et al (2002) designed a short (40-60 min) self-management educational programme for 280 asthmatic patients during hospital admission and

found that morbidity after discharge (daytime wheezes, night disturbances and activity limitation) has significantly reduced after implementation of the programme. Also, readmission rate has significantly decreased [17% vs. 27%, odds ratio (OR) 0.5, confidence interval (CI) 0.3 – 1.0] in self-management group when compared to patients on standard care. Because patients differ in important characteristics that could interfere with the learning process, tailoring the programme to address patient's needs, literacy level and culture could produce better outcomes.⁶⁶

Based on this premise, **Thoones et al** (2002) studied the efficacy of tailored versus traditional AEP (Asthma educational programme). The tailored programme was designed based on information needed by asthmatic patients as determined by a panel of experts. The authors reported better patient satisfaction and better interaction between patients and health-care providers when tailored programme was used.⁶⁷

Takemura et al (2010) tested the effect of a structured educational programme on the use of inhalation devices and reported that implementation of the programme for asthmatic patients led to proper use of inhaler devices and better adherence to treatment. In a systematic review of 38 research studies including 7,843 children with asthma, AEP was found to reduce risk for ED visits (RR 0.73) and hospital admissions (RR 0.79).⁶⁸

Martínez-Moragón et al (2014) conducted Multicenter, prospective, observational, cohort study, assessing demographic and clinical factors that have an impact on the quality of life (QoL) of patients with asthma in 40 Spanish Pneumology Units during a 12-month period on 536 patients in Spain. Data on sociodemographic, clinical variables, asthma treatment and QoL were collected in a case report form.

QoL was better for patients from Northern and Central Spain as compared with those from the South and the East ($p < 0.001$), students and employed patients as compared with housewives and unemployed ($p < 0.01$), for those who had received asthma information ($p < 0.01$), for those with milder daytime symptoms ($p < 0.01$) and for patients with higher level of education ($p < 0.05$). Thus it indicates quality of life will be better for who receive asthma information.⁶⁹

Kotwani A and Shendge S (2012) carried out a study to assess the Effect of patient education and standard treatment guidelines on asthma control: an intervention trial. They evaluated the effect of standard treatment guidelines and asthma education programme on asthma control among patients enrolled from a referral health facility of Delhi in India.

Fifty patients who visited the health facility first time for treatment of asthma were enrolled after confirming the diagnosis of asthma by symptoms and reversible spirometry. Patients were interviewed at baseline using three researcher-administered questionnaires - quality of asthma management questionnaire, asthma control questionnaire (ACQ) and asthma knowledge questionnaire (AKQ).

All patients were given pharmacotherapy according to standard treatment guidelines. In addition, every alternate patient was also given a face-to-face educational intervention. Patients were followed up at 2, 4, 8 and 12 weeks. The ACQ was used at each visit, and AKQ was reassessed at the twelfth week. The paired “t” test was used to detect significant changes in various domains of asthma control.

The knowledge of asthma among patients and the care provided by previous health-care providers were found to be poor at baseline assessment. The application of standard treatment guidelines improved asthma control by the second week and the

changes became significant by the fourth week, which persisted till the twelfth week ($p <0.0001$). Educational intervention led to improvements in knowledge in several domains. Improvements in asthma symptoms began earlier among those who had additional educational intervention.⁷⁰

Low health literacy has been identified as an independent predictor of poor asthma control. The Institute of Medicine considers the role of information technology (IT) as critical in providing "safe, effective, patient centered, timely, efficient, and equitable" care with the potential to reduce health disparities in underserved populations.

Peak Flow Self-Management and Quality of Life

Malarvizhi et al (2015) conducted a study on "Effectiveness of Peak Flow Guided Self Management Plan on Asthma Health Outcomes among Patients with Bronchial Asthma. Randomized controlled trial design was used. Interventions given to the group was Self Management plan guided by peak flow measurements that resulted in less number of visits to Outpatient department and days off work. The study concluded that Peak flow guided self management plan reduces the episode of asthma and improves quality of life.⁷¹

Kaya et al (2009) conducted a study on Self-management plans for asthma control and predictors of patient compliance to evaluate the impact of peak flow or symptom-based self-management plans on asthma control and patients' quality of life and to determine the main psychosocial factors that affect compliance with these plans. Of the 63 patients 85% of them had moderately or severely persistent asthma. Personal asthma plans increased optimal asthma control significantly. Emergency visits, antibiotic treatments, systemic corticosteroid treatments, and unscheduled visits

were fewer than the previous year. Control parameters were better in the PFM group. After the self-management education, the quality of life dimensions, i.e., vitality, total mental and general scores of both groups increased. Compliance with the action plans was better in the PFM group. No statistically significant association was found between demographic parameters and the compliance. The study concluded Introduction of self-management plans improved illness control and quality of life in asthma patients.⁷²

Akiyama (2002) in her literature on Self-Management with Peak Expiratory Flow Monitoring—Treatment for Bronchial Asthma—explains that Peak expiratory flow (PEF) monitoring should be considered in patients with moderate to severe asthma, who are older than 5 years of age, have measurable PEF values, and receive medication on a daily basis. In the practical treatment and management of asthma, the PEF monitoring is most effective in cases where step-wise therapy according to asthma severity is applied in long-term management.

The guidelines recommend to determine asthma severity on the basis of symptoms and PEF, and subsequently to select a controller medication for each patient consistent with the severity of the disease. The following two basic strategies are useful for increasing or decreasing the medication dosage: One is the step-up therapy in which treatment is moved to the next step if the disease is not controlled by the current treatment, and the other is the step-down therapy in which the dosage can be reduced if the target of each treatment is achieved and the disease is controlled and confirmed to be stable for at least 3 months.

In these strategies, PEF monitoring serves as an important indicator. The guidelines also recommend the ZONE SYSTEM to detect the earliest possible signs

of asthma exacerbation and start the use of a reliever medication as early as possible.⁷³

Features of asthma severity and control were examined on 500 patients by **Cowie et al** (2007) to determine the extent to which objective measurements, including forced expiratory volume in 1 s and forced expiratory volume in 1 s/forced vital capacity, correlated with other manifestations of the disease. Patients were a consecutive sample of patients with asthma attending a university-based asthma clinic.

All patients underwent routine assessment using a standard questionnaire and spirometry. Their assessment showed that neither symptoms nor history could predict or be predicted by their measurements of lung function. Routine measurement of lung function should be performed on patients with asthma if normal or near-normal lung function is a desired component of asthma control.⁷⁴

Kotwani et al (2012) conducted a study to investigate the quality of asthma management, knowledge about asthma and quality of life in 50 asthma patients referred to a public tertiary care chest hospital in Delhi. Patients were interviewed using three questionnaires on quality of asthma management before visiting referral hospital, asthma knowledge and asthma quality of life (AQLQ). Correlation amongst quality of treatment, asthma quality of life, and asthma knowledge was also determined. Findings revealed that only 60 per cent of patients were informed about their disease, and 10 per cent had undergone lung function tests previously. Only 44 per cent of patients were prescribed inhalers. None were provided with any educational material. Patients had poor knowledge of etiology, pathophysiology,

medication and how to assess the severity of their asthma. The mean scores in AQLQ indicated a moderate degree of impairment in quality of life.⁷⁵

Kotwani et al (2012) conducted a study to investigate the pattern of self-management in asthmatic patients enrolled as out-patients in a tertiary care referral public chest hospital, in Delhi, India. The study population was adult asthma patients (n=200) visiting the emergency room (December 2008-December 2009) of a chest hospital for asthma exacerbation.

The data was collected through a questionnaire regarding the self-management of asthma. Enrolled patients (64.0% female) were registered as asthma out-patients in the study hospital for a mean of 5.4±4.4 years. Patients visiting the emergency room (ER) and having an unscheduled visit to doctor at least twice in the previous 12 months were 86.5% and 91.0%. Patients were classified according to the disease severity as having intermittent (17.0%) or persistent (83.0%) asthma.

Not all patients had metered dose inhalers at home. Only 2.0% of patients were prescribed peak flow meters and were keeping a diary of their readings. With one exception, patients did not have written action plans for treatment provided by doctor or health facility. No statistical difference was found in the pattern of self-management of patients having persistent or intermittent asthma. Adherence to ICS therapy is poor and many factors modulate adherence to therapy. These findings lend preliminary support for an extended self-regulatory model of treatment adherence, which incorporates beliefs about treatment.⁷⁶

McGrath KW (2010) conducted a study on Objective airway monitoring improves asthma control in the cold and flu season: a cluster randomized trial. The

purpose of this study was to improve inhaled corticosteroid (ICS) adherence and asthma control by cueing therapeutic communication between patients with asthma and their primary care clinicians.

They conducted a prospective, cluster-randomized, controlled effectiveness trial to assess the effect of providing visually standardized, interpreted peak flow graphs (CUE intervention) to patients and their clinicians on ICS adherence and asthma control. Asthma control outcomes were analyzed by season to account for seasonal variations in exacerbation frequency.

Intervention patients required fewer courses of oral steroids during winter (9% vs 23%, $p < .001$) and spring (3% and 17%, $p < .001$) compared with control patients. Intervention patients also had fewer periods of worsening symptoms (65% vs 89%, $p < .001$) and fewer urgent care visits (10% vs 23%, $p < .001$) during winter compared with control patients.

Post hoc analysis showed significant improvement in the intervention group with respect to ICS adherence during winter months ($p < .05$), the likely explanation for the reduction in prednisone use and symptoms. Day-to-day peak flow variability in the intervention group fell consistently throughout the study from an average of 32% at baseline to 23% at final measurement ($p < .001$), indicating less airway reactivity over time. Their findings provided evidence of the value of peak flow monitoring for patients with asthma during seasons of greatest vulnerability, the cold/flu season. The peak flow information apparently led to improvements in ICS adherence resulting in less need for prednisone rescue and fewer episodes of worsening symptoms.⁷⁷

McGrath et al (2009) along with the University of California San Francisco conducted a 24-week randomized, controlled trial to determine if individualized instruction in asthma self-management adds significantly to the effects of self monitoring alone on patients' adherence to inhaled corticosteroids (ICSs), medications that can help reduce inflammation in the airway and prevent asthma attacks. In the study, 84 adults with asthma, self-monitored their symptoms and kept a daily log of their peak expiratory air flow. Of that group, 45 patients were randomly selected to receive a personal 30-minute session that included asthma information, personally relevant allergen exposure reduction, a personal action plan, and instruction in the correct use of their inhalers. During the study period, adherence to ICSs was consistently higher in the intervention group compared with the control group.

In addition, participants in the intervention group experienced fewer nighttime awakenings, a marker of asthma control. Intervention participants also used rescue inhalers less frequently, experienced an increased sense of control over their asthma, and had a significant decrease in their levels of tryptase, which is released from cells in the presence of allergens.⁷⁸

Slader et al (2007) conducted a study on Measuring peak flow enhances adherence to monitoring in asthma. Data were obtained from a randomised double blind study of breathing techniques in 57 adults with poorly controlled asthma. Patients were non-smokers aged 19–80 years, using reliever as-needed ≥ 4 times/week and taking inhaled corticosteroids $\geq 200 \mu\text{g}/\text{day}$. The patients used electronic diary spirometers (AM2, Erich Jaeger GmbH, Hoechberg, Germany) twice daily to answer questions about symptom frequency/intensity and treatment.

There were three “PEF periods” during which patients also measured spirometry twice daily. PEF was displayed after each of three maneuvers followed by the highest PEF. At study visits, data were uploaded and reviewed by the research assistant. The adherence to monitoring was higher during PEF periods than non-PEF periods (79% vs. 65%, p<0.0001). Mixed model analysis showed that weekly adherence with monitoring increased by 13% with PEF monitoring (p<0.0001) and by 5% with each 10 years of increasing age (p<0.0001). There was no effect of gender (p=0.80) or time to next/last visit (p=0.59).

In contrast with the perception that PEF monitoring is burdensome to patients, this analysis showed that, with electronic diaries, asking adults to measure PEF significantly improved their adherence with monitoring. While a randomised study would be required to formally evaluate the impact of PEF measurement on adherence with monitoring, this is the first study to assess differences in adherence with monitoring with and without PEF. They used patients as their own controls as they crossed over between periods. Good adherence was also achieved with similar electronic devices, despite the routine nature of the monitoring for assessment of study outcome variables and the absence of physician feedback to patients.⁷⁹

De Asis ML Greene R (2004) conducted a study to analyze the cost-effectiveness of peak flow-based action plans in reducing costs associated with ER visits and hospitalizations due to acute asthma exacerbation in a population of high-risk and high-cost patients, defined as patients with moderate to severe asthma with a history of recent urgent treatment in the ER or hospitalization due to asthma.

A literature review of randomized clinical trials comparing peak flow-based (PFB) action plans, symptom-based (SB) action plans, and usual care/no action plan

(NAP) was performed. Probability values regarding the effectiveness of each alternative (as measured by increase/decrease in ER visits and hospitalizations over a 6-month period) were derived. Incremental cost-effectiveness and cost-benefit ratios were calculated for each alternative. Sensitivity analyses were performed.

For high-risk and high-cost asthma patients, their analysis revealed that the most cost-effective alternative for reducing ER visits was a peak flow-based self-management plan. The peak flow-based self-management program had an incremental cost-effectiveness (C/E) ratio of \$ 60.57 per ER visit averted compared to usual care/NAP and a C/E ratio of \$31.46 compared to the SB-AP. The PFB-AP was also the most cost-effective in reducing asthma hospitalization costs with an incremental C/E ratio of \$300 per hospitalization prevented, compared with usual care and a C/E ratio of \$311, compared to a SB-AP. Cost-effectiveness and cost-benefit analyses revealed that for high-cost patients, a peak flow-based asthma education and self-management plan program is the most cost-effective alternative in reducing costs associated with ER visits and hospitalizations due to asthma exacerbation.⁸⁰

Adams RJ et al (2001) conducted a prospective, randomized controlled trial of 134 adults with moderate-to-severe asthma who did not have evidence of poor perception of bronchoconstriction on histamine challenge testing, who were recruited from inpatients and outpatients of a university teaching hospital. Comparison was made over 12 months of the effectiveness of written action plans using either peak flow monitoring or symptoms to guide management. Patients were contacted at monthly intervals by telephone for reinforcement and evaluation of use of the action plans, and to provide ongoing education. Spirometry and PD20 histamine were measured at 3-monthly intervals. Measures of health care utilization and morbidity

(asthma exacerbations; hospitalizations; emergency department (ED) visits; days absent from work or school due to asthma; medication use and a self-rating of asthma severity) were made monthly. A psychosocial questionnaire (attitudes and beliefs, state-trait anxiety, denial) was given at entry and at 12-months or at withdrawal from the study.

The results showed there were significant improvements for both groups for hospitalizations, ED visits, days off from school or work, and PD20 histamine, but no between-group differences. Appropriate use of action plans was 85% in the symptoms group and 86% in the PFM group. For all patients, those who subsequently had an ED visit had significantly higher levels of denial ($p=0.04$) and lower scores for self-confidence ($p=0.04$), compared to those who did not have an ED visit. Use of written action plans, combined with regular contact to reinforce self-management, improved airway reactivity and reduced health care utilization. Peak flow meters (PFM) continued to be recommended as an important part of asthma self-management plans though it remains unclear if there is an advantage in using PFM in people with moderate-to severe asthma who are not poor perceivers of bronchoconstriction.⁸¹

Correia de Sousa J et al (2013) conducted a study on Asthma control, quality of life, and the role of patient enablement: a cross-sectional observational study assessing asthma severity, medication use, asthma control, and patient enablement in patients with asthma treated in primary care and to study the relationship between these variables and quality of life on 180 patients in an urban clinic in northern Portugal. Data were collected from both clinical records and questionnaires from a random sample of asthma patients. The modified Patient Enablement Instrument, the Asthma Quality of Life Questionnaire, and the Asthma

Control Questionnaire were used. Peak expiratory flow and forced expiratory volume in one second (FEV1) were measured. Receiver operating characteristic curve analysis was performed to establish cut-off values for the quality of life measurements. The associations between enablement, asthma control, and quality of life were tested using logistic regression models.

There was a strong correlation between asthma control and quality of life ($r=0.81$, $p<0.001$). A weak association between patient enablement and asthma control and quality of life was found in the logistic regression models. Poor control of asthma was associated with female gender, concomitant co-morbidities, reduced FEV1, and increased severity of asthma. The weak correlation between enablement and asthma control requires further study to determine if improved enablement can improve asthma outcomes independent of gender, severity, and concomitant co-morbidities. This study confirms the strong correlation between asthma control and quality of life.⁸²

Online Asthma Information

Basyouni et al (2014) conducted a study on Online Health Information Needs for Patients with Asthma in Saudi Arabia. A self-administered questionnaire was administered to 83 asthma patients attending the outpatient pulmonary clinic. Approximately two-thirds of participants who use the Internet have searched for asthma information online. Thirteen percent of the participants reported that the Internet was their main source of information about asthma, and 33.7% reported that the Internet was their favorite additional source of information about asthma.

Seventy-eight percent of the participants were interested in an asthma information Web site in the Arabic language. Employment and higher income were

associated with participants who chose the Internet as the favorite source of additional information about asthma (OR 4.5, 95% CI 1.6–12.7) and (OR 4.2, 95%CI 1.4–12.5), respectively, and an education level higher than high school was associated with participants who previously had looked for online information about asthma (OR 11.2, 95%CI 3.8.6–33.5)⁸³

In the era of computer and mobile technology, some health-care providers and researchers have utilized available technology as means of delivering asthma education. **Burns et al** (2013) pilot-tested web-based asthma self-management programme in 51 adult asthmatic patients and found that this form of delivery increased patients' asthma knowledge, improved asthma control and enhanced quality of life.⁸⁴

Also, interactive smart phone applications have been used to improve communication between asthmatic patients and health care providers. Preliminary studies on using smart phone applications to support asthma action plan showed promising results. It has been reported that patients who used asthma action smart phone applications had better compliance with self-management advice, fewer asthma symptoms and better interaction with health-care providers.^{85,86}

Asthma online treatment In the UK one in 12 adults are affected by asthma. Asthma Inhaler Consultation is available online. The Online Clinic prescribe inhalers to patients where they have been instructed on how to use an inhaler by a doctor in a face to face environment. Start Free Consultation page as well as A-Z list of triggers, please follow the link to [Asthma UK](#) page are also available.

Vargas PA et al (2010) conducted a study to evaluate an interactive computer-based questionnaire to assess asthma symptoms in children of parents with limited health literacy and/or limited English proficiency. A total of 48 parents participated in the study, 26 completed the electronic ASQ and 21 the paper-and-pencil form. Thirty-five percent of the children had well-controlled asthma (n = 17). Most participants were Spanish speaking (67%) Hispanic (n = 44) mothers (n = 43) with a median age of 32 years. More than half had ≤ 8 years of education (n = 25) and earned <\$20,000 per year (n = 27). The median health literacy score was 32 (range 0-36). The correlation between health literacy scores and years of education was significant ($p = .47$, $p < .01$). Concordance between the electronic ASQ and the nurse interview was significantly higher than concordance between the paper ASQ and the nurse interview (68% versus 54%; $p < .01$).

All parents who completed the electronic questionnaire reported being satisfied; 96% felt comfortable using it, and found it simple to use. Thus facilitating the assessment of asthma symptoms at manageable cost, interactive information technology tools may help reduce barriers to access due to inadequate levels of English proficiency and health literacy.⁸⁷

Asthma symptoms and lung function

Dorinsky et al (2001) conducted a retrospective study to determine whether there is a correlation between changes in asthma symptoms during treatment and changes in lung function, as measured by peak expiratory flow on 2890 male and female adolescent and adult patients with persistent asthma. A secondary goal was to compare the relative efficacy (in terms of improvement in asthma symptoms and lung

function) of 3 commonly used asthma treatments: inhaled fluticasone propionate, inhaled salmeterol xinafoate, and oral zafirlukast.

Patients were enrolled in 8 randomized, double-blind, double-dummy, parallel-group studies. Data on patients' self-rated symptoms, PEF, supplemental albuterol use, nighttime awakenings, and frequency of asthma exacerbations were used to ascertain whether there was a correlation between changes in asthma symptoms and changes in pulmonary function, and to compare treatment effects. The study showed that there is a strong correlation between lung function as expressed as peak respiratory flow and symptom management.⁸⁸

Aburuz S et al (2005) examined the relationship between measures of asthma control and lung function in patients with asthma in a cohort of difficult to control asthmatics attending a hospital outpatient clinic. FEV1 % and asthma control scores were measured at first clinic visit and at a follow-up visit. A total of 59 patients took part in the study. At the initial visit, FEV1 % correlated with limitation of activity ($p = 0.002$), shortness of breath ($p = 0.02$), wheezing ($p = 0.029$), and ACS ($p = 0.014$). However, at follow-up, there was no correlation between FEV1 % and any measured index of asthma control. When patients with severe fixed airflow obstruction were excluded from the analysis ($n = 16$), FEV1 % at follow-up became significantly correlated with night waking ($p = 0.02$), wheezing ($p = 0.05$), and ACS ($p = 0.036$).

The improvement in asthma control score at follow-up was significantly and strongly associated ($r = 0.51$ for total asthma control, $p < 0.001$) with the improvement in lung function in patients without severe fixed airflow obstruction. Lung function was not associated with any measure of asthma control in patients with severe fixed airflow obstruction. FEV1 % correlates well with asthma symptoms in

difficult asthma patients with poor control but not when control improves. This loss of relationship is due to patients with severe fixed airflow obstruction where good subjective control does not exclude the presence of significant obstruction.⁸⁹

Hancox et al (2006) explored the associations between respiratory symptoms, lung function, and gastro-esophageal reflux symptoms in a birth cohort of approximately 1000 individuals. They obtained information on respiratory symptoms, asthma, atopy, lung function and airway responsiveness at multiple assessments from childhood to adulthood in an unselected birth cohort of 1037 individuals followed to age 26. Symptoms of gastro-esophageal reflux were recorded at age 26.

Heartburn and acid regurgitation symptoms that were at least "moderately bothersome" at age 26 were significantly associated with asthma (odds ratio = 3.2; 95% confidence interval = 1.6–6.4), wheeze (OR = 3.5; 95% CI = 1.7–7.2), and nocturnal cough (OR = 4.3; 95% CI = 2.1–8.7) independently of body mass index. In women reflux symptoms were also associated with airflow obstruction and a bronchodilator response to salbutamol. Persistent wheezing since childhood, persistence of asthma since teenage years, and airway hyper responsiveness since age 11 were associated with a significantly increased risk of heartburn and acid regurgitation at age 26.⁹⁰

Drs Michael Wechsler and Ted Kaptchuk (2011) led a research team assembling a group of 46 chronic asthma sufferers. On each visit, the patients received 1 of 4 different interventions: an inhaler with albuterol (the standard treatment for relieving sudden asthma symptoms), a placebo inhaler, sham acupuncture or no treatment. The patients received each of these 4 interventions in

random order on different visits. The cycle was then repeated 2 more times for a total of 12 visits.

The researchers assessed how well the treatments worked both objectively and subjectively. The objective test measured how much air the patients could expel from their lungs in 1 second. The subjective test asked the patients to rate their symptom improvement on a scale of 0 to 10. As expected, patients reported symptom relief with the albuterol treatment.

However, they also felt similar improvement when using the placebo inhaler or the sham acupuncture. When the team looked at the maximum air volume that patients could exhale, they found improvement in lung function only when the patients received albuterol. There was no improvement in objective measurements with the other treatments.⁹¹

Development of Nursing Evidence-Based Practice Protocol

For the development of evidence based practice guideline, an extensive systematic review was carried out by the researcher. The electronic data bases and various hand search strategies were adopted for the systematic review. The search engines included were Pubmed Central, Med line, Google Scholar, Science Direct, Cochrane Library and Proquest. All the studies identified through this search were subjected to quality check by using Johns Hopkins evidence Practice Model. The researcher obtained permission from Johns Hopkins University (<https://www.johns-hopkins-education.org>) to use the Johns Hopkins Nursing Evidence Based Practice (JHN EBP) model and tools. (Annexure I)

The Protocol includes the following aspects in this study:

1. Nursing Evidence Based Practice Question Development
2. PRISMA Flow Diagram
3. Individual Evidence Summary

1. Nursing Evidence Based Practice Question Development

What is the problem and why is it important?

This research focuses on introducing peak flow self management plan as asthma patients are suffering from wheezing due to bronchospasm and chest tightness affecting their routine life activities. This research work was undertaken by the investigator to seek evidence as the asthmatics have poor quality of life and decreased productivity due to their prolonged hospitalization and emergency visits.

What is the current practice?

At present, asthma patients across the world widely use pharmacological measures such as corticosteroids and bronchodilators by means of inhalational methods or oral that may cause serious side effects. Some asthmatics may not be aware of correct inhaler techniques and are also steroid resistant that calls for the home management and self monitoring of symptoms.

What is the focus of the problem?

The focus of the problem is both of clinical and educational concern. Reduce the severity of asthma and number of asthma episodes. Patients will be taught on how to identify or recognize the symptoms early by monitoring their lung status so that emergency visits are avoided, reduce hospitalization keeping asthma under control. So they are instructed to practice peak flow self-management of asthma about when to take rescue medications, how to identify and avoid triggers. Thus majority ought to focus through asthma educational / non pharmacological interventions.

How was the problem identified?

The problem was identified by the researcher observed when asthma patients had frequent admissions to hospital and patients visiting to OPD with wheezing and other chest symptoms requiring bronchodilators, corticosteroids with nebulization.

What is the scope of the problem?

In this research work the researcher initially looks at the individual's asthma exacerbations later overcome fatigue, reduce physical and emotional effects such as wheezing, and improve breathing ability having less absenteeism to work or school and better quality of life and well being so that he can lead an active and healthy life.

What are the PICO Components?

P - Population / Patient. Here it is the asthma patients experiencing breathing difficulty and distress related to bronchospasm

I – Intervention. Here peak flow self management plan is the intervention planned.

C – Comparison. A comparison group is also identified who follows regular practices / routines without the given intervention.

O – Outcome – The expected outcome is reduction of chest symptoms and asthma severity and reduced hospitalization related to bronchospasm and is based on peak flow self management plan as an intervention measured by using Asthma Quality of Life Questionnaire (AQLQ) and Well being index (WBI) and level of satisfaction .

2. PRISMA Flow Diagram

PRISMA (Preferred Reporting Items for Systematic Reviews and Meta – Analyses) is an evidence based minimum set of items aimed at helping authors to report a wide array of systematic reviews and meta-analyses that assess the benefits and harms of a health care intervention. PRISMA focuses on ways in which authors can ensure a transparent and complete reporting of this type of research.

The two important components of PRISMA are the PRISMA checklist and the PRISMA flow diagram. In this research work, the researcher used the PRISMA flow diagram to depict the flow of information through the different phases of systematic review. In this research work, PRISMA helped the author mainly focus and improve the reporting of systematic review of randomised controlled trials.

It is further used as a basis for reporting reviews of other types of researches like cross sectional, cohort, case-control studies. Total records collected for the systematic review include 87, out of which 65 were identified through database search and 12 were identified through other searches. Duplicate records were excluded at this stage were 33. The remaining records after undergoing screening for abstract and methodology were 54. Among these 54, 41 were excluded based on the exclusion criteria. The remaining 13 full text articles were assessed for eligibility, out of which 8 full text articles were excluded with reasons. Hence there were 5 studies included for qualitative synthesis / metasynthesis.

PRISMA Flow Diagram depicting the different phases of Systematic Review

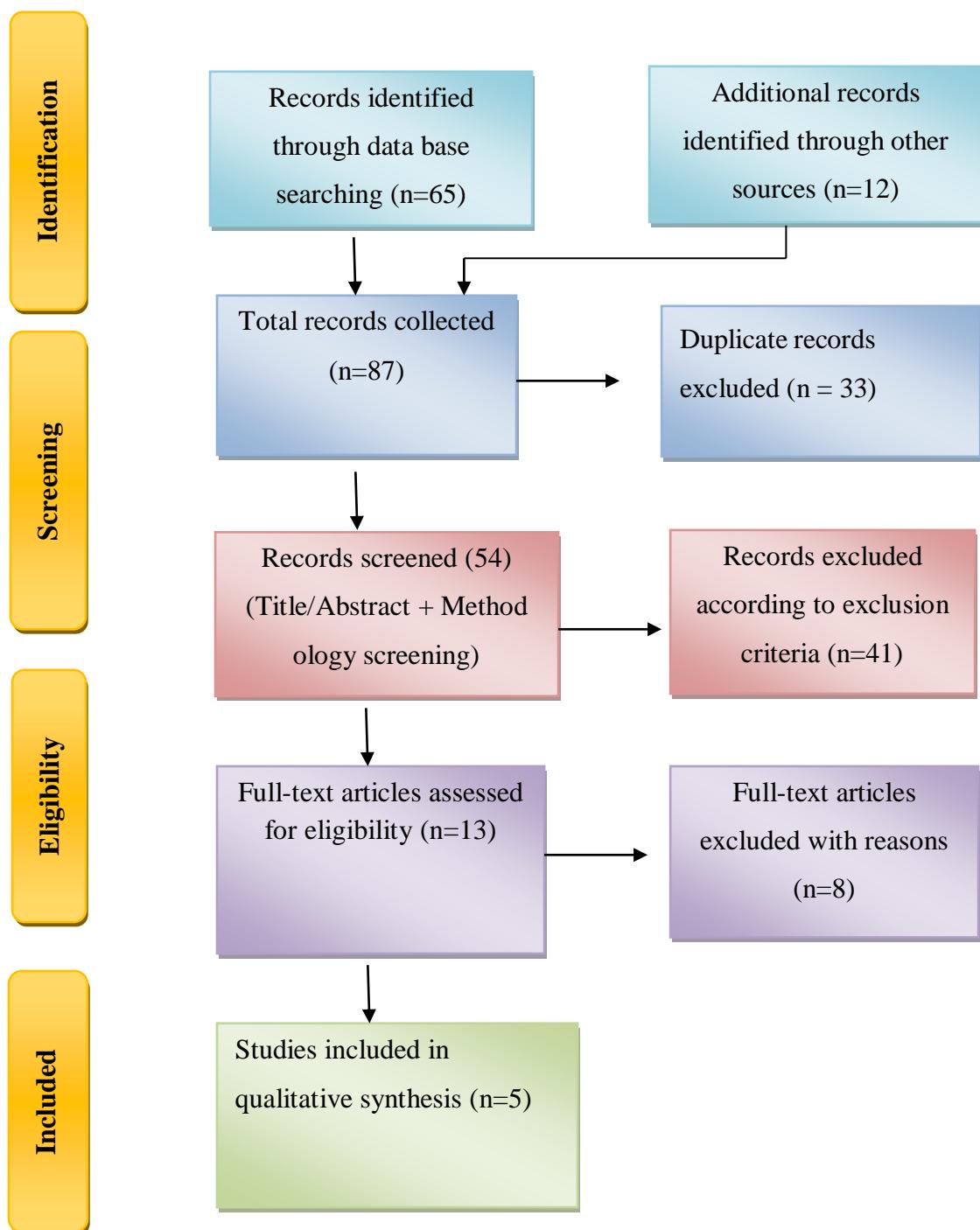


Fig. 2 PRISMA Flow Diagram

EBP Question: Is Peak flow Self management Plan Effective as an Intervention in improving quality of life for Asthma patients

Table.1 Individual Evidence Summary of RCT's based on effectiveness of Peak flow Self management plan upon Quality of life

Article No	Author & Date	Title / Objective	Evidence Type	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
	Malarvizhi et al, (2015)	<p>Title: "Effectiveness of Peak Flow Guided Self Management Plan on Asthma Health Outcomes among Patients with Bronchial Asthma.</p> <p>Objective: to determine the effect of peak flow</p>	Randomized controlled trial design	<p>Sample: Patients with mild to moderate type of asthma</p> <p>Sample size: 60</p> <p>Setting Dept of Chest and TB,OPD</p> <p>Tool used: Diary</p>	<p>The mean number of visits to OPD, days off work were lower. There were no admissions during the data collection period. Peak flow guided self -management plan reduces the episode of asthma and improves quality</p>	Level 1

		Guided Self Management Plan on Asthma Health Outcomes among Patients with Bronchial Asthma		card,pocket size peak flow metre, questionnaire, written instructions on how to monitor PEFR values.	of life	
2	McGrath KW (2010)	Title: Objective airway monitoring improves asthma control in the cold and flu season: a cluster randomized trial. Objective: to assess the effect of providing visually standardized,	Prospective, cluster-randomized, controlled effectiveness trial	Sample: Adults with persistent asthma. Sample size: 139 Study setting: Clinical laboratory Tool used: Asthma-status questionnaire	Intervention patients had fewer periods of worsening symptoms (65% vs 89%, p < .001) and fewer urgent care visits (10% vs 23%, p < .001) during winter compared with control subjects.	Level 1

		interpreted peak flow graphs (CUE intervention) to patients and their clinicians on ICS adherence and asthma control.			The peak flow information apparently led to improvements in ICS adherence resulting in less need for prednisone rescue and fewer episodes of worsening symptoms	
3.	McGrath et.al (2009)	Title: Individualized asthma self-management improves medication adherence and markers of asthma control. Objective: to study the effect of self-management	24 week prospective, RCT	Sample: adults with moderate- severe asthma. Sample size: 84 Setting: Metropolitan community	Intervention group had higher adherence to ICSs than control group. They experienced fewer nighttime awakenings, a marker of asthma control and also used rescue inhalers less	Level 1

		education on long term adherence to ICS and markers of asthma control.		Tool: Daily log diary of their peak expiratory air flow, a personal action plan, asthma information.	frequently.	
4	Adams RJ et al (2001)	Title: A randomized trial of peak-flow and symptom-based action plans in adults with moderate-to-severe asthma Objective: Comparison on effectiveness of written	Prospective, randomized controlled trial (RCT)	Sample: moderate-to-severe asthma. Sample size:134 adults Setting: inpatients and outpatients of a university teaching	There were significant improvements for both groups for hospitalizations, ED visits, days off from school or work, and PD20 histamine, but no between-group differences. Appropriate use of action	Level 1

		action plans using either peak flow monitoring or symptoms to guide management.		hospital. Tool: Psycho social questionnaire, Action plans, Measures of self-rating scale of asthma severity	plans was 85% in the symptoms group and 86% in the PFM group. For all subjects, those who subsequently had an ED visit had significantly higher levels of denial ($p=0.04$) and lower scores for self-confidence ($p=0.04$), compared to those who did not have an ED visit.	
5.	Poureslami. et al, (2012)	Title: Impact of optimal asthma education programme on asthma	Randomized Controlled Trial	Sample: Physician-diagnosed adult asthma patients.	Knowledge of asthma symptoms, inhaler use, and understanding of physician's	Level 1

	<p>morbidity, inhalation technique and asthma knowledge</p> <p>Objective: To explore the effectiveness of different formats of culturally relevant information and its impact on asthma patients' self-management</p>	<p>Sample size: 92</p> <p>Setting: Punjabi, Mandarin, and Cantonese communities.</p> <p>Tool: videos and pamphlet, read pictorial pamphlet,</p>	<p>instructions improved significantly from pretest to 3 months post-intervention follow-up among all participants. Participants performed significantly better at follow-up than they did at baseline assessment, with the most notable improvements observed in the group that watched both community and knowledge videos.</p>	
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Summary

This chapter has dealt with the review of research literature related to the problem stated. It had helped the researcher to understand the importance of education and self management plan for asthma patients. It had helped enabling the investigator to design the study, develop the tool, plan for data collection and to analyze the data. Among 54 sources of literature review collected, 50 were primary sources and 4 were secondary sources of literature data.

Chapter – III
Research Methodology

CHAPTER - III

RESEARCH METHODOLOGY

Methodology indicates the general pattern for organising the procedures for the development of the tool, pilot study, procedures for data collection and plan for data analysis.⁹² Research methodology is the conceptual structure within which the research is conducted.⁹³

The present study was conducted to assess the Effectiveness of Peak flow Self Management Plan on Quality of life for Asthma Patients in Selected Community at Coimbatore.

This chapter describes the aspects like Research approach, Research design, Research variables, Research setting, Population, Samples, Sampling technique, Criteria for sample selection, Development of description of Study instruments, Description of intervention tool, Psychometric properties of study instruments, Intervention protocol, Pilot study, Data collection procedure, Ethical considerations, and Data analysis plan.

Research Approach

The selection of research approach is the basic procedure for the conduct of research inquiry.⁹⁴ A quantitative experimental research approach was used for the present study as it is aimed at assessing the effectiveness of peak flow self management plan among asthma patients on quality of life.

Research Design

A quasi-experimental time series two group pre-test post-test design was adopted for the study. Here both groups were observed before and after introducing the independent variable (intervention).

Groups	Pretest	Intervention	Post test		
			Quality of life		
			2 months	4 months	6 months
Control (n=100)	0 ₁	-	0 ₂	0 ₃	0 ₄
Experimental (n=100)	0 ₁	X	0 ₂	0 ₃	0 ₄

0₁ Observation of quality of life and well being using AQLQ and well being Index at the time of interview before intervention in control and experimental group of asthma patients.

X – Intervention was peak flow self management (information on asthma)

0₂ - Observation of quality of life and well being using AQLQ and well being Index at the end of 2 months in control and experimental group of asthma patients.

0₃ - Observation of quality of life and well being using AQLQ and well being Index at the end of 4 months in control and experimental group of asthma patients.

0₄ - Observation of quality of life and well being using AQLQ and WB Index at the end of 6 months in control and experimental group of asthma patients.

In order to assess the effectiveness of nursing intervention on peak flow self management, quality of life and well being were observed using AQLQ and general well being Index at the time of interview before intervention in control and experimental group of asthma patients.

Then after giving intervention only for experimental group, quality of life and general well being was observed using AQLQ and general well being Index at the interval of two months interval for over a period of six months for both control and experimental group of asthma patients.

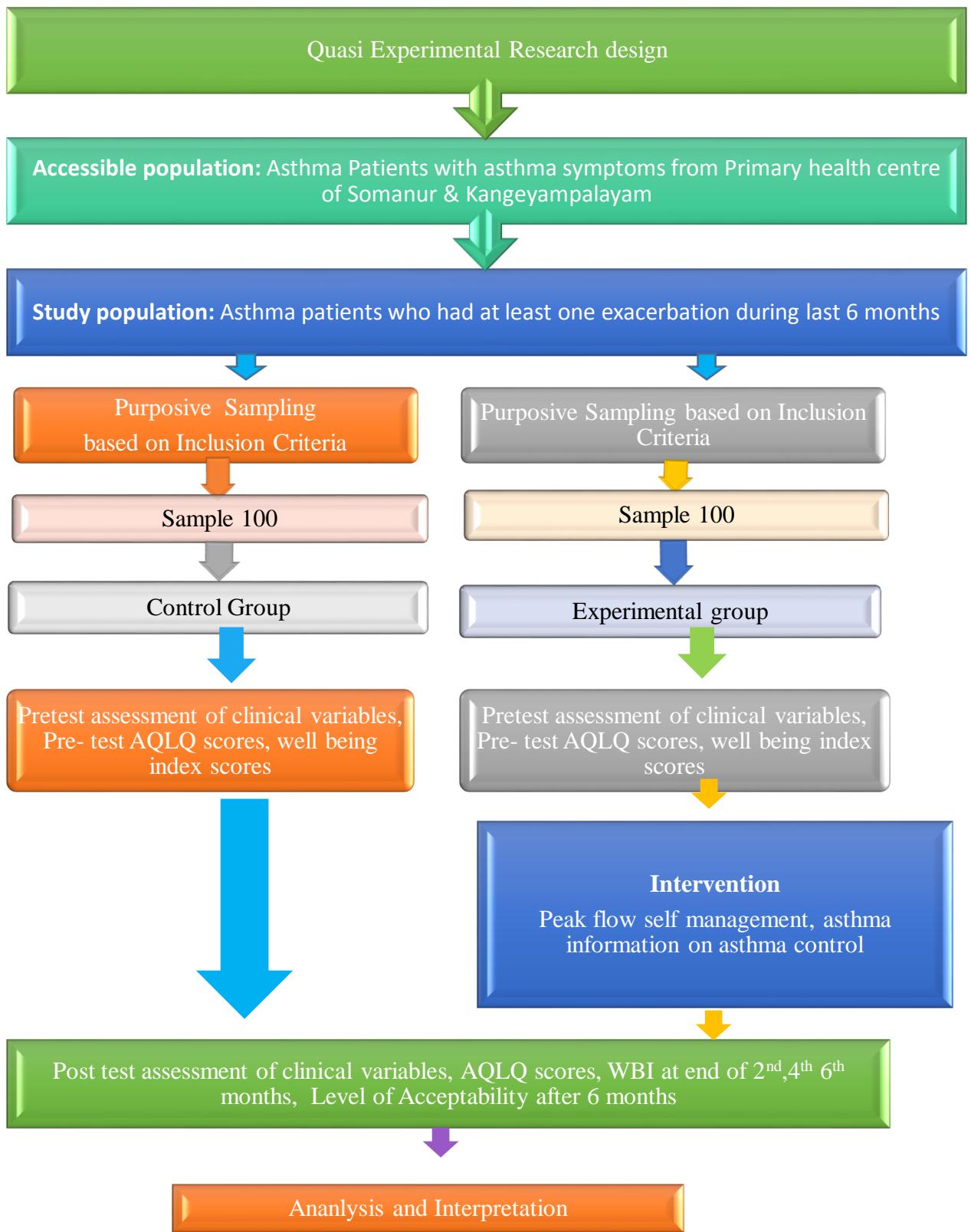


Fig.3 Schematic Representation of Research Design

Research Variables

Variables are phenomena or characteristics that are measured, manipulated and controlled in a research.

Independent Variable

An independent variable is the variable that is changed or controlled in a scientific experiment to test the effects on the dependent variable. In this study, the independent variables includes peak flow self monitoring taught to the patients in addition to the education on asthma for the patients who are clinically diagnosed as asthma.

Dependent Variables

A dependent variable is what the researcher is able to measure in the experiment and what is affected during the experiment or research study. In this study, the dependent variables are the quality of life, well-being and symptoms of asthma patients.

Attribute Variables

It includes the demographic variables such as age in years, gender, education, occupation, marital status, income, residence, type of family and presence of industry near home and the clinical variables such as smoking habit, duration of asthma, family history of asthma, presence of co-morbid illness, severity of asthma, type of cooking fuel used, number of days absent from work or college, medications used, frequency of experiencing asthma symptoms, whether used peak flow meter and

products of allergies which has influence on asthma symptoms of patients diagnosed with asthma.

Research Setting

The study was conducted at the Somanur Primary health centre (PHC) and kangeyampalayam subcentre situated at Coimbatore District. These rural healthcare centres are maintained by the State Government. Somanur PHC has a population of 1,30,000 covering 14 villages such as Annur, Sulur 9-km, Karumathampatty-3km, Thekkalur and Kangeyampalayam 6 km. it is equipped with 180 bedded inpatient health care facilities and 7000 out patients regularly visits the physician. The average number of asthma out-patients range from 250-300 and 50-75 respectively in each centre in a month.

Population

Population is the entire aggregation of patients with similar characteristics and on whom the researcher would generalize the study findings.

Target Population

It is the entire group of all the elements, individuals or objects that meet certain criteria for inclusion in order to make generalization. The target population for the present study was 200 patients who had symptoms of Asthma during last 6 months and were clinically diagnosed.

Accessible Population

It refers to the aggregate of patient with whom the designated criteria are confirmed and accessible population was all adults who were asthmatic residing in

somanur and asthmatics who were available at Somanur PHC during the study were selected for the study.

Sample

Sample is a subset of population selected to participate in a research study. In this study, Sample consisted of asthma patients with asthma symptoms who fulfil the inclusion criteria and are permanent residents of the selected community areas and primary health centers of Somanur at Coimbatore district.

Estimating Sample Size

Determination of the optimal sample size for the study assures an adequate power for detection of statistical significance. The sample sizes, which were required for this main study was calculated through online calculators on the basis of pilot study data.

The following statistics were fed in to the online calculator. The sample size was estimated based on the two scales namely Asthma Quality of Life Questionnaire and Well-Being Index. The type I error was $\alpha=0.05$ and type II error $\beta=0.20$. The standard deviation of them were 2.3 and 2.7 respectively. The power of the study was 80% of clinically diagnosed cases of 200 asthma patients. The number of patients required for Asthma Quality of Life Questionnaire =85 and Well-Being Index=117. By taking the average of the two scales, the required sample size is 101. Thus the sample size was arrived at 100 per group. The study will be Type I error $\alpha=0.05$ and Type II error $\beta= 0.20$. The power of the study will be 0.80 ($1-0.20=0.80$) or 80% and the effect size will be 0.7.

Sample Size

With the estimation of 202 asthma patients, 200 were selected for the study who fulfilled the inclusive criteria and were present during the study. Though the study planned to include 202 samples, at the time of data collection, some asthma patients were acutely ill or with co morbidity who could not be included to produce the data.

Sampling Technique

Purposive sampling technique was used in this study. Researcher identified the samples with the help of OPD nurse and patients' records. Patients who met the inclusion criteria were included in the study. Selected samples were assigned to either control or experimental group alternatively using odd and even number.

Sampling Criteria

Inclusion Criteria

- Only respondents with current asthma who can follow the instructions were included in the study.
- Patients with a history of clinically diagnosed asthma were studied.
- Patients of 20 - 70 years of age with at least one documented exacerbation of their asthma in the previous 6 months which required contact with a doctor/nurse.
- Patients who were willing to use peak flow metre.

Exclusion Criteria

- Patients with co-existing cardiac or other respiratory ailments.
- Patients who were not willing to participate in the study.

Development of the Study Instruments

The following instruments were used for data collection.

- Demographic Variable Proforma
- Clinical Variable Proforma
- Asthma Quality of Life Questionnaire (AQLQ)
- WHO Well being Index (1998 version)
- Observation schedules: Peak flow graph, peak flow diary
- Level of Acceptability for Peak flow Self management
- Asthma education booklet

Demographic Variable Proforma

It was developed by the researcher to assess the following demographic characteristics: Age in years, gender, education, occupation, marital status, Income, residence, type of family and presence of industry near home.

Clinical Variable Proforma

It includes smoking habit, duration of asthma, family history of asthma, presence of co morbid illness, severity of asthma, date of consulting physician,

medical diagnosis, type of cooking fuel used, number of days absent from work or college, medications used, frequency of experiencing asthma symptoms, whether used peak flow metre and products of allergies.

Asthma Quality of Life Questionnaire (AQLQ)

It is a standardized, widely used instrument to assess the quality of life in asthma patients. The AQLQ was developed to measure the functional problems (physical, emotional, social and occupational) that are most troublesome to adults (17-70) years with asthma.⁹⁵ The Tamil and English version were used. There are 32 items in AQLQ and are divided into the following four domains— symptoms (12 items), activity limitations (11 items), emotional function (5 items) and environmental stimuli (4 items). Patients responded to each item on a seven-point scale by recollecting their experiences during the previous two weeks.

The overall AQLQ score is the mean of all 32 responses and the individual domain scores are the means of the items in those domains. Each domain score ranges from 1 to 7 representing the greatest impairment possible or most of the time and 7 represents the least or none of the time.^{96,97} Total obtainable score is 32-224.

WHO's General Well being Index (1998 version)

The WHO-5 is a short questionnaire consisting of 5 simple and non-invasive questions, which tap into the subjective well-being of the respondents. The scale has adequate validity both as a screening tool for depression and as an outcome measure in clinical trials and has been applied successfully across a wide range of study fields.

This is also a standardized tool developed by World Health Organization and is mainly concerned for emotional aspects of patients. It has 5 statements on a 6 point

scale (5=All of the time, 0= At no time). It measures the well being of the individual.

The higher the scores, the better the well-being.⁹⁸

Scoring of WHO Well being Index: The raw score is calculated by totaling the figures of the five answers. The raw score ranges from 0 to 25, 0 representing worst possible and 25 representing best possible quality of life.

To obtain a percentage score ranging from 0 to 100, the raw score is multiplied by 4. A percentage score of 0 represents worst possible, whereas a score of 100 represents best possible quality of life.

Translation of the WHO Well being Index Tool. Translated version of the Tool from English to Tamil was used from the study conducted by Dr. Latha Venkatesan, Principal, Apollo College of Nursing, Chennai with her Permission.⁹⁹

Observation schedules

Peak flow graph, peak flow diary: This Peak flow tool is made to be used by the asthma patients where by they can mark the readings of peak flow meter every day morning and evening then plotted in the peak flow graph.

Level of Acceptability for Peak flow Self Management: This is a four-point likert scale developed and used by the investigator to evaluate and measure the acceptability for the experimental group. The scale consisted of 10 items regarding the asthma information and intervention provided to asthma patients. The respondents indicated their level of agreement or disagreement scoring the items on the scale.

Scoring: The scale consists of responses marked as Highly Acceptable, Acceptable, un acceptable, and Highly Unacceptable. The responses were quantamized as 4,3,2,1, scores respectively. The raw score is calculated by totaling the figures of the ten

answers. The raw score ranges from 1 to 40. The level of acceptability was interpreted after the scores were converted into percentage and classified as follows:

Highly Acceptable – 76-100%

Acceptable – 51-75%

Unacceptable – 26-50%

Highly unacceptable – 0-25%

Asthma Information booklet The booklet consists of the information regarding what is asthma, Anatomy and function of Lungs, Symptoms of inflammation in chronic and moderate, and severe asthma, Controlling Triggers of Irritants such as smoke, smog, allergens, dust mites, molds, pets, pollen, cockroaches, weather, colds, flu, and sinus infections, food additives, medications, Emotion, Exercise and Asthma medications.^{100,101} (Annexure - P)

Psychometric Properties of the Instruments

Content Validity

Validity refers to how well an instrument measures what it is intended to measure. In general, validity is an indication of how sound one's research is. So content validity of instruments were obtained.

Tools were constructed by the researcher to assess the demographic variables, clinical variables and level of acceptability of the asthma patients. Standardized tools like Asthma Quality of Life Questionnaire (AQLQ) and Well being index were used in this study. The constructed tools were given to experts for content validity.

Opinions and suggestions were obtained from the experts in the field of chest medicine, adult health and geriatric nursing, medical and surgical nursing, physiotherapist and biostatistics.

The AQLQ is very responsive to within-patient change over time. This is the property that is needed both in clinical practice and in clinical trials. Extensive construct validity studies (both cross-sectional and longitudinal) have shown that the AQLQ correlates appropriately with other measures of clinical asthma status and generic health status. Studies have built up very strong evidence that the AQLQ really does measure the health-related quality of life of adults with asthma.^{102,103}

WHO well being index 1998 version's validity: The scale was sufficiently homogeneous (Loevinger's coefficient: version 1=0.38, version 2=0.47; Mokken coefficient τ ; 0.3 in nearly all items).¹⁰⁴

Reliability

Reliability is concerned with how consistently and accurately the measurement technique measured the concept of interest. In this study, the reliability of the tools used are as follow.

S.No.	Tool	Method	R
1.	AQLQ(Over all & Domain wise)	Intra class correlation	0.95, 0.71
2.	WHO Well being Index (Tamil version)	Cronbach-alpha	0.92
	WHO Well being Index (English version)	Cronbach-alpha	0.90
3.	Satisfaction scale on Level of acceptability of peak flow monitoring	Test Re test	0.74

Ethical Considerations

- The study was conducted after obtaining the ethical approval from Institutional Ethics Committee, Apollo Hospitals, Chennai.
- Formal written Permission was obtained from the Office of Directorate of Public Health and Deputy Director of Health Services, Coimbatore and the copy of the letters were submitted to the Medical Officers of the concerned PHCs.
- Adequate explanation was given regarding intervention and purpose of the study for the experimental group of asthma patients.
- The informed verbal and written consent was obtained from the asthma patients for acceptance of the peak flow self management and their willingness. Confidentiality was maintained throughout the study.

Intervention Protocol

The peak flow self monitoring intervention was designed by the investigator to evaluate the lung status or function of asthma patients. Peak Expiratory Flow Rate (PEFR) is a simple indicator of ventilatory function. Peak flow metre was used to measure how fast one can push air out of his lungs. As per National Asthma Education and Prevention Program (2007), periodic assessment of pulmonary function by peak flow rate monitoring was intervened for asthma patients. Peak flow rate monitoring and a written asthma action plan as well as information booklet was used. The instructions for peak flow usage were as follow:

Step 1.

- Move the marker in the peak flow metre to 0 or to the lowest number on the scale.
- Stand up. If you can't stand, sit up straight in a chair. Be sure you're in the same position each time.

Step 2. Take a deep breath. Fill your lungs all the way.

- While holding your breath, put the mouthpiece of the meter between your teeth. Close your lips tightly around it, making a tight seal around the mouthpiece. Be sure your tongue does not block the hole.
- Blow into the mouthpiece once, as hard and fast as you can. Your peak flow meter will measure how fast you can blow air out.
- Take the meter out of your mouth.
- Check where the marker has moved to on the numbered scale. Write this number down.

Step 3: Move the marker back to 0. Repeat the above steps 2 more times.

- Write down the highest of the three numbers. This is your peak flow number.

Color zones of Peak flow metre.

Zone	Reading	Description
Green Zone	80 to 100 percent of the usual or normal peak flow readings are clear.	A peak flow reading in the green zone indicates that the asthma is under good control. Peak flow reading is above 460-600 EU
Yellow Zone	50 to 79 percent of the usual or normal peak flow readings	Indicates caution. It may mean respiratory airways are narrowing and additional medication may be required. Peak flow reading is between 287-460 EU
Red Zone	Less than 50 percent of the usual or normal peak flow readings	Indicates a medical emergency. Severe airway narrowing may be occurring and immediate action needs to be taken. This would usually involve contacting a doctor or hospital. Peak flow reading is only upto 2 EU

An asthma action plan (also called a management plan) is a written plan that was developed to help control patients' asthma.¹⁵ The asthma action plan showed daily treatment, such as what kind of medicines to take and when to take them. This plan describes how to control asthma long term and how to handle worsening asthma, or attacks. The plan explained when to call the doctor or go to the emergency room. The asthma booklet consisted of the information regarding what is asthma, Anatomy and function of Lungs, Symptoms of inflammation in chronic and moderate, and severe asthma, Controlling Triggers of Irritants such as smoke, smog, allergens, dust

mites, molds, pets, pollen, cockroaches, weather, colds, flu, and sinus infections, food additives, medications, Emotion, Exercise and Asthma medications and peak flow instructions.^{99,100}

Pilot Study

A pilot study was conducted during the month of September 2015 to November 2015 to find the feasibility of the study and appropriateness of the research tools among 20 asthma patients. It was noted that some patients needed help in explaining the questionnaire. Thus the investigator made a point to help them in answering the questions and discussing with group regarding asthma information booklet as well as training them on using peak flow meter. Overall study was feasible and there was no confusion or ambiguity about the tools.

Data Collection Procedure

With the support of multi-purpose health care workers, staff nurses of PHC, the researcher proceeded with the data collection. The data were collected in four phases.

- **Phase I:** Purpose of the study was explained and informed oral consent were obtained from the study participants. Pre test was conducted using the tools such as the baseline data of demographic variables, clinical variables, and the questions related to Symptoms, Activity limitation, Emotional function and Environmental stimuli using Asthma quality of life questionnaire (AQLQ) were assessed for both Control and Experimental group through interview method.

Selected samples were randomized using odd and even method (alternate samples). Control group patients were given routine treatment. Experimental group patients were made to gather in a separate room and the investigator explained about asthma home care and peak flow instructions.

- **Phase II:** Peak flow Self management Plan along with written Asthma Action Plan was implemented for experimental of asthma patients. Information booklet was also provided by the researcher followed by which the patients were instructed to perform the peak flow monitoring and to note down the readings of peak flow in peak flow diary for 6 months. The investigator has obtained the list of mobile numbers and their address of all the samples for follow up.
- **Phase III:** Each day the investigator reminded the patients through phone to enter the readings two times and every two weeks supervision was done. At the end of every two months quality of life and well being (Post test I, II, III) were assessed for six months at their home.
- **Phase IV:** The level of acceptability was assessed only for experimental group of asthma patients using level of acceptability scale and the study was concluded.

Plan for Data Analysis

The plan for data analysis is as follows:

Data analysis is the evaluation of information and its pertinence to the study variables. The data obtained was analysed using both descriptive and inferential

statistics based on the objectives and hypotheses of study. The computed data was entered and analysed in SPSS-20.

- Baseline proforma containing sample characteristics was analysed using frequency and percentage.
- The quality of life and well being before and after administration of peak flow self management was calculated using descriptive statistics like mean and standard deviation.
- The effectiveness of peak flow self management was analysed by independent and paired “t” test and ANOVA for finding the significant difference in quality of life between and within control and experimental group of asthma patients.
- The domain wise relationships of experimental and control groups were computed by Karl Pearson product moment correlation methods.
- Association between quality of life and selected variables was analysed by Chi-square test

Summary

Research Methodology is the blue print or overall plan of the entire process of tackling the research problem in a systematic and scientific manner. This chapter has dealt with description about Research approach, research design, Research variables, Research setting, Population, Sample, Sampling technique, Development of Study

instruments, Psychometric properties of study instruments, Intervention protocol, Pilot study, Data collection procedure, Ethical considerations, and Data analysis plan.

Chapter – IV
Analysis and Interpretation

CHAPTER - IV

DATA ANALYSIS AND INTERPRETATION

Data were coded and analyzed using IBM SPSS-20 statistical package. The variables namely Asthma Quality of Life Questionnaire (AQL) and Well Being Index (WBI) of the study patients were analyzed and interpreted. Appropriate statistical methods were used based on the objectives and hypotheses of the study.

Descriptive Statistics used were Frequency, Percentage, Mean and Standard deviation. The discreet variables like demographic and clinical were analyzed and interpreted by χ^2 (Chi-square) test for their homogeneity. The continuous variables (AQLQ and WBI) were interpreted by appropriate parametric tests and the discrete variables were interpreted by appropriate non parametric tests. In this study the parametric tests such as Student “t” test viz. Paired and Unpaired and ANOVA were applied.

The domain wise relationships between the experimental and control groups were computed by Karl Pearson product moment correlation methods. The non-parametric χ^2 (Chi- squared) tests were utilized to analyze the association between selected demographic variables and clinical variables with the pre-test scores of AQLQ and Well being index. The p-values less than or equal to 0.05 ($p \leq 0.05$) were fixed as level of statistical significance.

Organization of Study Findings

The substantive summary of the data analysis is organized under the following sections.

Section I: Description of Demographic and Clinical Variables of Control and Experimental group of Asthma patients.

Section II: Mean, Standard Deviation and “t” values of AQLQ and Well being Index showing the Effectiveness of peak flow self management plan in improving the Quality of Life within and between groups among control and experimental group of asthma patients.

Section III: Pre and Post test Assessment of Domain Wise Asthma Quality of Life Questionnaire (AQLQ) and category wise AQLQ and Well being Index in Control and Experimental group of Asthma patients.

Section IV: Test of ANOVA in Control and Experimental readings from Pre test to Post test I to III

Section V: Assessment of Level of Acceptability of Peak flow Intervention among Experimental group of Asthma patients.

Section VI: Assessment of Correlation between Quality of life and its Domains in Control and Experimental group.

Section VII: Association between quality of life of Asthma patients with their Selected Demographic Variables and Clinical Variables.

Section I: Description of Demographic and Clinical variables of Control and Experimental group of Asthma patients with regard to Homogeneity.

Table-2: Frequency and Percentage Distribution and Homogeneity of Demographic variables in Control and Experimental group of Asthma Patients.

Demographic variables	Categories	Control group (n=100)		Experimental group (n=100)		χ^2	p value
		f	%	f	%		
Age (Years)	20-39	21	21.0	18	18.0	$\chi^2 = 0.35$ df=2	p=0.84
	40-59	37	37.0	40	40.0		
	≥ 60	42	42.0	42	42.0		
Gender	Male	54	54.0	72	72.0	$\chi^2 = 6.95$ df=1	p=0.01
	Female	46	46.0	28	28.0		
Educational status	No formal	14	14.0	13	13.0	$\chi^2 = 1.77$ df=4	p=0.78
	Primary	23	23.0	21	21.0		
	High School	24	24.0	21	21.0		
	Hr.Sec	19	19.0	17	17.0		
	Degree	20	20.0	28	28.0		
Occupational status	Cooly	26	26.0	28	28.0	$\chi^2 = 0.79$ df=3	p=0.77
	Unskilled	42	42.0	37	37.0		
	Skilled	21	21.0	25	25.0		
	Professional	11	11.0	10	10.0		
Marital status	Married	57	57.0	66	66.0	$\chi^2 = 6.25$ df=3	p=0.1.00
	Un married	27	27.0	13	13.0		
	Widowed	11	11.0	14	14.0		
	Divorced	5	5.0	7	7.0		
Monthly family income (000)	<5	11	11.0	9	9.0	$\chi^2 = 6.25$ df=4	p=0.78
	5-10	44	44.0	41	41.0		
	10-15	29	29.0	32	32.0		
	15-20	11	11.0	15	15.0		
	≥ 20	5	5.0	3	3.0		
Residence	Rural	69	69.0	74	74.0	$\chi^2 = 0.61$ df=1	p=0.43
	Urban	31	31.0	26	26.0		

Type of family	Joint	84	84.0	79	79.0	$\chi^2 = 0.83$	p=0.36
	Nuclear	16	16	21	21	df=1	

Table 2 reveals that majority of the asthma patients were males (54%,72%), married (57%,66%), from rural back ground (69,74), from joint family (84%,79%) in control group and experimental group respectively. Considerable percentage of them were above 60 age years (42%,42%), were unskilled workers (42%,37%) with monthly family income of Rs.5001 - 10,000 (44%,41%) and had degree education (20%,28%), in control group and experimental group respectively.

The above table-2 also describes the homogeneity of control and experimental groups according to their demographic profiles. Except gender all other demographic variables such as age, education, occupation, marital status, monthly income, residence and type of family were not statistically significantly differed ($p>0.05$). The two groups were homogeneous groups and they were comparable groups in respect of their demographic characteristics.

Table-3: Frequency and Percentage Distribution and Homogeneity of Clinical variables in Control and Experimental groups of Asthma Patients.

Clinical variables	Components	Control group (n=100)		Experimental group (n=100)		χ^2 & df	p value
		f	%	f	%		
Last consultation	1 st day	16	16.0	18	18.0	$\chi^2 = 5.00$ df=3	p=0.61
	2-7 days back	9	9.0	19	19.0		
	8-15 days back	17	17.0	12	12.0		
	1 month back	58	58.0	51	51.0		
Industries around	Yes	81	81.0	77	77.0	$\chi^2 = 0.49$ df=1	p=0.49
	No	19	19.0	23	23.0		
Cooking fuel	Wood	23	23.0	16	16.0	$\chi^2 = 4.05$ df=2	p=0.07
	Cow dung	6	6.0	2	2.0		
	LPG	71	71.0	82	82.0		
Abstain from work	Lost no	43	43.0	38	38.0	$\chi^2 = 1.18$ df=4	p=0.76
	1-2 weeks	20	20.0	18	18.0		
	2-4 weeks	21	21.0	23	23.0		
	>5 weeks	9	9.0	12	12.0		
	Unable	7	7.0	9	9.0		
Medication	Budamate	3	3.0	5	5.0	$\chi^2 = 0.68$ df=3	p=0.88
	Salbutamol	41	41.0	42	42.0		
	Deriphyline	27	27.0	27	27.0		
	Any other	29	29.0	26	26.0		
Smoking	No	61	61.0	48	48.0	$\chi^2 = 3.41$ df=1	p=0.07
	Yes	39	39.0	52	52.0		
Family history	1 st degree	67	67.0	72	72.0	$\chi^2 = 0.59$ df=1	p=0.44
	No 1 st degree relative	33	33.	28	28.0		
Duration of Asthma	< 6 months	14	14.0	8	8.0	$\chi^2 = 5.72$ df=3	p=0.34
	6-12 months	21	21.0	32	32.0		
	1-5 years	35	35.0	39	39.0		

	>5 years	30	30.0	21	21.0		
Asthma severity	Mild	34	34.0	27	27.0	$\chi^2 = 5.26$ df=2	p=0.28
	Moderate	49	49.0	64	64.0		
	Severe	17	17.0	9	9.0		
Co-morbidity present	Diabetes	19	19.0	14	14.0	$\chi^2 = 3.06$ df=4	p=0.38
	Hypertension	16	16.0	16	16.0		
	Bone	3	3.0	2	2.0		
	Gastric	16	16.0	11	11.0		
	Nil	46	46.0	57	57.0		
Allergy	Pets	8	8.0	12	12.0	$\chi^2 = 7.63$ df=5	p=0.30
	Dust	13	13.0	5	5.0		
	Pollen	19	19.0	11	11.0		
	Smokes	14	14.0	17	17.0		
	Fumes	6	6.0	8	8.0		
	Cold air	40	40.0	47	47.0		
Use of Peak flow metre	Yes	23	23.0	6	6.0	$\chi^2 = 11.66$ df=1	p=0.00
	No	77	77.0	94	94.0		

Table 3 depicts that majority of the asthma patients had industry around home (81%, 77%), used LPG Gas for cooking (71%,82%), used no peak flow metre (77%, 94%), had family history of first degree relative with asthma (67%,72%), had no habit of smoking (61%, 48%), with moderate asthma (49%,64%), had consultation with physician one month back (58%,51%) and had no presence of co-morbid illness (46%,57%). Considerable percentage of them had no absenteeism in work or school (43%, 38%), used Salbutamol medication (41%, 42%), with history of asthma for 1-5 years (35%,39%) and allergy to cold air (40%,47%) in control group and experimental group respectively.

The above table -3 also describes the homogeneity between the groups in respect of their clinical variables. All other clinical variables namely Last consultancy, Industries around the house, Cooking fuel, Abstain from work, Medication, Smoking habits, Family history, Duration of Asthma, Asthma severity, Co-morbidity present and Allergy were not statistically differed between the groups ($p>0.05$).

Section II: Mean, Standard Deviation and “t” values of AQLQ and Well being Index showing the Effectiveness of Peak flow Self management plan in improving the Quality of Life within and between groups among Control and Experimental group of Asthma patients.

Table. 4 Comparison of Mean, Standard Deviation and Mean Difference between Tests of AQLQ in Control Group of Asthma Patients

(N =100)

Assessment	Mean	SD	Mean Diff	SD	“t” value (paired)	p’ Value
Pre Test & Post Test I	95.90 98.29	7.84 8.40	2.47	12.5	1.94 NS	p=0.55
Post Test I &Post Test II	98.29 100.77	8.40 11.72	2.40	10.4	1.93 NS	p=0.055
Post Test II &Post Test III	100.77 103.09	11.72 13.28	2.32	7.6	1.43 NS	p=0.150

NS - Not significant

Table. 4 depicts the mean, standard deviation, and mean difference of AQLQ scores from pretest to post test III of control group. The mean scores of AQLQ in control group during pretest was M=95.90, SD=7.84, though there was slight increase during Post test I (98.29, SD=8.4), Post test II (100.77, SD=11.72), and Post test III (103.09, SD=13.28), there was no improvement between the means of first and subsequent observation which indicates that it is not significant ($p>0.05$) having the “t” value for pre test with post test I (“t” 1.94.3), post test I with post test II (“t” 1.76) and post test II with post test III (“t” 1.43) respectively as it is below table value 2.36. ($p<0.05$). Hence, the H02: There will be no significant difference in the mean AQLQ

score and well being index score between first and subsequent observations in control group is accepted.

Table. 5 Comparison of Mean, Standard Deviation and Mean Difference between Tests of AQLQ in Experimental group of Asthma patients

(N=100)

Assessment	Mean	SD	Mean Diff	SD	"t" value (paired)	p' Value
Pre Test & Post Test I	96.96 127.73	9.1 7.9	30.8	12.1	25.39	p=0.000
Post Test I & Post Test II	127.73 144.14	7.9 10.4	16.4	13.5	12.18	p=0.000
Post Test II & Post Test III	144.14 161.17	10.4 7.3	17.1	12.2	13.95	p=0.000

Table. 5 shows the effectiveness of peak flow self management plan from pretest to post test III of AQLQ in Experimental group. The mean scores of AQLQ in experimental group during pretest was only M=96.96, SD=9.1 but there was gradual increase during Post test I (M=127.7, SD=7.9), Post test II (M=144.1, SD=10.4), and Post test III (M=161.17 SD=7.3) which determined the effectiveness of peak flow monitoring for asthma patients. The improvement was statistically significant ($p<0.001$) having the "t" value for pre test with post test I ("t" 25.3), post test I with post test II ("t" 12.18) and post test II with post test III ("t" 13.95) respectively. ($p <0.001$).

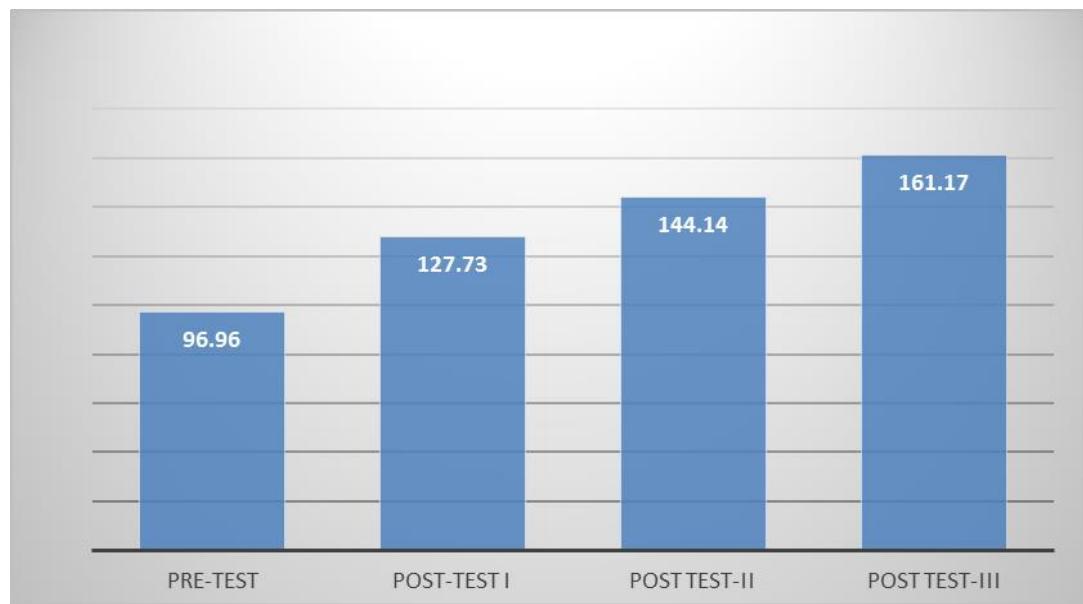


Fig. 4 Mean scores of AQLQ of Experimental group from Pre test to Post test III.

Fig. 4 depicts the mean scores of AQLQ in experimental group that gradually increased from pretest ($M=96.96$, $SD=9.1$), Post test I ($M=127.7$, $SD=7.9$), Post test II ($M=144.1$, $SD=10.4$), and Post test III ($M=161.17$ $SD=7.3$), which determined the effectiveness of peak flow monitoring for asthma patients.

Table. 6 Comparison of Mean, Standard Deviation and Mean Difference between Tests of AQLQ Scores between Control group and Experimental group of Asthma patients

Assess ment	Control Group (n=100)		Experimental Group (n=100)		Differ ence b/w means	“t” value (unpaired)	p’ Value
	Mean	SD	Mean	SD			
Pre-test	95.90	7.84	96.96	9.05	1.06	0.88	p=0.378
Post I	98.31	8.88	127.73	7.88	29.36	24.4	p=0.000
Post II	100.77	11.72	144.14	10.36	43.37	27.72	p=0.000
Post III	103.09	13.28	161.17	7.23	58.08	38.26	p=0.000

Table 6 reveals mean scores of AQLQ of control group and experimental group (95.9, 96.9/224) that were almost same during pretest having the “t” value 0.88 which shows there is no significant difference in mean pretest scores ($p>0.05$). But the post test scores of experimental group were significantly higher after 2 months (127.7), 4 months (144.1) and 6 months (161.1) than the post test scores of control group at 2 months (98.3) 4 months (100.7) and 6 months (103.09) respectively $p<0.001$. Hence there is significant difference between control group and experimental group in post test I, II, III. This indicates the effectiveness of peak flow self management plan for asthma patients.

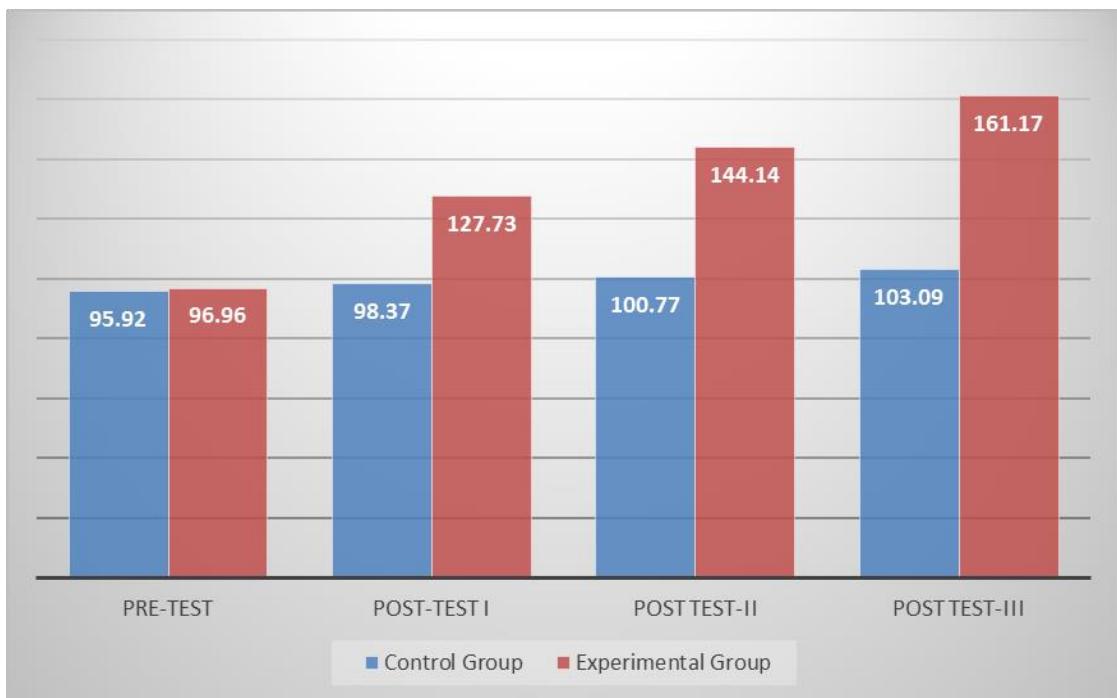


Fig. 5 Mean scores of AQLQ of Control group and Experimental group from Pre test to Post test III

Fig. 5 indicates the post test scores of experimental group that were significantly higher after 2 months (127.7), 4 months (144.1) and 6 months(161.1) than the post test scores of control group at 2 months (98.3) 4 months (100.7) and 6 months (103.09) respectively.

Table. 7 Comparison of Mean and Standard Deviation between Tests of Well Being Index Scores in Control Group of Asthma patients.

(N =100)

Assessment	Mean	SD	Mean Diff	SD	"t" value (paired)	p' Value
Pre Test &	30.36	2.51				p=0.000
Post Test I	35.52	2.44	5.16	2.9	4.43	
Post Test I &Post Test II	35.52	2.44				p=0.000
Post Test II &Post Test III	40.96	1.89	5.44	3.2	4.30	
Post Test II &Post Test III	40.96	1.89				p=0.002
	45.20	2.75	4.24	3.4	3.12	

Table. 7 depicts the mean, standard deviation and mean difference of well being scores of control group. The mean scores of control group during pretest was only 30.36 and there was no statistically significant improvement during post test I, though there was only a slight increase during post test II and III for asthma patients. Thus the H₀₂: there will be no significant difference between the mean well being score of first and subsequent observations in control group is partially rejected.

Table. 8 Comparison of Mean and Standard Deviation between Tests of Well being Index scores in Experimental group of Asthma patients.

(N =100)

Assessment	Mean	SD	Mean Diff	SD	"t" value (paired)	p' Value
Pre Test & Post Test I	29.32 49.48	2.55 2.75	20.16	3.8	13.35	p=0.000
Post Test I & Post Test II	49.48 61.28	2.75 1.86	11.80	3.5	8.44	p=0.000
Post Test II & Post Test III	61.28 80.80	1.86 1.58	19.52	2.4	20.54	p=0.000

Table. 8 depicts the effectiveness of peak flow self management plan from pre to post test III of well being Index in Experimental group. The mean scores of well being index scores in experimental group during pretest was only M=29.32 but there was gradual increase during Post test I (M=49.48, SD=2.7), Post test II (M=61.28, SD=1.86), and Post test III (M=80.80, SD=1.5), which can be attributed to the effectiveness of peak flow monitoring for asthma patients. The improvement was statistically significant ($p<0.001$) having the t' value for pre test with post test I ($t''13.3$), post test I with post test II ($t'' 8.4$) and post test II with post test III ($t''20.5$) respectively.

Table. 9 Comparison of Mean, and Standard Deviation of Well being Index Scores between Control group and Experimental group of Asthma patients.

Assessment	Control Group (n=100)		Experimental Group (n=100)		Difference b/w means	“t” value (unpaired)	p' value
	Mean	SD	Mean	SD			
Pre-test	30.36	2.51	29.32	2.51	1.04	0.72 NS	p=0.469
Post I	35.52	2.44	49.48	2.75	13.96	9.46	p=0.000
Post II	40.96	1.89	61.28	1.86	20.32	19.10	p=0.000
Post III	45.20	2.75	80.80	1.58	35.60	28.01	p=0.000

NS Not significant

The effect of peak flow monitoring within experimental and control groups are showed in the above Table 9. The mean Well being index scores before peak flow monitoring in experimental group was M=29.32, SD=2.5 and after peak flow monitoring was M=49.4, SD=2.7, M=61.2, SD=1.8, M=80.8, SD=1.5 during post test I,II,III respectively. The mean Well being index scores during pre test in control group was M=30.36, SD=2.5 and in post test M=35.52, SD=2.4, M=40.96, SD=1.8, M=45.20, SD=2.7 during post test I,II,III respectively. The same was statistically highly significant ($p<0.001$) during post test I ($t'9.46$), post test II ($t'19.10$), post test III (“t” 28.01) and not during pretest ($t'0.72$). Hence H_01 (no significant difference in well being index score between control and experimental group before intervention) is accepted.

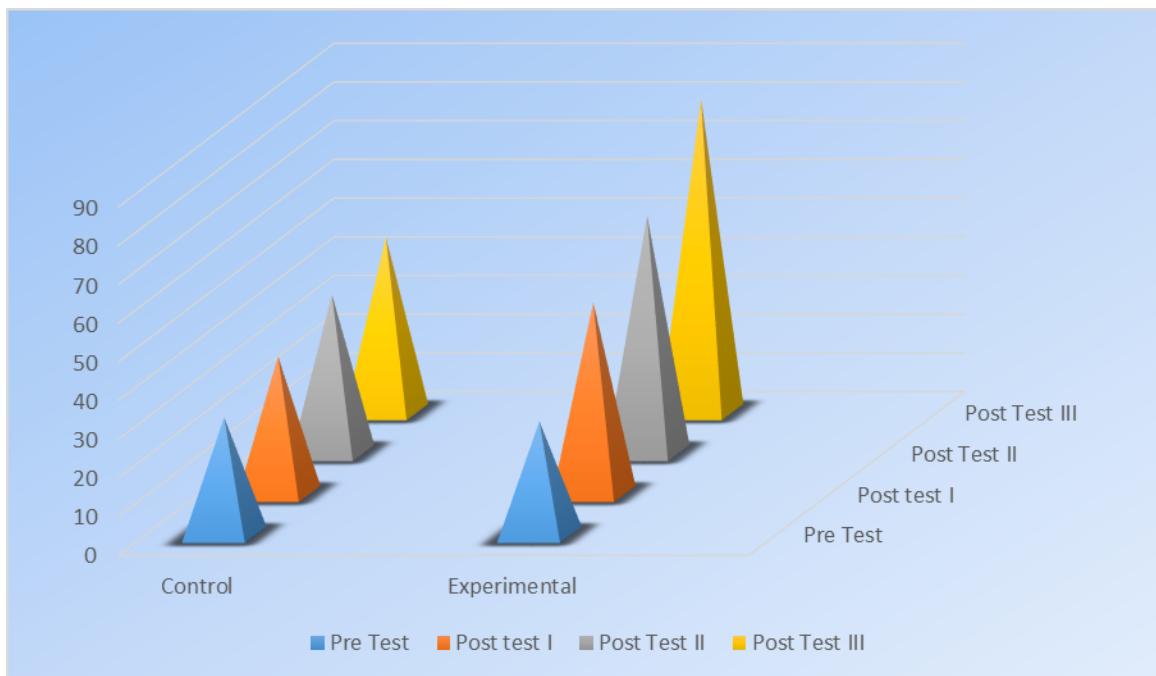


Fig. 6 Mean scores of Well being Index from Pre test to Post Test III between Control and Experimental Group.

Fig. 6 depicts the improvement in well being index scores during the post tests of experimental group comparing with control group that determines the effectiveness of peak flow self management plan for asthma patients.

Section III Comparison of Pre and Post test Assessment of Domain Wise Asthma Quality of Life Questionnaire (AQLQ) and Category wise AQLQ and Well being Index in Control and Experimental group of asthma patients.

Table. 10 Comparison of Domain Wise AQLQ Scores between Control and Experimental group in Pretest of Asthma Patients

Sl: No:	Domains	Control (n=100)		Experimental (n=100)		“t” test (Unpaired)	p' Value
		Mean	SD	Mean	SD		
1	Symptoms (12)	35.19	4.90	36.33	5.38	1.56 NS	p=0.119
2	Activity limitation (11)	33.48	4.84	33.51	4.49	0.45 NS	p=0.964
3	Emotional function (5)	15.26	3.03	14.74	3.66	1.09 NS	p=0.276
4	Environmental stimuli (4)	11.97	3.00	12.38	2.81	0.99 NS	p=0.321

NS: Not significant

Table. 10 depicts the domain wise AQLQ scores of pre-test in control and experimental group. There was no significant difference in mean scores of control and experimental group during pretest and the “t” values (1.56, 0.45, 1.09 & 0.99) respectively for each domain was not statistically significant showing no significant difference between the mean AQLQ scores of control and experimental group before intervention. Therefore the hypothesis H_0 : there will be no significant difference between the mean AQLQ scores of control and experimental group before intervention is accepted. ($p>0.05$).

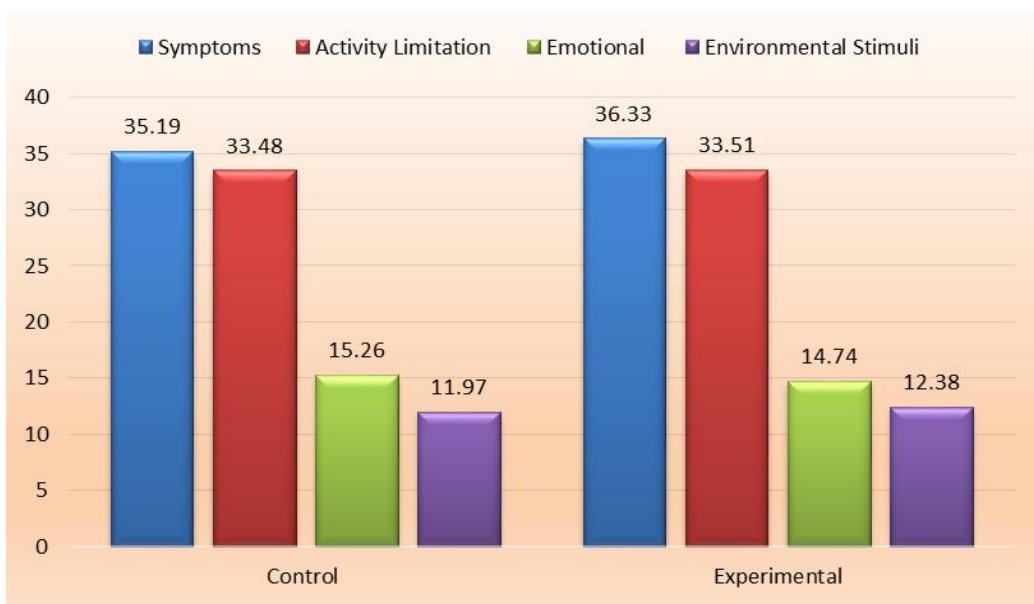


Fig.7 Mean Scores of Domain wise AQLQ in Control and Experimental group in Pre Test

The data in Fig.7 depicts that there was no change Domain wise AQLQ scores in Control and Experimental group in Pre Test.

Table. 11 Comparison of Domain wise AQLQ Scores between Control and Experimental Group in Post test I of Asthma Patients

Sl: No:	Domains	Control (n=100)		Experimental (n=100)		“t” test (Unpair ed)	p’ value
		Mean	SD	Mean	SD		
1	Symptoms (12)	36.62	5.70	47.43	5.32	13.71	p=0.000
2	Activity limitation (11)	33.38	4.56	43.89	4.60	16.79	p=0.000
3	Emotional function (5)	15.56	3.09	20.25	3.37	10.34	p=0.000
4	Environmental stimuli (4)	12.81	2.81	16.16	2.96	8.28	p=0.000

The effect of peak flow monitoring on Asthma quality of life questionnaire among control and experimental during post test I are showed in the above table 11. The mean AQLQ scores of experimental group ($M=47.43$, $SD=5.32$, $M=43.89$, $SD=4.60$, $M=20.25$, $SD=3.37$, $M=16.16$, $SD= 2.96$) for all the domains such as symptoms, Activity limitation, Emotional function and Environmental stimuli were higher when compared with control group ($M=36.62$, $SD=5.7$, $M=33.38$, $SD=4.5$, $M=15.56$, $SD=3.0$, $M=12.8$, $SD=2.81$) and the unpaired “t” test (14.09, 16.22, 10.22 &8.19) for each domain respectively showed significant difference $p<0.001$ for all the domains which can be attributed to the effectiveness of peak flow monitoring for asthma patients.

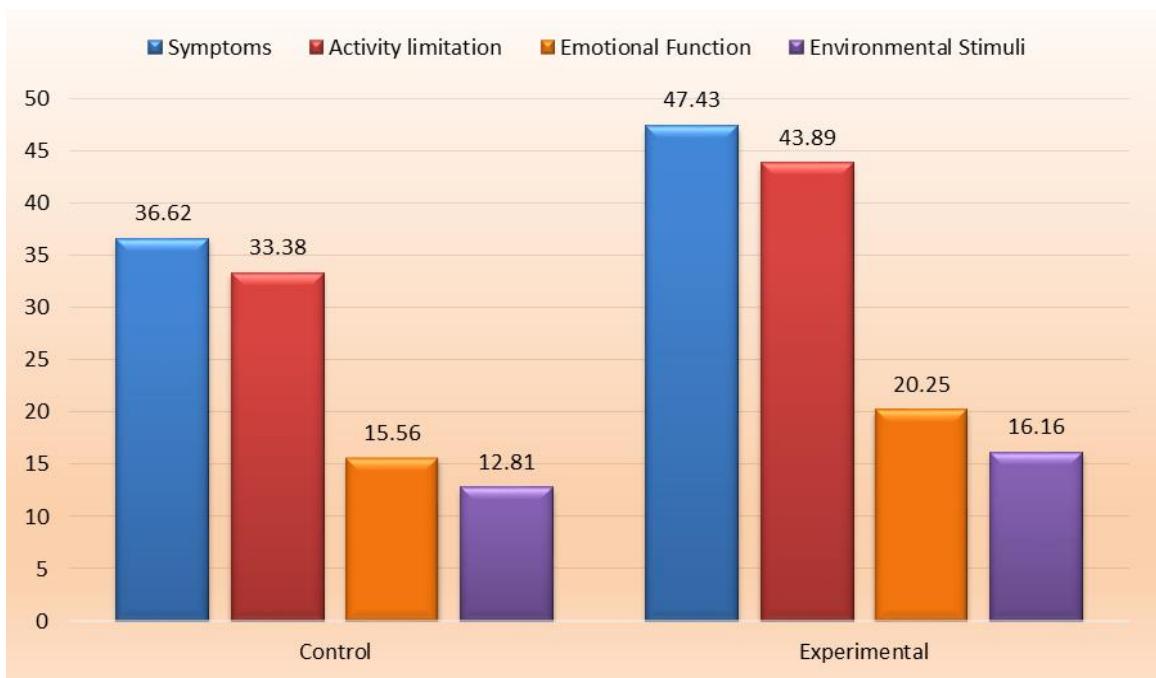


Fig.8 Mean Scores of Domain wise AQLQ in Control and Experimental group in Post test I

The data in figure 8 shows that there was increase in domain wise AQLQ scores in Experimental group in Post test I that determines the effectiveness of peak flow self management plan for asthma patients.

Table. 12 Comparison of Domain wise AQLQ between Control And Experimental Group in Post test II of Asthma Patients

Sl: No:	Domains	Control (n=100)		Experimental (n=100)		“t” test (Unpair ed)	p’ Value
		Mean	SD	Mean	SD		
1	Symptoms (12)	37.99	5.80	54.09	5.92	19.40	p=0.000
2	Activity limitation (11)	34.20	5.19	49.18	5.60	19.59	p=0.000
3	Emotional function (5)	15.82	3.77	22.53	3.48	13.05	p=0.000
4	Environmental stimuli (4)	12.76	2.97	18.34	3.48	12.17	p=0.000

The effect of peak flow monitoring on Asthma quality of life questionnaire among control and experimental in post test II are showed in the above table 12. The mean AQLQ scores of experimental group ($M=54.09$, $SD=5.9$, $M=49.18$, $SD=5.6$, $M=22.53$, $SD=3.4$, $M=18$, $SD=3.4$) for all the domains such as Symptoms, Activity limitation, Emotional function and Environmental stimuli were higher when compared with control group ($M=37.99$, $SD=5.8$, $M=34.20$, $SD=5.1$, $M=15.82$, $SD=3.7$, $M=12.76$, $SD=2.97$) and the unpaired “t” test $p<0.001$ (19.40, 19.59, 13.05 & 12.17) respectively showed significant difference for all the domains which can be attributed to the effectiveness of peak flow monitoring for asthma patients.

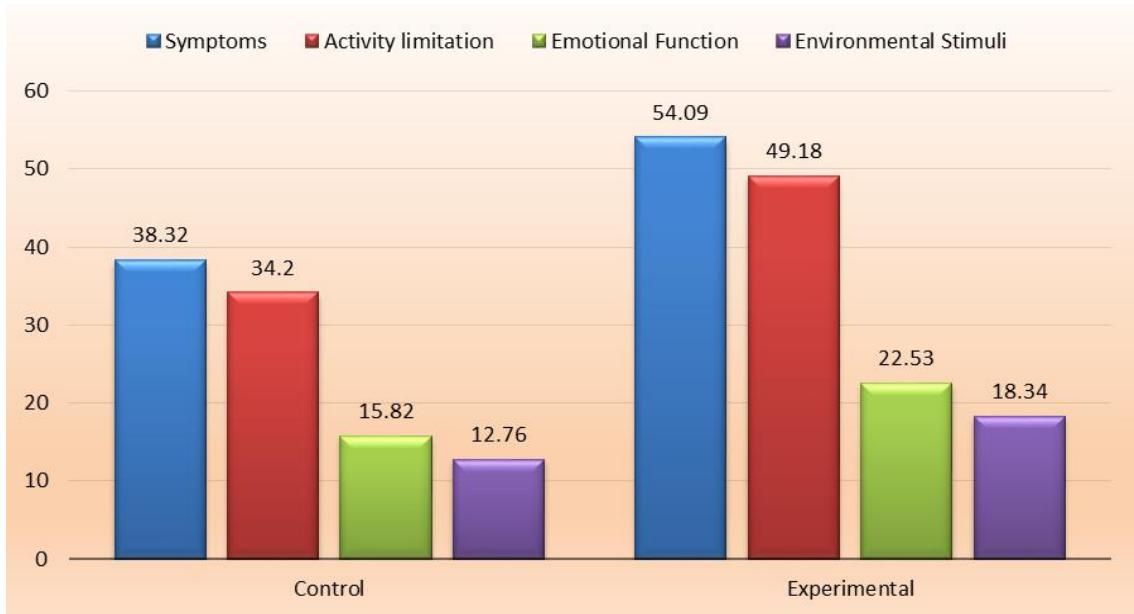


Fig.9 Mean Scores of Domain wise AQLQ in Control and Experimental group in Post Test II

The data in figure 9 presents the improvement in Domain wise AQLQ in Control and Experimental group in Post test II that determines the effectiveness of peak flow self management plan for asthma patients.

Table 13 Comparison of Domain wise AQLQ scores between Control and Experimental Group in Post test III of Asthma Patients

Sl: No:	Domains	Control (n=100)		Experimental (n=100)		“t” test (Unpair ed)	p’ value
		Mean	SD	Mean	SD		
1	Symptoms (12)	38.32	6.56	60.28	4.42	27.75	p=0.000
2	Activity limitation (11)	35.64	5.25	55.63	4.89	27.85	p=0.000
3	Emotional function (5)	16.30	3.11	25.46	3.09	20.87	p=0.000
4	Environmental stimuli (4)	12.83	2.97	19.80	2.88	16.80	p=0.000

Table. 13 depicts the domain wise AQLQ scores of control and experimental group during post-test-III. The mean AQLQ scores of experimental group ($M=60.28$, $SD=4.4$, $M=55.63$, $SD=4.8$, $M=25.46$, $SD=3.0$, $M=19.80$, $SD=2.8$) for all the domains such as Symptoms, Activity limitation, Emotional function and Environmental stimuli were higher when compared with control group ($M=38.32$, $SD=6.5$, $M=35.64$, $SD=5.2$, $M=16.30$, $SD=3.1$, $M=12.83$, $SD=2.97$) and the unpaired “t” test $p<0.001$ (27.75, 27.75, 20.87 &16.80) respectively showed significant difference for all the domains which can be attributed to the effectiveness of peak flow monitoring for asthma patients.

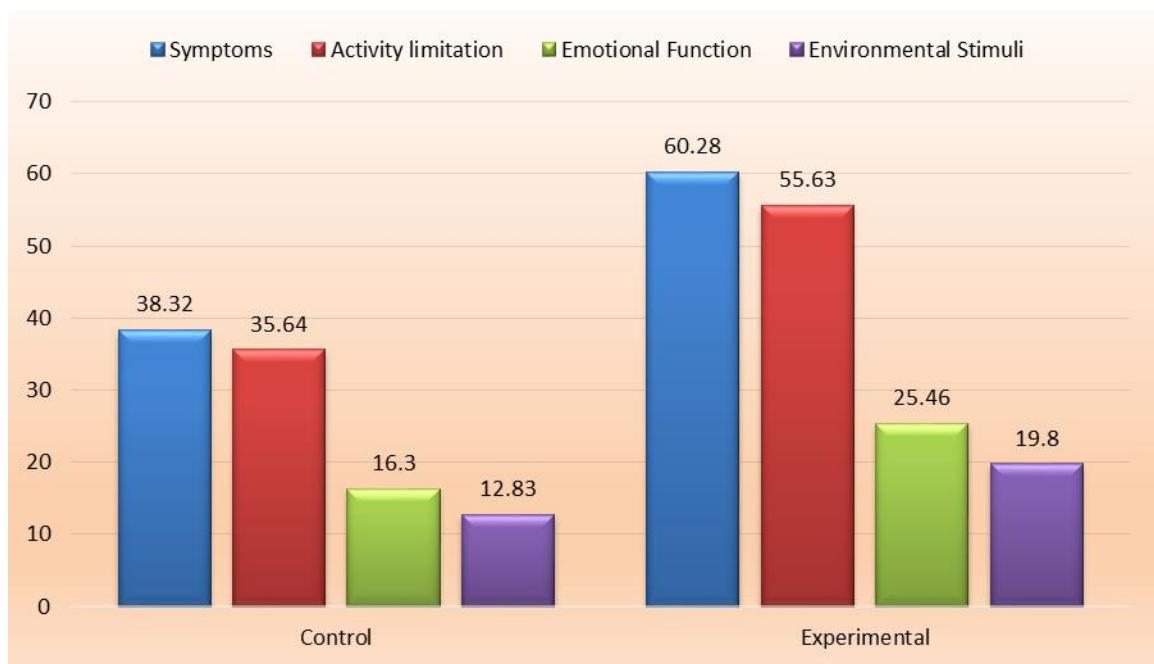


Fig. 10 Mean Scores of Domain wise AQLQ in Control and Experimental group in Post Test III

The data in figure 10 presents the improvement in Domain wise AQLQ in Control and Experimental group in Post test III that determines the effectiveness of peak flow self management plan for asthma patients.

Table 14 Assessment of Quality of life of Control and Experimental group from Pre -test to Post-test III

Groups	Score	QOL	Pre test		Post-1		Post-2		Post-3	
			f	%	f	%	f	%	f	%
Control (n=100)	32-96	Poor	53	53.0	37	37.0	39	39.0	34	34.0
	97-160	Average	47	47.0	63	63.0	61	61.0	66	66.0
	161-224	Good	0	0.0	0	0.0	0	0.0	0	0.0
	Total		100	100	100	100	100	100	100	100
Experimental (n=100)	32-96	Poor	49	49.0	0	0.0	0	0.0	0	0.0
	97-160	Average	51	51.0	100	100.0	93	93.0	48	48.0
	161-224	Good	0	0.0	0	0.0	7	7.0	52	52.0
	Total		100	100	100	100	100	100	100	100

The table-14 assesses the quality of life of both groups from pretest to post test III. In control group, 53% and 47% of the patients had poor and average quality of life in pre-test and no one had good quality of life in post-test. Similarly in experimental group 49% and 51% had poor and average quality of life respectively in pre-test but after intervention majority of patients (52%) had good quality of life and the remaining 48% asthma patients' quality of life was average and no one had poor quality of life. This attributes to the effectiveness of peak flow self management plan for asthma patients.

Table 15 Assessment of Well being of Control and Experimental group from Pre-test to Post-test III

Groups	Score	Well being	Pre test		Post-1		Post-2		Post-3	
			f	%	f	%	f	%	f	%
Control (n=100)	0-40	Poor	87	87.0	75	75.0	51	51.0	38	38.0
	41-80	Avera ge	13	13.0	25	25.0	49	49.0	62	62.0
	81-100	Good	0	0.0	0	0.0	0	0.0	0	0.0
	Total		100	100	100	100	100	100	100	100
Experi- mental (n=100)	0-40	Poor	87	87.0	25	25.0	0	0.0	0	0.0
	41-80	Avera ge	13	13.0	75	75.0	100	100	59	59.0
	81-100	Good	0	0.0	0	0.0	0	0.0	41	41.0
	Total		100	100	100	100	100	100	100	100

The table-15 states the assessment of well being of the control and experimental group of patients from pre test to post test III. Both groups had 87% and 13% of poor and average well being respectively at pre test. Control group had poor well being (75%, 51% and 38%) and average well being (25%, 49%, 62%) during post-test I, II, III respectively and no one had good well being. Experimental group had poor well being (25%), average well being (75%, 100%, 59%) during post-test I, II, III respectively and good well being (41%) at post III, and though a minimal 25% had poor well being at post test I, no one had poor well being at post test II & III. This attributed to the effectiveness of peak flow self management plan for asthma patients.

Section IV Test of ANOVA between the Experimental and Control readings from Pre test to Post test I to III.

Table 16 Comparison of AQLQ Scores between Pre-test and Post-tests in Control and Experimental group of Asthma patients using ANOVA.

Assessment	Control group (n=100)				Experimental group (n=100)			
	Mean	SD	F value	Sig	Mean	SD	F value	Sig
Pre test	95.90	7.84	461.28	0.000	96.96	9.05	2078.39	0.000
Post test I	98.37	8.88			127.73	7.88		
Post test II	100.77	11.72			144.14	10.36		
Post test III	103.09	13.28			161.17	7.23		

Table 16 infers that there is significant difference in AQLQ scores in pre-test and post test I,II,III scores within the groups.(p=0.000).

Asthma patients in control group had F=461.28, but F=2078.39 in experimental group showing significant difference in repeated observations which showed improvement in quality of life.

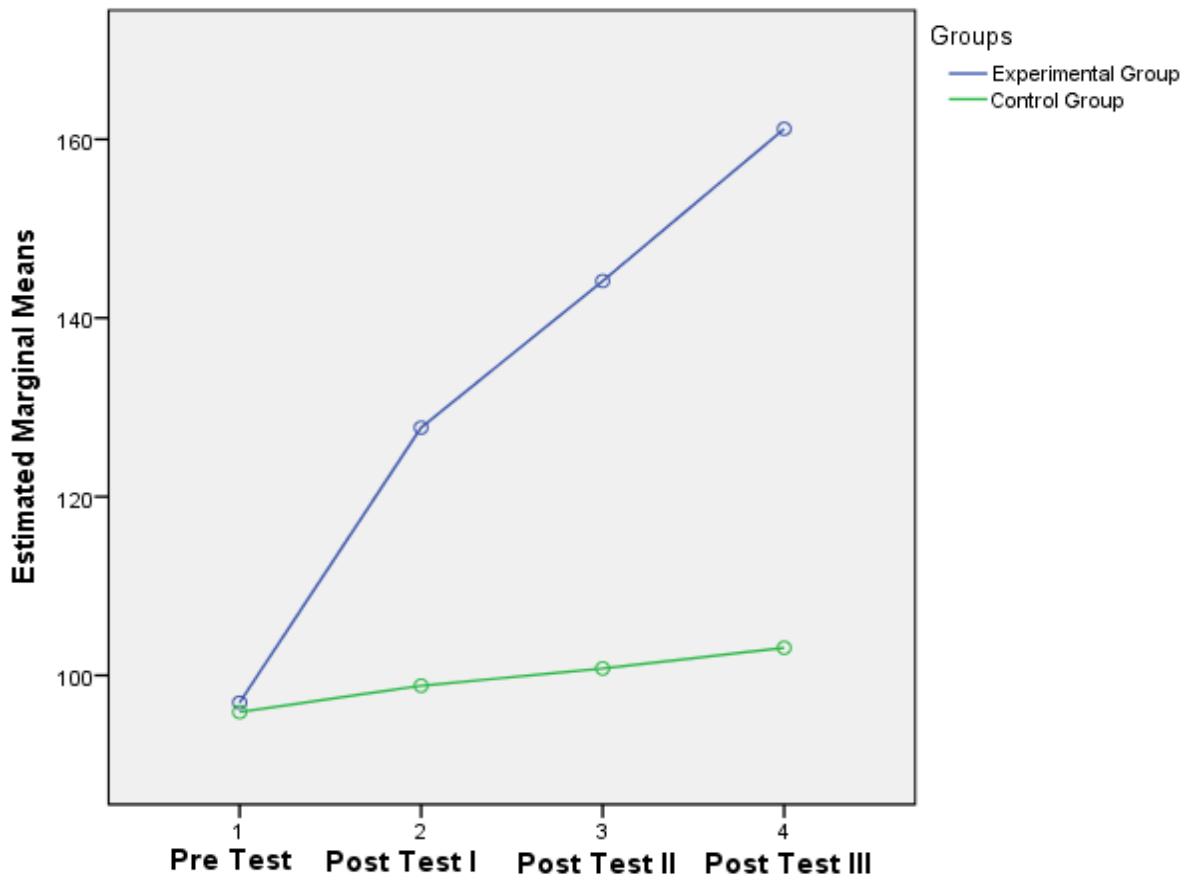


Fig 11. Trends of AQLQ improvements from Pre-test to Post-test III between the Control and Experimental groups of Asthma patients.

Fig 11 depicts Confirmation of AQLQ score by repeated measures of ANOVA from pre- test to post-test III. The plots clearly shows that the trends have a significant difference between the two groups. The experimental group had an improvement in AQLQ score that was statistically significant ($p<0.001$). Thus, it determines the effectiveness of peak flow self-management plan for asthma patients.

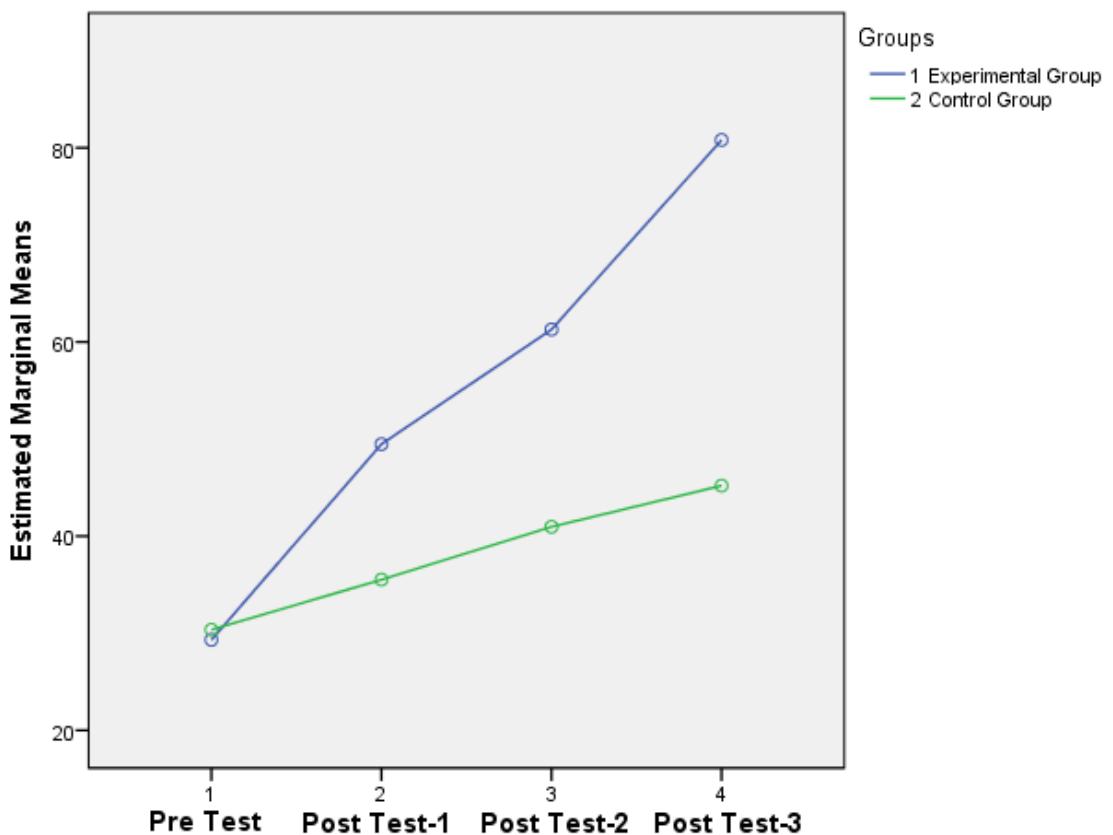


Fig 12. Trends of Well being improvements from Pre-test to Post-test III between the Control and Experimental groups of Asthma patients.

Fig 12 depicts Confirmation of Well being index score by repeated measures of ANOVA from pre- test to post-test III. The plots clearly shows that the trends have a significant difference between the two groups. The experimental group had an improvement in Well being index score that was statistically significant ($p<0.001$). Thus, it determines the effectiveness of peak flow self-management plan for asthma patients.

Section V: Assessment of Level of Acceptability of Peak flow Intervention among Experimental group of Asthma patients.

Table. 17 Level of Acceptability of Peak flow Self Management Plan in Experimental Group of Asthma Patients

(N=100)

Score	Satisfaction category	Peak flow self management patients	
		Frequency	%
0-10	Highly Unacceptable	-	-
11-20	Unacceptable	-	-
21-30	Acceptable	37	37%
31-40	Highly Acceptable	63	63%
Total		100	100.0

Table 17 reveals that majority (63%) of asthma patients have highly accepted and 37% of the patients accepted the peak flow self management plan intervention.

Section VI: Assessment of Correlation between Quality of life and Symptoms in control and experimental group

Table 18 Correlation between the Domains of AQLQ in Control group of Asthma patients in Pre-test

(N=100)

Domains		r	p' Value	r²	Percentage of domain (1) determined domain (2)
1	2				
Symptoms	Activity	-0.077	p=0.45	0.006	0.6
Symptoms	Emotional	0.026	p=0.80	0.0007	0.07
Symptoms	Environmental	0.017	p=0.87	0.003	0.3
Activity	Emotional	0.070	p=0.49	0.005	0.5
Activity	Environmental	-0.106	p=0.29	0.011	1.1
Emotional	Environmental	-0.048	p=0.64	0.002	0.2

The table 18 states the relationships between domains of AQLQ among control group in pre test. The results revealed that there was no statistically significant correlation between the domains (p>0.05).

**Table 19 Correlation between the Domains of AQLQ in Control group of
Asthma patients in Post-test I**

(N=100)

Domains		r	p' value	r²	Percentage of domain (1) determined domain (2)
1	2				
Symptoms	Activity	-0.077	p=0.45	0.006	0.6
Symptoms	Emotional	0.026	p=0.80	0.001	0.1
Symptoms	Environmental	0.017	p=0.87	0.000	0
Activity	Emotional	0.070	p=0.49	0.005	0.5
Activity	Environmental	0.070	p=0.49	0.005	0.5
Emotional	Environmental	-0.048	p=0.64	0.002	0.2

The table 19 shows the relationships between each domains of AQLQ among control group of asthma patients in post-test I. The results revealed that there was no statistically significant correlation between the AQLQ domains (p>0.05).

Table 20 Correlation between the Domains of AQLQ in Control group of Asthma patients in Post-test II

(N=100)

Domains		r	p'Value	r^2	Percentage of domain (1) determined domain (2)
1	2				
Symptoms	Activity	0.261	p=0.01	0.068	6.8
Symptoms	Emotional	0.210	p=0.04	0.044	4.4
Symptoms	Environmental	0.228	p=0.02	0.052	5.2
Activity	Emotional	0.258	p=0.01	0.067	6.7
Activity	Environmental	0.258	p=0.01	0.067	6.7
Emotional	Environmental	0.208	p=0.04	0.043	4.3

The table 20 states the correlation between each domains of AQLQ among control group patients in post- test II. The domain symptom was statistically significantly correlated with the domains namely activity, emotional and environmental domains ($p<0.05$). The domain activity was statistically significantly correlated with emotional domain ($p<0.01$). The activity domain did not correlate with environmental domain ($p>0.05$). The domain emotional was statistically significantly correlated with environmental domain ($p<0.05$). The domain symptom determined activity domain, emotional and environmental domain as 6.8%, 4.4% and 5.1% of variance respectively. The activity domain determined 6.7% of emotional domain. The emotional domain determined 4.3% variance of environmental domain.

**Table 21 Correlation between the Domains of AQLQ in Control group of
Asthma Patients in Post-test III**

(N=100)

Domains		r	p' value	r²	Percentage of domain (1) determined domain (2)
1	2				
Symptoms	Activity	0.565	p=0.00	0.320	32.0
Symptoms	Emotional	0.307	p=0.00	0.094	9.4
Symptoms	Environmental	0.469	p=0.00	0.220	22
Activity	Emotional	0.277	p=0.01	0.077	7.7
Activity	Environmental	0.277	p=0.01	0.077	7.7
Emotional	Environmental	0.140	p=0.16	0.020	2.0

The table 21 shows the correlations between each domains of AQLQ among control group in post-test III. The symptom was statistically highly significantly correlated with activity, emotional and environmental domains ($p<0.001$). The activity was statistically significantly correlated with emotional and environmental domain ($p<0.05$). The symptom domain determined activity, emotional and environmental domain as 31.9%, 9.4% and 21.9% variance respectively. The activity domain determined the emotional and environmental domains as 7.7% and 4.5% variance respectively.

Table 22 Correlation between the Domains of AQLQ in Experimental group of Asthma patients in Pre-test

(N=100)

Domains		R	p'Value	r²	Percentage of domain (1) determined domain (2)
1	2				
Symptoms	Activity	-0.002	p=0.98	0.00	0.0
Symptoms	Emotional	0.096	p=0.34	0.009	0.9
Symptoms	Environmental	0.110	p=0.28	0.012	1.2
Activity	Emotional	0.074	p=0.46	0.006	0.6
Activity	Environmental	0.099	p=0.33	0.01	1.0
Emotional	Environmental	-0.023	p=0.82	0.0005	0.1

The table 22 states the relationships between domains of AQLQ among experimental groups in pre-test. The results revealed that there was no statistically significant correlation between the domains (p>0.05).

Table 23 Correlation between the Domains of AQLQ in Experimental group of Asthma patients in Post-test I

(N=100)

Domains		R	p'Value	r^2	Percentage of domain (1) determined domain (2)
1	2				
Symptoms	Activity	0.045	p=0.66	0.002	0.2
Symptoms	Emotional	-0.113	p=0.26	0.013	1.3
Symptoms	Environmental	-0.011	p=0.91	0.0001	0.01
Activity	Emotional	-0.252	p=0.01	0.063	6.34
Activity	Environmental	0.069	p=0.50	0.005	0.5
Emotional	Environmental	0.028	p=0.78	0.0008	0.08

The table 23 states the correlation between each domains of AQLQ among experimental group patients in post-test I. There was no statistically significant relationship established except activity limitation domain with emotional domain. The correlation between activity with emotional domain was statistically significant ($p<0.05$) and it determined 6.3% of variance.

Table 24 Correlation between the Domains of AQLQ in Experimental group of Asthma patients in Post-test II

(N=100)

Domains		R	p'Value	r²	Percentage of domain (1) determined domain (2)
1	2				
Symptoms	Activity	-0.034	p=0.74	0.001	0.1
Symptoms	Emotional	-0.059	p=0.56	0.003	0.3
Symptoms	Environmental	0.138	p=0.17	0.019	1.9
Activity	Emotional	0.146	p=0.15	0.021	2.1
Activity	Environmental	0.146	p=0.15	0.021	2.1
Emotional	Environmental	0.168	p=0.09	0.028	2.8

The table 24 states the correlation between each domains of AQLQ among experimental group patients in post-test II. None of the domains were established correlations between them (p>0.05).

Table 25 Correlation between the Domains of AQLQ in Experimental group of Asthma patients in Post-test III (N=100)

Domains		R	p' value	r²	Percentage of domain (1) determined domain (2)
1	2				
Symptoms	Activity	-0.043	p=0.67	0.002	0.2
Symptoms	Emotional	-0.271	p=0.01	0.073	7.3
Symptoms	Environmental	0.060	p=0.55	0.004	0.4
Activity	Emotional	0.018	p=0.86	0.0003	0.03
Activity	Environmental	-0.044	p=0.66	0.002	0.2
Emotional	Environmental	0.002	p=0.98	0.0	0.0

The table 25 shows the correlation between each domains of AQLQ among experimental group patients in post-test III. The domains did not show statistically significant correlation except symptom with emotional domain of AQLQ ($p>0.05$). The symptom was statistically significantly negatively correlated with emotional domain ($p<0.05$). The symptom determined 7.3% variance with emotional domain of AQLQ in asthma patients.

Section VII: Association between quality of life of Asthma patients with their Selected Demographic Variables and Clinical Variables.

Table 26 Association between Pre Test Mean Scores of AQLQ (Asthma quality of life questionnaire) and Selected Demographic Variables among Asthma Patients in Control group. (N=100)

Demographic variables	Categories	Poor	Average	Total	χ^2 and df	p' Value
Age (Years)	20-39	12	9	21	$\chi^2=3.126$ df=2	p=0.209
	40-59	23	14	37		
	≥ 60	18	24	42		
	Total	53	47	100		
Gender	Male	33	21	54	$\chi^2=3.100$ df=1	p=0.078
	Female	20	26	46		
	Total	53	47	100		
Educational status	No formal	10	4	14	$\chi^2=6.461$ df=4	p=0.167
	Primary	11	12	23		
	High School	16	8	24		
	Hr.Sec	7	12	19		
	Degree	9	11	20		
	Total	53	47	100		
Occupational status	Cooly	11	15	26	$\chi^2=0.697$ df=2	p=0.697
	Unskilled	26	16	42		
	Skilled & Prof	16	16	32		
	Total	53	47	100		
Marital status	Married	29	28	57	$\chi^2=2.646$ df=2	p=0.266
	Un married	14	13	27		
	Widow & Div	10	6	16		
	Total	53	47	100		
Monthly family income (000)	<10	27	28	55	$\chi^2=1.353$ df=2	p=0.508
	10-15	18	11	29		
	>15	8	8	16		

	Total	53	47	100		
Residence	Rural	37	32	69	$\chi^2=0.035$ df=1	p=0.852
	Urban	16	15	31		
	Total	53	47	100		
Type of family	Joint	46	38	84	$\chi^2=0.654$ df=1	p=0.419
	Nuclear	7	9	16		
	Total	53	47	100		

The above table 26 shows the association between selected demographic variables and AQLQ of patients of the control group at the time of the pre-test. None of the demographic variables of the patients had any statistically significant association ($p>0.05$) with their quality of life.

Table 27 Association between Pre Test Mean Scores of AQLQ (Asthma quality of life questionnaire) and Selected Clinical Variables among Asthma Patients in Control group.

(N=100)

Clinical variables	Components	Poor	Average	Total	χ^2 and df	p' Value
Last consultation	1 st day	5	11	16	$\chi^2=5.911$ df=2	p=0.052
	After day	3	6	9		
	After week	45	30	75		
	Total	53	47	100		
Industries around	Yes	48	33	81	$\chi^2=6.705$ df=1	p=0.010
	No	5	14	19		
	Total	53	47	100		
Cooking fuel	Wood &Dung	17	12	29	$\chi^2=0.518$ df=1	p=0.472
	Gas	36	35	71		
	Total	53	47	100		
Abstain from work	Lost no	23	20	43	$\chi^2=2.085$ df=3	p=0.555
	1-2 weeks	12	8	20		
	2-4 weeks	12	9	21		
	>5 & Unable	6	10	16		
	Total	53	47	100		
Medication	Drug 1&2	23	21	44	$\chi^2=0.079$ df=2	p=0.961
	Deriphyline	14	13	27		
	Others	16	13	29		
	Total	53	47	100		
Smoking	Yes	25	14	39	$\chi^2=11.709$ df=1	p=0.001
	No	28	33	61		
	Total	53	47	100		
Family history	1 st degree	35	32	67	$\chi^2=0.047$ df=1	p=0.828
	No	18	15	33		
	Total	53	47	100		

Duration of Asthma	<1 year	21	14	35	$\chi^2=1.072$ df=2	p=0.585
	1-5 years	17	18	35		
	>5years	15	15	30		
	Total	53	47	100		
Asthma severity	Mild	12	22	34	$\chi^2=13.287$ df=2	p=0.001
	Moderate	29	20	49		
	Severe	15	2	17		
	Total	53	47	100		
Co- morbidity present	DM	11	8	19	$\chi^2=0.418$ df=3	p=0.937
	HT	9	7	16		
	Gastro& Bone	10	9	19		
	Others	23	23	46		
	Total	53	47	100		
Allergy	Pets	4	4	8	$\chi^2=1.99$ df=5	p=0.851
	Dust	7	6	13		
	Pollen	9	10	19		
	Smokes	9	5	14		
	Fumes	2	4	6		
	Cold air	22	18	40		
	Total	53	47	100		
Use of Peak flow metre	Yes	44	34	78	$\chi^2=1.655$ df=1	p=0.198
	No	9	13	22		
	Total	53	47	100		

The above table 27 shows the association between selected clinical variables and AQLQ of the patients of the control group at the time of the pre-test. The patients' asthma severity, habit of smoking and whether or not they had industries around their homes had statistically highly significant ($p<0.01$) associations with their quality of life. The rest of the variables such as when they had lastly met a physician, whether or not they had used a peak flow meter at any time, and what kind of cooking

fuel they used at that time did not have any kind of statistically significant association with their quality of life ($p>0.05$).

Table 28 Association between Pre Test Mean Scores of AQLQ (Asthma quality of life questionnaire) and Selected Demographic Variables among Asthma Patients in Experimental group. (N=100)

Demographic variables	Categories	Poor	Average	Total	χ^2 and df	p'value
Age (Years)	20-39	6	12	18	$\chi^2=2.156$ df=2	p=0.340
	40-59	21	19	40		
	≥ 60	22	20	42		
	Total	49	51	100		
Gender	Male	35	37	72	$\chi^2=0.016$ df=1	p=0.900
	Female	14	14	28		
	Total	49	51	100		
Educational status	No formal	6	7	13	$\chi^2=6.566$ df=4	p=0.161
	Primary	10	11	21		
	High School	9	12	21		
	Hr.Sec	13	4	17		
	Degree	11	17	28		
	Total	49	51	100		
Occupational status	Cooly	13	15	28	$\chi^2=0.327$ df=2	p=0.849
	Unskilled	15	22	37		
	Skilled & Prof	21	14	35		
	Total	49	51	100		
Marital status	Married	31	35	66	$\chi^2=2.828$ df=2	p=0.243
	Un married	7	6	13		
	Widow & Div	11	10	21		
	Total	49	51	100		
Monthly family income	<10	19	31	50	$\chi^2=5.064$	p=0.079
	10-15	20	12	32		

(000)	>15	10	8	18	df=2	
	Total	49	51	100		
Residence	Rural	34	40	74	$\chi^2=1.062$ df=1	p=0.303
	Urban	15	11	26		
	Total	49	51	100		
Type of family	Joint	42	37	79	$\chi^2=2.611$ df=1	p=0.106
	Nuclear	7	14	21		
	Total	49	51	100		

The above table 28 shows the association between selected demographic variables and AQLQ of the patients of the experimental group at the time of the pre-test. None of the demographic variables of the patients had any statistically significant association ($p>0.05$) with their quality of life.

Table 29 Association between Pre Test Mean Scores of AQLQ (Asthma quality of life questionnaire) and Selected Clinical Variables among Asthma Patients in Experimental group.

(N=100)

Clinical variables	Components	Poor	Average	Total	χ^2 and df	p' Value
Last consultation	1 st day	13	5	18	$\chi^2=5.491$ df=2	p=0.064
	After day	10	9	19		
	After week	26	37	63		
	Total	49	51	100		
Industries around	Yes	36	41	77	$\chi^2=0.676$ df=1	p=0.411
	No	13	10	23		
	Total	49	51	100		
Cooking fuel	Wood&Dung	6	12	18	$\chi^2=2.156$ df=1	p=0.142
	Gas	43	39	82		
	Total	49	51	100		
Abstain from work	Lost no	21	17	38	$\chi^2=1.362$ df=3	p=0.715
	1-2 weeks	7	11	18		
	2-4 weeks	11	12	23		
	>5 weeks & Unable	10	11	21		
	Total	49	51	100		
Medication	Drug 1&2	17	30	47	$\chi^2=7.442$ df=2	p=0.024
	Deriphyline	14	13	27		
	Others	18	8	26		
	Total	49	51	100		
Smoking	Yes	27	21	48	$\chi^2=1.942$ df=1	p=0.164
	No	22	30	52		
	Total	49	51	100		

Family history	1 st degree	34	38	72	$\chi^2=0.325$ df=1	p=0.568
	No	15	13	28		
	Total	49	51	100		
Duration of Asthma	<1 year	18	22	40	$\chi^2=1.782$ df=2	p=0.410
	1-5 years	18	21	39		
	5+ years	13	8	21		
	Total	49	51	100		
Asthma severity	Mild	10	17	27	$\chi^2=7.285$ df=2	p=0.026
	Moderate	30	34	64		
	Severe	8	1	9		
	Total	49	51	100		
Co- morbidity present	DM	9	5	14	$\chi^2=3.295$ df=3	p=0.348
	HT	7	9	16		
	Gastro& Bone	4	9	13		
	Others	29	28	57		
	Total	49	51	100		
Allergy	Pets	4	8	12	$\chi^2=7.42$ df=5	p=0.191
	Dust	3	2	5		
	Pollen	4	7	11		
	Smokes	5	12	17		
	Fumes	5	3	8		
	Cold air	28	19	47		
	Total	49	51	100		
Use of Peak flow metre	Yes	1	5	6	$\chi^2=2.670$ df=1	p=0.102
	No	48	46	94		
	Total	49	51	100		

The above table 29 shows the association between selected clinical variables and AQLQ of the patients of the experimental group at the time of the pre-test. The patients' asthma severity, and the medications they used had statistically significant associations with their quality of life ($p<0.05$). The rest of the variables such as when they had lastly met a physician, whether or not they had used a peak meter at any time, and what kind of cooking fuel they used at that time had no statistically significant association with their quality of life ($p>0.05$).

Table 30 Association between Post-test II Mean Scores of AQLQ (Asthma quality of life questionnaire) and Selected Demographic Variables among Asthma Patients in Control group. (N=100)

Demographic variables	Categories	Poor	Average	Total	χ^2 and df	Test statistics
Age (Years)	20-39	15	6	21	$\chi^2=12.079$ df=	p=0.002
	40-59	10	27	37		
	≥ 60	14	28	42		
	Total	39	61	100		
Gender	Male	20	34	54	$\chi^2=0.190$ df=1	p=0.662
	Female	19	27	46		
	Total	39	61	100		
Educational status	No formal	6	8	14	$\chi^2=1.348$ df=4	p=0.853
	Primary	10	13	23		
	High School	8	16	24		
	Hr.Sec	6	13	19		
	Degree	9	11	20		
	Total	39	61	100		
Occupational status	Cooly	14	12	26	$\chi^2=7.317$ df=2	p=0.026
	Unskilled	10	32	42		
	Skilled & Prof	15	17	32		
	Total	39	61	100		
Marital status	Married	20	37	57	$\chi^2=1.215$ df=2	p=0.545
	Un married	11	16	27		
	Widow & Div	8	8	16		
	Total	39	61	100		
Monthly family income (000)	<10	22	33	55	$\chi^2=0.052$ df=2	p=0.974
	10-15	11	18	29		
	>15	6	10	16		
	Total	39	61	100		

Residence	Rural	28	41	69	$\chi^2=0.234$ df=1	p=0.629
	Urban	11	20	31		
	Total	39	61	100		
Type of family	Joint	30	54	84	$\chi^2=2.383$ df=1	p=0.123
	Nuclear	9	7	16		
	Total	39	61	100		

The above table 30 shows the association between selected demographic variables and AQLQ of the patients of the control group at the time of the post-test II. The asthma patients' age had a statistically highly significant association with their quality of life and the patients' occupations had a statistically significant association with their quality of life ($p<0.01$). The rest of the variables such as the type of their families, their education, marital statuses, and how much their households earned at that time had no statistically significant association with their quality of life ($p>0.05$).

Table 31 Association between Post-test II Mean Scores of AQLQ (Asthma quality of life questionnaire) and Selected Clinical Variables among Asthma Patients in Control group.

(N=100)

Clinical variables	Components	Poor	Average	Total	$\chi^2 & df$	Test statistics
Last consultation	1 st day	6	8	14	$\chi^2=0.492$ df=2	p=0.782
	After day	6	7	13		
	After week	27	46	73		
	Total	39	61	100		
Industries around	Yes	30	51	81	$\chi^2=0.691$ df=1	p=0.406
	No	9	10	19		
	Total	39	61	100		
Cooking fuel	Wood & Dung	13	16	29	$\chi^2=0.583$ df=1	p=0.445
	Gas	26	45	71		
	Total	39	61	100		
Abstain from work	Lost no	20	23	43	$\chi^2=4.852$ df=3	p=0.183
	1-2 weeks	9	11	20		
	2-4 weeks	4	17	21		
	5+ & Unable	6	10	16		
	Total	39	61	100		
Medication	Drug 1&2	22	22	44	$\chi^2=6.356$ df=2	p=0.042
	Deriphyline	11	16	27		
	Others	6	23	29		
	Total	39	61	100		
Smoking	Yes	19	6	25	$\chi^2=19.182$ df=1	p=0.000
	No	20	55	75		
	Total	39	61	100		
Family history	1 st degree	25	42	67	$\chi^2=0.243$ df=1	p=0.622
	No	14	19	33		

	Total	39	61	100		
Duration of Asthma	<1 year	17	18	35	$\chi^2=3.281$ df=2	p=0.194
	1-5 years	14	21	35		
	5+ years	8	22	30		
	Total	39	61	100		
Asthma severity	Mild	10	24	34	$\chi^2=16.194$ df=2	p=0.000
	Moderate	15	34	49		
	Severe	14	3	17		
	Total	39	61	100		
Co- morbidity present	DM	10	9	19	$\chi^2=3.754$ df=3	p=0.290
	HT	8	8	16		
	Gastro & Bone	7	12	19		
	Others	14	32	46		
	Total	39	61	100		
Allergy	Pets	4	4	8	$\chi^2=8.908$ df=5	p=0.113
	Dust	7	6	13		
	Pollen	8	11	19		
	Smokes	7	7	14		
	Fumes	4	2	6		
	Cold air	9	31	40		
	Total	39	61	100		
Use of Peak flow metre	Yes	13	15	28	$\chi^2=0.902$ df=1	p=0.342
	No	26	46	72		
	Total	39	61	100		

The above table 31 shows the association between selected clinical variables and AQLQ of the patients of the control group at the time post-test II. The patients' habit of smoking and asthma severity had statistically very highly significant associations with their quality of life and the patients' medications had a statistically significant association with their quality of life ($p<0.01$). The rest of the variables such as when they had lastly consulted with a physician, whether or not they had industries around their home at that time, what kind of cooking fuel they used at that time, and how long they had been absent from their works in the last six months had no statistically significant association with their quality of life. ($p>0.05$).

Table 32 Association between Post-test II Mean Scores of AQLQ (Asthma quality of life questionnaire) and Selected Demographic Variables among Asthma Patients in Experimental group. (N=100)

Demographic variables	Categories	Average	Good	Total	χ^2 and df	Test statistics
Age (Years)	20-39	13	5	18	$\chi^2=14.558$ df=2	p=0.001
	40-59	39	1	40		
	≥ 60	41	1	42		
	Total	93	7	100		
Gender	Male	68	4	72	$\chi^2=0.824$ df=1	p=0.364
	Female	25	3	28		
	Total	93	7	100		
Educational status	No formal	12	1	13	$\chi^2=1.475$ df=4	p=0.831
	Primary	19	2	21		
	High School	20	1	21		
	Hr.Sec	15	2	17		
	Degree	27	1	28		
	Total	93	7	100		
Occupational status	Cooly	24	4	28	$\chi^2=2.220$ df=2	p=0.330
	Unskilled	36	1	37		
	Skilled & Prof	33	2	35		
	Total	93	7	100		
Marital status	Married	63	3	66	$\chi^2=3.422$ df=2	p=0.181
	Un married	11	2	13		
	Widow & Div	19	2	21		
	Total	93	7	100		
Monthly family income (000)	<10	48	2	50	$\chi^2=3.303$ df=2	p=0.192
	10-15	30	2	32		
	>15	15	3	18		
	Total	93	7	100		

Residence	Rural	70	4	74	$\chi^2=1.112$ df=1	p=0.292
	Urban	23	3	26		
	Total	93	7	100		
Type of family	Joint	75	4	79	$\chi^2=2.168$ df=1	p=0.141
	Nuclear	18	3	21		
	Total	93	7	100		

The above table 32 shows the association between selected demographic variables and AQLQ of the patients of the experimental group in post-test II. The patients' age had a statistically highly significant association with their quality of life ($p<0.01$). The rest of the variables such as their education, occupations, marital statuses, and how much their households earned at that time had no statistically significant association with their quality of life ($p>0.05$).

Table 33 Association between Post-test II Mean Scores of AQLQ (Asthma quality of life questionnaire) and Selected Clinical Variables among Asthma Patients in Experimental group.

(N=100)

Clinical variables	Components	Average	Good	Total	$\chi^2 & df$	Test statistics
Last consultation	1 st day	1	1	2	$\chi^2=9.316$ df=2	p=0.009
	After day	2	1	3		
	After week	90	5	95		
	Total	93	7	100		
Industries around	Yes	75	2	77	$\chi^2=9.968$ df=1	p=0.002
	No	18	5	23		
	Total	93	7	100		
Cooking fuel	Wood&Dung	14	4	18	$\chi^2=7.813$ df=1	p=0.005
	Gas	79	3	82		
	Total	93	7	100		
Abstain from work	Lost no days	35	3	38	$\chi^2=0.558$ df=3	p=0.906
	1-2 weeks	17	1	18		
	2-4 weeks	22	1	23		
	>5 & Unable	19	2	21		
	Total	93	7	100		
Medication	Drug 1&2	45	2	47	$\chi^2=1.373$ df=2	p=0.503
	Deriphyline	25	2	27		
	Others	23	3	26		
	Total	93	7	100		
Smoking	Yes	24	1	25	$\chi^2=0.461$ df=1	p=0.497
	No	69	6	75		
	Total	93	7	100		
Family history	1 st degree	68	4	72	$\chi^2=0.824$ df=1	p=0.364
	No	25	3	28		
	Total	93	7	100		

Duration of Asthma	<1 year	37	2	39	$\chi^2=0.431$ df=2	p=0.806
	1-5 years	37	3	40		
	5+ years	19	2	21		
	Total	93	7	100		
Asthma severity	Mild	85	6	91	$\chi^2=0.470$ df=2	p=0.791
	Moderate	7	1	8		
	Severe	1	0	1		
	Total	93	7	100		
Co-morbidity present	DM	12	2	14	$\chi^2=8.726$ df=3	p=0.033
	HT	15	1	16		
	Gastro&Bone	10	3	13		
	Others	56	1	57		
	Total	93	7	100		
Allergy	Pets	10	2	12	$\chi^2=3.120$ df=5	p=0.681
	Dust	5	0	5		
	Pollen	10	1	11		
	Smokes	16	1	17		
	Fumes	7	1	8		
	Cold air	45	2	47		
	Total	93	7	100		
Use of Peak flow metre	Yes	93	7	100	$\chi^2=0$ df=1	p=1.000
	No	0	0	0		
	Total	93	7	100		

The above table table 33 shows the association between selected clinical variables and AQLQ of the patients of the experimental group in post-test II. The patients' time of last consultancy with a physician, whether or not they had industries around their homes at that time, what kind of cooking fuel they used at that time had statistically highly significant associations with their quality of life, and the patients' co-morbid illnesses had a statistically significant association with their quality of life.

($p<0.01$). The rest of the clinical variables had no statistically significant association with their quality of life ($p>0.05$).

Summary

This chapter dealt with the analysis and the interpretation of data obtained by the researcher. The analysis showed improvement in the quality of life in regard to Symptoms, Activity Limitation, Emotional Function and Environmental Stimuli among asthma patients after the intervention on peak flow self management plan. This indicates that the peak flow self management plan was effective in enhancing the quality of life for asthma patients

Chapter – V
Discussion

CHAPTER - V

DISCUSSION

This chapter deals with the discussion of the results of the data analyzed based on the objectives of the study and the hypotheses. This chapter also presents the major findings and discusses them in relation to similar studies conducted by other researchers. The aim of this study was to find out the effectiveness of peak flow self management plan for asthma patients on quality of life in selected community.

The research design used for the study was quasi experimental time series design. The study was conducted among 200 asthma patients. The conceptual frame work based on Bandura's self regulatory model was applied for the present study. The findings of the study had proved that there was a significant difference in experimental group and improved quality of life after intervention.

Major findings of the study

Description of sample characteristics

The present study revealed that majority of the asthma patients were males (54%, 72%), married (57%, 66%), from rural back ground (69, 74), from joint family (84%, 79%) in control group and experimental group respectively. Considerable percentage of them were aged >60 years (42%, 42%), had degree education (20%, 28%), were unskilled workers (42%, 37%) with monthly family income of Rs.5001 - 10,000 (44%, 41%) in control group and experimental group respectively.

In regard to clinical variables, majority of the asthma patients had industry around home (81%, 77%), used LPG for cooking (71%,82%), used no peak flow metre (77%,94%), had family history of first degree relative with asthma (67%,72%), had no habit of smoking (61%, 48%), with moderate asthma (49%,64%) had

consultation with physician one month back (58%,51%) and had no presence of co-morbid illness (46%, 57%). Considerable percentage of them had no absenteeism in work or school (43%, 38%), used Salbutamol medication (41%, 42%), with history of asthma for 1-5 years (35%,39%) and allergy to cold air (40%, 47%) in control group and experimental group respectively.

The first objective of the study was to assess the quality of life and general well being before and after peak flow self management plan in control and experimental group of asthma patients.

The present study findings indicate that the mean AQLQ scores of control group and experimental group were almost same (95.90, 96.6/224) during pretest having the “t” value 0.88 which showed there is no significant difference in mean pretest scores ($p>0.05$), but the post test scores of experimental group were significantly higher after 2 months (127.7), 4 months (144.1) and 6 months(161.1) than the post test scores of control group respectively 2 months (98.3) 4 months (100.7) and 6 months(103.09).

The present study also found that the mean Well being index scores before peak flow monitoring in experimental group was $M=29.32$, $SD=2.5$ and after peak flow monitoring was $M=49.4$, $SD=2.7$, $M=61.2$, $SD=1.8$, $M=80.8$, $SD=1.5$ during post test I,II,III respectively. The mean Well being index scores during pre test in control group was $M=30.36$, $SD=2.5$ and in post test $M=35.52$, $SD=2.4$, $M=40.96$, $SD=1.8$, $M=45.20$, $SD=2.7$ during post test I, II, III respectively.

The findings are consistent with the findings of **Kaya et al.** (2009) who conducted a study on Self-management plans for asthma control and predictors of patient compliance to evaluate the impact of peak flow or symptom-based self-

management plans on asthma control and patients' quality of life and to determine the main psychosocial factors that affect compliance with these plans. Of the 63 patients 85% of them had moderately or severely persistent asthma. Personal asthma plans increased optimal asthma control significantly. Emergency visits, antibiotic treatments, systemic corticosteroid treatments, and unscheduled visits were fewer than the previous year. Control parameters were better in the PFM group. After the self-management education, the quality of life dimensions, i.e., vitality, total mental and general scores of both groups increased. Compliance with the action plans was better in the PFM group.⁶³ So here it indicates the importance of personal asthma plans & PFM I s required for asthma control and improved quality of life in terms of reduced emergency visits, antibiotic treatments, systemic or ICS.

The second objective of the study was to assess the effectiveness of peak flow self management plan among asthma patients by comparing the quality of life and general well being between control and experimental group of asthma patients.

H_02 : There will be no significant difference in the mean AQLQ score and well being index score between first and subsequent observations in control and experimental group.

The present study findings showed that the mean scores of AQLQ in control group during pretest was $M=95.90$, $SD=7.84$, though there was slight increase during Post test I (98.37, $SD=8.8$), Post test II (100.77, $SD=11.72$), and Post test III (103.09, $SD=13.2$). There was no significant difference between the means of first and subsequent observation having the "t" value for pre test with post test I ("t" 1.94.3),

post test I with post test II ("t" 1.76) and post test II with post test III ("t" 1.43) respectively as it is below table value 2.36 (p>0.05).

And the post test scores of AQLQ in experimental group were 127.73, 144.14, 161.17 that was significantly higher than in control group (95.90, 100.77, 103.09) at the end of 2 months 4 months and 6 months respectively. And the unpaired "t" value (24.42, 27.72, 38.26) showed significant difference between experimental and control group after the intervention (p<0.001). This showed that peak flow self management plan among asthma patients was effective on quality of life. Hence H₀2: There will be no significant difference in the mean AQLQ score and well being index score between first and subsequent observations in control group and experimental group of asthma patients is rejected.

The findings are consistent with the findings of **McGrath, et.al** (2009) along with the University of California San Francisco. They conducted a 24-week randomized, controlled trial to determine if individualized instruction in asthma self-management adds significantly to the effects of self monitoring alone on patients' adherence to inhaled corticosteroids (ICSs), medications that can help reduce inflammation in the airway and prevent asthma attacks.

In the study, 84 adults with asthma self-monitored their symptoms and kept a daily log of their peak expiratory air flow. Of that group, 45 patients were randomly selected to also receive a personal 30-minute session that included asthma information, personally relevant allergen exposure reduction, a personal action plan, and instruction in the correct use of their inhalers. During the study period, adherence to ICSs was consistently higher in the intervention group compared with the control group. In addition, participants in the intervention group experienced fewer nighttime

awakenings, a marker of asthma control. Intervention participants also used rescue inhalers less frequently, experienced an increased sense of control over their asthma, and had a significant decrease in their levels of tryptase, which is released from cells in the presence of allergens.⁷⁸ So here is observed that PFM and individualized instructions helped in adherence to ICS, less night time awakenings, and fewer asthma episodes leading to good asthma control.

These findings are also consistent with the findings of **Malarvizhi et al** (2015) on “Effectiveness of Peak Flow Guided Self Management Plan on Asthma Health Outcomes among Patients with Bronchial Asthma at Chest OPD, Sri Ramachandra Hospital, Chennai-116” which showed that the overall improvement in the mean scores of post-test for experimental group when compared with control group, which was highly significant. Hence it indicates that peak flow self management plan was effective in improving quality of life among asthma patients.⁷¹

The present study findings are also consistent with the findings of **Akiyama** (2002) in her literature on Self-Management with Peak Expiratory Flow Monitoring—Treatment for Bronchial Asthma—explains that Peak expiratory flow (PEF) monitoring should be considered in patients with moderate to severe asthma, who are older than 5 years of age, have measurable PEF values, and receive medication on a daily basis. In the practical treatment and management of asthma, the PEF monitoring is most effective in cases where step-wise therapy according to asthma severity is applied in long-term management.⁷³ Thus PEF monitoring on daily basis is more useful for chronic asthma patients than for acutely ill asthmatics.

The mean scores of well being index scores in experimental group during pretest was only M=29.32 but there was gradual increase during Post test I

(M=49.48, SD=2.7), Post test II (M=61.28, SD=1.86), and Post test III (M=80.80, SD=1.5), which can be attributed to the effectiveness of peak flow monitoring for asthma patients. The improvement was statistically significant ($p<0.01$) having the “t” value for Pre test with post test I (“t” 13.3), post test I with post test II (“t” 8.4) and post test II with post test III (“t” 20.5) respectively.

The present study findings are also consistent with the findings of **Slader et al** (2007) who conducted a study on Measuring peak flow enhances adherence to monitoring in asthma. There were three “PEF periods” during which patients also measured spirometry twice daily. PEF was displayed after each of three maneuvers followed by the highest PEF. At study visits, data were uploaded and reviewed by the research assistant. The adherence to monitoring was higher during PEF periods than non-PEF periods (79% vs. 65%, $p<0.0001$). Mixed model analysis showed that weekly adherence with monitoring increased by 13% with PEF monitoring ($p<0.0001$) and by 5% with each 10 years of increasing age ($p<0.0001$). There was no effect of gender ($p=0.80$) or time to next/last visit ($p=0.59$).⁷⁹ This study attributed also stresses the importance of PEF monitoring for good adherence to treatment.

The third objective of the study was to assess the acceptability of asthma patients regarding peak flow self management.

The present study revealed that majority of asthma patients (63%) have highly accepted with peak flow self monitoring intervention, 37% just accepted the peak flow self management plan intervention, no one was under unacceptable or highly unacceptable categories. It indicates the interest, willingness and possibility of adherence with monitoring of asthma patients towards asthma treatment and control.

The present study findings are consistent with the findings of **Slader et al** (2007) where he explained that in contrast with the perception that PEF monitoring is burdensome to patients, this analysis on Measuring peak flow enhances adherence to monitoring in asthma showed that, with electronic diaries, asking adults to measure PEF significantly improved their adherence with monitoring. While a randomised study would be required to formally evaluate the impact of PEF measurement on adherence with monitoring, this is the first study to assess differences in adherence with monitoring with and without PEF. They used patients as their own controls as they crossed over between periods. Good adherence was also achieved with similar electronic devices, despite the routine nature of the monitoring for assessment of study outcome variables and the absence of physician feedback to patients.⁷⁹ Here it is observed that instead of manual peak flow, electronic measurement is preferred for good adherence to treatment and monitoring.

The fourth objective of the study was:

To find out the correlation between quality of life and its domains among control and experimental group of asthma patients in pre test and post test.

The present study revealed that there is no significant correlation between its domains of AQLQ during pretest and post test I. But there was significant correlation among the domains in post test II and III in control group. Same way there was no significant correlation between quality of life (AQLQ) and its domains during pretest, post test I (except activity with emotional), post-test II, as well as post-test III among the domains in in experimental group.

The present study findings are also consistent with the findings of **Schatz M et al** where in Questionnaires were completed at home by a random sample of 542 adult asthmatic patients. The correlations of the two asthma control tools (Asthma

Control Test and Asthma Therapy Assessment Questionnaire) with the quality of life tool (mini-Asthma Quality of Life Questionnaire) were strongest with the symptoms and activity domains ($r = 0.63\text{--}0.77$); lower with the emotions domain ($r = 0.57\text{--}0.64$); and lowest with the environment domain ($r = 0.38\text{--}0.43$). Asthma control tools reflect the symptoms and activity themes of asthma quality of life well, but reflect the environmental domain less well.¹⁰² Therefore asthma tools may be used to study the domains in AQLQ and the relationship between quality of life and its domains.

The fifth objective of the study was:

To find the association between demographic and clinical variables with pre-test quality of life in control and experimental group.

The present study in table 1 showed that majority (63%) of the participants were males. The findings are supported by the findings of a study conducted by **Chhabra et al**, to estimate prevalence of bronchial asthma in different regions of India and to define risk factors influencing disease prevalence in Chandigarh, Delhi, Kanpur and Bangalore where in among 73605 respondents, 37682 were men and 35923 were women that showed asthma being found in men than women.³⁰ This showed asthma affects women more than men.

Among participants most (39.5%) of the patients were unskilled workers earning Rs.5001 to 15000/- . The findings are supported by the findings of a study conducted on ‘Socioeconomic Status and Asthma Prevalence in Young Adults in which Asthma prevalence was higher in lower socioeconomic groups, and patients of low educational levels had a higher risk of asthma’. The authors concluded that community influences of living in a low-educational area are associated with asthma, independently of patients’ own educational level and social class.³¹ Similar findings

are also reported by **Apter et al.** (2013)⁴⁸ who studied the association of health literacy to asthma self-management in 284 adult patients and found that higher health literacy was linked to better asthma control and adherence to therapy.

Also highest percentages (71.5%) of asthma patients were living in rural area. The findings are supported by the findings of a study conducted on Prevalence and risk factors for self-reported asthma in an adult Indian population: a cross-sectional survey. The prevalence of self-reported asthma was 1.8% (95% CI 1.6–2.0) among men and 1.9% (95% CI 1.8–2.0) among women, with higher rates in rural than in urban areas and marked geographic differences.³² Thus living in rural area may be a predisposing factor for developing asthma.

Among the participants majority (79%) of patients have industry around their home. The findings are supported by the findings of a study conducted on ‘Prevalence of asthma by industry in the US population: A study of 2001 NHIS data’ where in, In whites, the prevalence and ORs were significantly elevated for printing, publishing, and allied industries ($OR = 2.4$, 95% CI 1.2–5.0) and health care ($OR = 1.3$, 95% CI 1.0–1.7).³⁶ so inhaling or exposure to cotton dust or other industries may be another predisposing factor for developing asthma.

In respect to smoking habits in this study most of the participants (54.5%) had smoking habit. The study findings are consistent with the findings of **Aggarwal. et al**, in which current tobacco smoking ($OR = 1.30$, 95% CI 1.12–1.50) and ever use of alcohol ($OR = 1.21$, 95% CI 1.05–1.39) were associated with an increased asthma risk.³²

The same study findings are also consistent with the findings of **Cerveri et al** in which Smokers had the highest proportion of patients with chronic cough/phlegm

($p<0.01$). One out of 4 patients with asthma continues smoking and reports significantly more chronic cough/phlegm than never smokers and ex-smokers. This stresses the importance of smoking cessation in all patients with asthma, even in those with less severe asthma.³⁷

Again **Rabe et al** in their study on Worldwide severity and control of asthma in children and adults has mentioned that the proportion of adult asthmatic patients who were current smokers was high.⁵¹ So, having first degree relative has more chance of developing asthma as a heredity factor.

In regard to family history (first degree) of asthma, majority (69.5%) of the participants have family history (first degree) of asthma. The findings are supported by the findings of a study conducted on ‘Family history as a predictor of asthma risk where in family history of asthma in one or more first-degree relatives was consistently identified as a risk factor for asthma’.³⁴

Among the participants a significant percent (51.5%) of the patients had no co-morbid illness. The findings are supported by the findings of a study conducted on ‘Asthma and comorbidities’ where it says evidence-based medicine is lacking as most asthma studies exclude comorbidities; and that additional studies are needed.³⁵

The present study showed majority (37%) of patients had allergy to cold air. The findings are supported by the findings of a study conducted on Mild Cool Air - A Risk Factor for Asthma Exacerbations: Results of a Retrospective Study where in the Maximum attack rate (>90%) was found in October, November (early winter) and

February and March (spring) during all the four years (2006-2009) studied except in October 2009 and the common precipitant identified during these months was mild cool air (environmental temperature of 23-27°C).³⁸

Finally the present study showed majority (85.5%) of the patients had not used peak flow metre for asthma. Only 14.5% had ever used but that also were not on regular basis. This highlights the need for Asthma self-management education program on home monitoring of peak expiratory flow. This is supported by the findings of another study which was conducted on Asthma Self-Management: A Study in an Emergency Room of a Chest Hospital in Delhi, India, in which it explained that not all patients had metered dose inhalers at home. Only 2.0% of patients were prescribed peak flow meters and were keeping a diary of their readings. With one exception, patients did not have written action plans for treatment provided by doctor or health facility. These findings lend preliminary support for an extended self-regulatory model of treatment adherence, which incorporates beliefs about treatment.⁷⁶ This draws the attention to development of new nursing strategies and evidence based models related to peak flow monitoring and home management in asthma care.

Association between Pre-test AQLQ Score and Selected Demographic Variables

Findings of the present study showed that there was no significant association between pre test score and selected demographic variables such as age ($\chi^2 = 3.12$, $\chi^2 = 2.156$ $p > 0.05$), Gender ($\chi^2 = 3.10$, $\chi^2 = 0.01$ $p > 0.05$), Education ($\chi^2 = 6.46$, $\chi^2 = 6.56$ $p > 0.05$), occupation ($\chi^2 = 0.69$, $\chi^2 = 0.32$ $p > 0.05$), family income ($\chi^2 = 1.35$, $\chi^2 = 5.06$ $p > 0.05$), Area of residence ($\chi^2 = 0.03$, $\chi^2 = 1.06$ $p > 0.05$), and type of family ($\chi^2 = 0.65$, $\chi^2 = 2.61$ $p > 0.05$) in control and experimental group respectively. From this it is

evident that pretest scores of AQLQ were not affected by any of the variables. This is supported by the findings of a study by **Kaya et al** which was conducted to evaluate the impact of peak flow or symptom-based self-management plans on asthma control and patients' quality of life which showed no statistical significant association between demographic parameters and the compliance.⁷² Hence H₀₄: There will not be significant association between AQLQ scores and selected demographic variables is accepted.

Association between Pre-test AQLQ Score and Selected Clinical Variables

Findings of the present study showed that there was no significant association between pre test scores and quality of life and selected clinical variables of asthma patients of control and experimental group such as last consultation with physician ($\chi^2 = 5.91$, $p > 0.05$; $\chi^2 = 5.491$, $p > 0.05$), industries around home ($\chi^2 = 0.67$, $p > 0.05$ only in experimental group), cooking fuel used ($\chi^2 = 0.51$, $\chi^2 = 2.15$ $p > 0.05$), absence from work ($\chi^2 = 2.08$, $\chi^2 = 1.36$ $p > 0.05$), medication used ($\chi^2 = 0.07$, $p > 0.05$ only in control), smoking habit ($\chi^2 = 1.94$ $p > 0.05$ only in experimental), family history of asthma ($\chi^2 = 0.04$, $\chi^2 = 0.32$ $p > 0.05$), duration of asthma ($\chi^2 = 1.07$, $p > 0.05$ in control group), presence of co-morbidity ($\chi^2 = 0.41$, $\chi^2 = 3.29$ $p > 0.05$), and allergies ($\chi^2 = 0.41$, $\chi^2 = 3.29$ $p > 0.05$) in. Hence H₀₄ and H₀₅ : There will not be significant association between AQLQ scores and selected demographic variables and selected clinical variables is accepted.

Medications used by the patients and Asthma severity ($\chi^2 = 7.44$, $\chi^2 = 7.28$, $p < 0.05$), showed association in experimental group and industry around house ($\chi^2 = 6.70$), smoking habit ($\chi^2 = 11.70$) and asthma severity ($\chi^2 = 13.28$) in control group was statistically strongly significantly associated with quality of life ($p < 0.01$). Hence H₀₄ and H₀₅: There will not be significant association between AQLQ scores and

selected demographic variables and selected clinical variables may be partially rejected.

Association between Post-Test II AQLQ Score and Selected Demographic Variables

Findings of the present study showed that there was no significant association between post test II score and selected demographic variables such as gender ($\chi^2=0.190$, $\chi^2=0.824$, $p>0.05$), education ($\chi^2=1.348$, $\chi^2=1.475$, $p<0.01$), occupation ($\chi^2=2.220$, $p>0.05$ in experimental group only), family income ($\chi^2=0.05$ $\chi^2=3.303$, $p>0.05$), Area of residence ($\chi^2=0.234$, $\chi^2=1.112$, $p>0.05$), and type of family ($\chi^2=2.38$, $\chi^2=2.168$, $p>0.05$) except with age ($\chi^2=12.079$, $\chi^2=14.558$, $p>0.05$) in control and experimental group respectively, thus post test II scores of AQLQ were not affected by any of the above variables.

But the variable age ($\chi^2=12.07$, $p<0.01$) was statistically strongly significant association with the quality of life; and occupation status ($\chi^2=7.317$, $p<0.05$), was statistically significant only in control group.

Association between Post-test II AQLQ Score and Selected Clinical Variables

Findings of the present study showed that there was no significant association between post test II scores and quality of life and selected clinical variables of asthma patients such as last consultation with physician ($\chi^2 =0.492$, $p>0.05$ only in control group), industries around home ($\chi^2=0.691$, $p>0.05$ only in control group), cooking fuel used ($\chi^2=0.583$, $p>0.05$ only in control group), absence from work ($\chi^2=4.852$, $\chi^2=0.558$, $p>0.05$), family history of asthma ($\chi^2=0.243$, $\chi^2=0.824$, $p>0.05$), duration of asthma ($\chi^2=3.281$, $\chi^2=0.431$, $p>0.05$), presence of co-morbidity ($\chi^2=3.754$, $\chi^2=p>0.05$), and allergies ($\chi^2=8.908$, $\chi^2= p>0.05$), whereas the habit of smoking of the

patients ($\chi^2 = 19.182$, $p < 0.01$) and the severity of asthma of the patients ($\chi^2 = 16.194$, $p < 0.01$) showed a statistically strong association ($p < 0.01$) and the medications used ($\chi^2 = 6.356$, $p < 0.05$) by the patients in control group showed a statistically significant association with the quality of life.

There was statistically strong significant association with quality of life and the last time the patients met a physician ($\chi^2 = 9.316$, $p < 0.01$), industries around the homes ($\chi^2 = 9.968$, $p < 0.01$) and cooking fuel used by the patients ($\chi^2 = 7.813$, $p < 0.01$) was statistically highly significantly associated with quality of life ($p < 0.01$). And the co-morbid illnesses of the patients ($\chi^2 = 8.726$, $p < 0.05$) also had a statistically significant association with their quality of life in experimental group. These findings are supported by the findings conducted by **Aggarwal et al** where in information on smoking habits, domestic cooking fuel used, atopic symptoms, and family history suggestive of asthma was collected. Asthma was diagnosed in 2.28%, 1.69%, 2.05 and 3.47% respondents respectively at Chandigarh, Delhi, Kanpur and Bangalore, with overall prevalence of 2.38%. Female sex, advancing age, usual residence in urban area, lower socio-economic status, history suggestive of atopy, history of asthma in a first degree relative, and all forms of tobacco smoking were associated with significantly higher odds of having asthma.³¹ From this it is evident that advancing age or old age, usual residence in urban area presently due to urbanization and industrialization, lower socio-economic status ultimately leading to poor nutrition and decreased immunity, and smoking are all factors that may cause asthmatic symptoms.

The conceptual frame work for the study was based on the Bandura's self regulatory theory which enabled the researcher to appreciate the overall research

process. The model designated on individual's perception of his own capabilities, attain strong commitment to follow the instructions and achieve the goals on behaviour change and modification in regard to peak flow self management.

Summary

The above discussion clearly represented that there has been a statistically significant improvement in experimental group in post test scores than in control group denoting the effectiveness of peak flow self management plan on quality of life for asthma patients in a selected community. This emphasizes the importance of education related to peak flow monitoring on asthma control and home management. The nurses in community plays a pivotal role in building up the health status of asthmatics living in community thus enhancing the quality of life and reduce hospitalization for asthma patients.

This chapter dealt with discussion based on objectives of the study, hypotheses, relevant consistent literature to support the study findings and utility of conceptual framework.

Next chapter will focus on summary, conclusion, implications, recommendations and limitation.

Chapter – VI
Summary, Conclusion,
Implications, Recommendations

CHAPTER - VI

SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS AND LIMITATIONS

This chapter presents the summary of the study, major findings, conclusions drawn and implications of the study, limitations encountered and recommendations for future research.

The main purpose of this study was to assess the effectiveness of peak flow self management plan upon quality of life among asthma patients. The research design used for the study was a quasi experimental two group pre test-post test time series design. The study was conducted among 200 adults with asthma in a community at Coimbatore.

Summary

Asthma is a serious health condition. It is established that the prevalence rate of bronchial asthma and allergic rhinitis is about 10 to 15% irrespective of the area in which people live whether it is industrial, urban, or rural. Increased life-expectancy in the face of increased morbidity and health-care utilization makes this an expensive public health problem that begs attention. In addition, recent evidence of increasing incidence of steroid resistance in asthmatics has aggravated the situation further. Therefore identifying and modifying the specific factors that predispose individuals towards asthma is important. Peak flow self management plan helps to monitor one's lung condition detecting early changes in asthma that may require therapy preventing asthma exacerbations. In this context, the problem selected for the present study was "A study to assess the effectiveness of peak flow self management plan on quality of life for asthma patients in selected community at Coimbatore."

The objectives of the study were

1. To assess the quality of life and general well being before and after peak flow self management plan in control and experimental group of asthma patients.
2. To assess the effectiveness of peak flow self management plan among asthma patients by comparing the quality of life and general well being between control and experimental group of asthma patients.
3. To assess the acceptability of asthma patients regarding peak flow self management plan in experimental group.
4. To find out the correlation between quality of life and its domain among control and experimental group of asthma patients in pre test and post test.
5. To find the association between demographic and clinical variables with quality of life in control and experimental group.

The research hypothesis formulated for the present study were

- **H₀1:** There will be no significant difference between the mean AQLQ score and well being index score between control and experimental group of asthma patients before and after intervention.
- **H₀2:** There will be no significant difference in the mean AQLQ score and well being index score between first and subsequent observations in control and experimental group of asthma patients.
- **H₀3:** There will not be any correlation between quality of life and its domains among control and experimental group of asthma patients in pre test and post test.

- **H₀4:** There will not be significant association between AQLQ scores and selected demographic and clinical variables in control and experimental group of asthma patients.
- **H₀5:** There will not be significant association between AQLQ scores and selected clinical variables in control and experimental group of asthma patients.

The major findings of the study were

- In relation to demographic variables, majority of the asthma patients were males (54%, 72%), married (57%, 66%), from rural background (69,74), from joint family (84%,79%) in control group and experimental group respectively. In regard to clinical variables, majority of the asthma patients had industry around home (81%, 77%), used LPG Gas for cooking (71%,82%), used no peak flow metre (77%, 94%), had family history of first degree relative with asthma (67%,72%), had no habit of smoking (61%, 48%), with moderate asthma (49%,64% %), had consultation with physician one month back (58%,51%) and had no presence of co morbid illness (46%,57%).
- In pre-test, the mean AQLQ scores of control group and experimental group were almost same (95.90, 96.6/224) with “t” value 0.88 showed that there is no significant difference at ($p>0.05$), however in post test I, II, III, with the interval of 2 months, there was marked increase in AQLQ score only in experimental group (127.73, 144.14, 161.17) and it was statistically significant at ($p<0.001$). There was also significant difference between control and experimental group.

- With regard to general well being index scores also, in pretest experimental group had $M=29.32/100$ that gradually increased to 49.4, 61.2, 80.8 during post test I,II,III respectively and it was statistically significant at ($p<0.01$).
- On comparison of AQLQ score of pretest, post test 1, post test II and post test III, repeated measures of ANOVA showed significant difference between the two groups. The experimental group had an improvement in AQLQ score that was statistically significant ($p<0.000$).
- With regard to association with selected demographic variables and quality of life, there was no significant association between pre test score and selected demographic variables such as age ($\chi^2 =3.12$, $\chi^2=2.156$ $p>0.05$), Gender ($\chi^2 =3.10$, $\chi^2=0.01$ $p>0.05$), Education ($\chi^2=6.46$, $\chi^2=6.56$ $p>0.05$), occupation ($\chi^2 =0.69$, $\chi^2=0.32$ $p>0.05$), family income ($\chi^2 =1.35$, $\chi^2=5.06$ $p>0.05$), Area of residence ($\chi^2 =0.03$, $\chi^2=1.06$ $p>0.05$), and type of family ($\chi^2 =0.65$, $\chi^2=2.61$ $p>0.05$) in control and experimental group respectively. And among clinical variables only asthma severity and medications had statistically significant association in experimental group ($p<0.05$). And asthma severity, habit of smoking and whether or not they had industries around their homes had statistically highly significant associations with their quality of life ($p<0.01$).
- There was no significant association between post test II scores and quality of life and selected clinical variables of asthma patients such as last consultation with physician ($\chi^2 =0.492$, $p>0.05$ only in control

group), industries around home ($\chi^2=0.691$, $p>0.05$ only in control group), cooking fuel used ($\chi^2=0.583$, $p>0.05$ only in control group), absence from work ($\chi^2=4.852$, $\chi^2=0.558$, $p>0.05$), family history of asthma ($\chi^2=0.243$, $\chi^2=0.824$, $p>0.05$), duration of asthma ($\chi^2=3.281$, $\chi^2=0.431$, $p>0.05$), presence of co-morbidity ($\chi^2=3.754$, $\chi^2= p>0.05$), and allergies ($\chi^2=8.908$, $\chi^2= p>0.05$), whereas the habit of smoking of the patients ($\chi^2 =19.182$, $p<0.01$) and the severity of asthma of the patients ($\chi^2 =16.194$, $p<0.01$) showed a statistically strong association ($p<0.01$) and the medications used ($\chi^2 =6.356$, $p<0.05$) by the patients in control group showed a statistically significant association with the quality of life.

- There was statistically strong significant association with quality of life and the last time the patients met a physician ($\chi^2 =9.316$, $p<0.01$), industries around the homes ($\chi^2 =9.968$, $p<0.01$) and cooking fuel used by the patients ($\chi^2 =7.813$, $p<0.01$) was statistically highly significantly associated with quality of life ($p<0.01$). And the co-morbid illnesses of the patients ($\chi^2 =8.726$, $p<0.05$) had a statistically significant association with their quality of life in experimental group.

Conclusion

The following conclusion was drawn on the basis of findings of the study:

1. The patients in experimental group developed self-care management skills and could avoid emergency consultations. It helped in reducing prolonged hospitalization reducing the severity of asthma, having less days of absenteeism from work suggesting the effectiveness of peak flow self management plan on quality of life for asthma patients. It was well-appreciated and accepted by the patients though it was little difficult at the beginning of practice.
2. The introduction of peak flow self management plan and peak flow diary among the patients helped them to gain the importance of awareness on monitoring the lung status thus preventing asthma episodes which was evident in the post- test AQLQ score. They could live a normal and active life.
3. The information booklet on asthma identification allergies and avoidance of triggers as well as monitoring the lung status using peak flow metre as *My asthma action plan* with Normal zone, Caution zone, Danger zone proved to be an effective teaching module in early recognition of symptoms and managing the same at home.

Thus the overall results of the study indicates that peak flow self management plan was effective in improving the quality of life for asthma patients.

NURSING IMPLICATIONS

The findings of the present study have implications in the field of nursing education, nursing practice, nursing administration and nursing research. The investigator has devised the following implications that may be vital for the adult health nurse working either at hospital or community setting.

- Adult health nurse in medical or respiratory wards can teach asthma patients regarding asthma care such as identifying or recognize the triggers and avoid such triggers to minimize the asthma attacks.
- Nurse can implement the written action plan and peak flow monitoring to determine the lung status and decide the treatment as required (quick relievers or long term drugs) depending on the condition or symptoms for all patients diagnosed with asthma.
- Nurse can use the asthma information booklet framed by the investigator educating the patients in hospital or community.
- Nurse can involve in assessing the patients at OPD regarding adherence to treatment and correct usage of inhaler techniques while consulting physician.

Nursing Education

The health care delivery system at present is giving more emphasis on preventive rather than curative aspect. A well planned health education on recognition of the symptoms of asthma for patients, families, and the public would decrease asthma-related morbidity and mortality.

Self management education incorporates behavioural strategies and can improve adherence to treatment in asthma control. Nurses have a vital role in teaching patients on self monitoring of symptoms and/peak flow. By heightening the patient's awareness of symptoms and airflow obstruction, monitoring alone may be sufficient

to enhance adherence by showing the patient that asthma control deteriorates when treatment is ignored and improved when it is taken regularly.

The study also gives priority for the asthma patients' quality of life in which self management education was reinforced by a written personalized asthma action plan and upholds and maintains the health status of patients enabling them to confidently self manage their care. The effectiveness of the peak flow self management plan and asthma information booklet can be used as an educational mode to patients in hospital and community by student nurses. The nurse should be well equipped with sufficient practical knowledge and skills and assist in asthma control thus reducing the asthma exacerbations.

The holistic health care approach should be emphasized during the training of nursing students. This is indeed an eye opener to all those who work in hospitals and community to provide education to nurses by different teaching strategies. Hence the nursing students could be empowered to update the knowledge on peak flow usage and implement the same for better asthma care and improved quality of life for asthma patients.

Nursing Practice

The nurse has to play a key role in the health delivery system, mainly emphasizing on primary prevention. Primary prevention includes health promotion. One of the methods of health promotion is health education. It is known fact that asthma is treatable. The nurse can diagnose and manage asthma. They have a unique opportunity as frontline care givers and patients to recognize, assess and effectively treat the wide spread of uncontrolled asthma. She involves in direct patient care during emergencies removing the airway obstruction caused by allergens or and

promote normal breathing pattern. Therefore the nursing personnel in the hospitals can be helpful in controlling the complications such as respiratory failure increasing the productivity of care and thereby reduce the asthma mortality and morbidity and help patients to be responsible for their care through expert nursing practice and teaching.

Nursing Administration

Nursing administrators should take initiatives in creating plans and policies in hospital and community or primary health centres for educating the nurses. In service education regarding asthma care using peak flow monitoring should be planned for nurses periodically by nursing administrators. They can display pamphlets in hospital premises on asthma control or provide educational sessions on inhaler use, controlling triggers, food additives, medications to avoid, Emotion, Exercise and Asthma medications for nurses in medical out patient department.

Nursing administrators can prepare protocols on standardized care for emergency purpose and display the same in emergency wards/ICU. They can train nurses to become specialized and expert in asthma care. In each session they should assess their level of knowledge before and after continuing education programme. They should plan for manpower, money, material, methods and time to conduct successful educational programmes. Health administrators should appraise the education department about the prevailing health problems and assist in prevention of complications of asthma patients.

Nursing Research

An emphasis on nursing research and clinical studies is needed to improve the quality of nursing care. The present study focused on improving the quality of life for asthma patients providing peak flow self management plan. This type of individual

study would help generate not only a comprehensive model of asthma care, but also standardized methods for testing common research hypotheses.

Nurse researcher should be aware of the health care system and status of nursing profession. By conducting research and formulating new theories, research can improve the practice, skill, attitude of asthma patients and ultimately can improve the standards of asthma care and asthma control.

The combination of clinical skills and expertise in teaching and counseling enhances the delivery of care in a manner that is cost-effective. Inherent in the role of nurse researcher, nurses have the shared responsibility for health care outcomes. This partnering of nurse with patient not only improves care but strengthens the patient's role as self-manager.

Limitations of the study

The investigator could not have close observation on peak flow self management. Hence there are chances of recall biases.

The investigator had constraints in training the patients till they developed confidence in using peak flow monitoring.

Recommendations

- Similar study can be conducted with personal use of an objective measure of lung function in association with a medication self management plan in order to improve patient's condition.
- A prospective, randomized trial can be conducted comparing two asthma self-management plans for longer duration.
- Comparative study could be conducted incorporating peak expiratory flow and symptom self-management plans with periodic assessment of pulmonary function by spirometry.
- Similar study may be conducted by providing relaxation as an intervention for asthma patients.
- A correlative study between changes in asthma symptoms and lung function during treatment as measured by peak expiratory flow may be done.
- Comparative study may be done assessing the effectiveness of different interventions and adherence to treatment in community settings.
- The study may be replicated in different settings covering various geographical areas in larger population and longer duration as well as for children.

Summary

Asthma is a chronic disease characterized by recurrent attacks of breathlessness and wheezing. In an individual, they may occur from hour to hour and day to day. Mortality due to asthma is not comparable in size to the day-to-day effects of the disease. Although largely avoidable, asthma tends to occur in epidemics and affects young people.

Experts are struggling to understand why rates world-wide are, on average, rising by 50% every decade. Therefore self managing of asthma is very important to lead an active and healthy life. During an asthma attack, the muscles in the airways tighten and cause the airways to narrow. The peak flow self monitoring with asthma action plan alerts patient to the tightening of the airways often hours or even days before he has any symptoms and in managing such symptoms and preventing an asthma attack by taking rescue asthma medicine and avoid a severe asthma emergency thus improving the quality of life.

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Annexures

ANNEXURE – A
PROVISIONAL REGISTRATION CERTIFICATE – Ph.D DEGREE



THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

No.69, ANNA SALAI, GUINDY, CHENNAI - 600 032.

Website : www.tnmgrmu.ac.in Ph : 22353574, 22353576 - 79, 22301760 - 63, 22353094
 E-mail : mail@tnmgrmu.ac.in Fax : 91-44-22353898

Dr. N. JEYALAKSHMI DEVI, M.D., D.G.O,
 ACADEMIC OFFICER

Dated: 09.10.2014

PROVISIONAL REGISTRATION CERTIFICATE FOR Ph.D.

1)	Name of the Candidate	:	Mrs.T.NEETHI SELVAM
2)	Qualification	:	M.Sc.(N) - Medical Surgical Nursing
3)	Duration of the Research	:	PART - TIME - 4 YEARS
4)	Name and Designation of Guide	:	Dr.Janani Sankar, MBBS.,DNB.,Ph.D.,MA.,M.S., Senior Consultant in Paediatrics, Kanchi Kamakoti Child Trust Hospital, 12A, Nageswara Road, Nungambakkam, Chennai 600 034.
5)	Name and Designation of Co-Guide	:	Mrs.A.Lizy Sonia, M.Sc.(N), Vice-Principal, Apollo College of Nursing, Vanagaram – Ambattur Main Road, Ayanambakkam, Chennai 600 095.
6)	Department in which candidate is conducting Research	:	Medical Surgical Nursing
7)	Name of the Institution	:	Apollo College of Nursing, Vanagaram – Ambattur Main Road, Ayanambakkam, Chennai 600 095.
8)	Broad Topic of Research	:	Medical Surgical Nursing
9)	Provisional Title of Research	:	“Effectiveness of peakflow self management plan on quality of life for asthma patients in selected community, Coimbatore”.
10)	Faculty & Branch	:	NURSING, Medical Surgical Nursing
11)	Date of Registration i.e. session	:	01.01.2014
12)	Date of conduct of Methodology Examination	:	01.01.2015
13)	Last Date for completion of Methodology examination	:	31.01.2015
14)	Last date for submission of Synopsis	:	01.10.2017
15)	Prescribed date for submission of Thesis	:	01.01.2018
16)	Last date for submission of Thesis	:	01.01.2019

N. J. DEVI
 ACADEMIC OFFICER

ANNEXURE – B
CONFIRMATION OF PROVISIONAL REGISTRATION



THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

No.69, ANNA SALAI, GUINDY, CHENNAI - 600 032.

Website : www.tnmgrmu.ac.in Ph : 22353574, 22353576 - 79, 22301760 - 63, 22353094
E-mail : mail@tnmgrmu.ac.in Fax : 91-44-22353698

**Dr.C.SRIDHAR, MD
CONTROLLER OF EXAMINATIONS i/c**

Ref.No.EXII(5)/24174/2012

Dated: 13.04.2015

To

Dr.Janani Sankar, MBBS, DNB, Ph.D. MAMS,
Senior Consultant in Paediatrics,
KanchiKamokoti Childs Trust Hospital,
12 A, Nageswara Road,
Nungambakkam, Chennai 600 034.

Sir/ Madam,

Sub: The Tamil Nadu Dr. M.G.R.Medical University, Chennai – Research leading to Ph.D.– **Mrs.T.NEETHI SELVAM** - Part I Methodology Examination JANUARY 2015 – Confirmation of Provisional Registration Order for Ph.D. – Regarding.

Ref: 1. This University's Letter of even number dated 05.03.15.
2. Your letter received on 23.03.2015.

In the reference first cited, It is informed that the Part I - Paper I Methodology Examination was conducted on 28.01.2015 at University Premises and also Paper II & Paper III conducted by the Doctoral Advisory Committee on 23.01.2015 and 27.10.2015 in respect of the Candidate **Mrs.T.NEETHI SELVAM** and the report sent thereon is hereby approved by this University, to proceed with the course for Ph.D. degree.

2. In the reference second cited, a sum of Rs.5,000/- (Five thousand rupees only) has been received from you. In view of this, the provisional registration of the candidate for Ph.D. Degree as **PART-TIME** candidate is hereby confirmed with effect from **01.01.2014**. The candidate Registered Number is **141420014**.

Last date for submission of Synopsis : 01.10.2017

Prescribed date for submission of Thesis : 01.01.2018

Last date for submission of Thesis : 01.01.2019

All the members of the Doctoral Advisory Committee may kindly be informed accordingly.

The candidate should submit 6(six) copies of the Synopsis through the Guide along with the prescribed application form together with the fee prescribed and the necessary original certificates along with xerox copy. While submitting the Synopsis and Thesis, kindly ensure that the title of research should be as per the title approved by this University. **The wrapper of the Thesis should be in PINK colour.**

(P.T.O.)

:2:

It is informed that the said candidate has not permitted for change of title as per Ph.D. Regulation.

As per Ph.D. Regulations, 33.4 Publication of Research Papers -"All Ph.D. candidates before submitting their Ph.D. thesis to the University should have published a minimum of two research papers in any Indexed journals". The publication of research papers may also be implemented from 1-7-2011 onwards.

Further, the Ph.D./ D.Sc. candidates those who are registered with the University from 01.07.2011 session onwards, should submit their Thesis for getting "Certificate of Plagiarism". The Anti Plagiarism Report should be attached in the last page of the Thesis. The details with regard to the Anti-Plagiarism are available in the University Website www.tnmgrmu.ac.in at "Research Ph.D/ D.Sc. Page" for information and necessary action.

The Letter number and date of this communication should be quoted as reference in all future correspondence. All the communications relating to the candidate should be addressed only by the guide and any communication by the candidate directly to the University will not be considered.

CONTROLLER OF EXAMINATIONS i/c

Copy to:

Mrs.T.NEETHI SELVAM ,
Ph.D. Scholar,
Department of Medical Surgical Nursing,
Apollo College of Nursing,
Ayanambakkam, Chennai 600 095.

ANNEXURE – C
CONSTITUTION OF DOCTORAL ADVISORY COMMITTEE



THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

P. file

No.69, ANNA SALAI, GUINDY, CHENNAI - 600 032.

Website : www.tnmgrmu.ac.in Ph : 22353574, 22353576 - 79, 22301760 - 63, 22353094
E-mail : mail@tnmgrmu.ac.in Fax : 91-44-22353698

**Dr.C.SRIDHAR, MD
CONTROLLER OF EXAMINATIONS i/c**

Ref.No. EXII(5)/24174/2012

Dated: 18.11.2014

To

Dr.Janani Sankar,MBBS., DNB, Ph.D.,
Senior Consultant Pediatrician,
Kanchi Kamakoti Childs Trust Hospital,
Chennai 600 034.

Madam,

Sub: The Tamil Nadu Dr.M.G.R.Medical University, Chennai - Research leading to Ph.D. - **Mrs.NEETHI SELVAM.T.** - Registered for Ph.D. during 01.01.2014 session - Constitution of Doctoral Advisory Committee' - Regarding.

Ref: Your letter dated 16.10.2014.

* * * * *

With reference to your letter cited, I am to inform you that the constitution of Doctoral Advisory Committee consisting of the following persons to examine the Ph.D. candidate, **Mrs.NEETHI SELVAM.T.** for conducting Part I Methodology Examinations of the Ph.D Degree Research Program is hereby approved. **The duties of the Doctoral Advisory Committee should be followed as per Ph.D. Regulations 2010 - Section -19B.**

- | | |
|---|---------|
| 1.Dr.Janani Sankar,MBBS., DNB, Ph.D.,
Senior Consultant Pediatrician,
Kanchi Kamakoti Childs Trust Hospital,
Chennai 600 034. | -GUIDE |
| 2. Dr.Latha Venkatesan,M.Sc.,(N),Ph.D.,
Principal, Apollo College of Nursing
Vanagaram to Ambattur Road,
Ayanambakkam, Chennai 600 095. | -MEMBER |
| 3. Dr.Janie Vanitha, M.Sc.,(N), Ph.D.,
Principal, BKR College of Nursing,
GRT Mahalakshmi Nagar,
Chennai to Tirupathi Highway,
Tirutanni 631 209. | -MEMBER |

TITLE: EFFECTIVENESS OF PEAKFLOW SELF MANAGEMENT PLAN ON QUALITY OF LIFE FOR ASTHMA PATIENTS IN SELECTED COMMUNITY, COIMBATORE".

(P.T.O.)

..2..

2. I request you to kindly inform the other members and the candidate concerned regarding the date, time and venue of Advisory Committee meeting to be held.

3. I am also to request you to kindly **prescribe the course the candidate** has to undergo in consultation with the Advisory Committee after interviewing the candidate. A **copy of the course work so prescribed may also be forwarded to this office record.**

4. Further, you are permitted to conduct the Methodology examination both written and oral during **JANUARY 2015** and **forward the Minutes, duly signed by all the members of the Advisory Committee on the candidate's fitness to proceed with his research work for the Ph.D. degree along with question paper and Answer script. The percentage (%) of marks obtained by the candidate in oral and written should be indicated separately in the report.**

5. The Part I Methodology Examination should be conducted with the following New Ph.D. Regulation. The Regulation are:

20.C. The Methodology Examination answer sheets and the results should be sent to the University within a month's time from the day of the Methodology Examination.

20.D. - As resolved in the 44th Meeting of the Standing Academic Board dated 15.06.2012, the candidates those who have registered from 01.07.2012, shall write 3 papers in Methodology Examinations.

The Methodology – Paper I Examination is common to all specialty

Paper-I - Research Methodology - University Premises ↗

Paper-II - Broad subject of the field - Research Centre

Paper-III - Area related to the thesis subject - Research Centre

Followed by Oral presentation of the proposal.

20.E. - As resolved in the 47th Meeting of the Standing Academic Board dated 18.12.2013, the maximum of 100 marks may be allotted for each of the three papers of the Methodology Examination. **No marks be allotted for Oral Presentation of the proposal.**

**## Candidates must obtain 50% marks in Research Methodology (Paper I) Examination
1 &**

50% aggregate in all the 3(three) papers of Part I Examination (i.e. 150/300) to continue their Ph.D programme. (## As resolved in the 48th Meeting of the Standing Academic Board dated 02.07.2014).

1. As resolved in the 47th Meeting of the Standing Academic Board dated 18.12.2013- All the Ph.D. candidates should undergo the training in Research Methodology, Biostatistics and Bio-ethics. The Ph.D. research work involving human subject and clinical trials should undergo GCP [Good Clinical Practice] training.

.3..

2. The workshop for Research Methodology including Biostatistics can be conducted by the qualified faculties of the affiliated Institution for 5 days covering all the topics as per Ph.D. Regulations 2010. The workshop for GCP can be conducted with the qualified faculty members of the affiliated Institutions.

3. The above mentioned training should be completed during the I Year, before the Methodology Examination.

4. Examination for Paper-I Research Methodology shall be conducted by the Controller of Examinations at the University premises twice in a year. Candidates will become eligible to appear for Paper I Research Methodology Examination one year from the date of Provisional Registration. The Paper II and III shall be conducted at the concerned Institutions by the Guides and Advisory Committee Members.

Regulation for Ph.D. is available in the University website www.tnmgrmu.ac.in for information and necessary action.

6. The specific area of research in which the candidate would continue his investigation may also be indicated in the report.

7. Further, it is informed that Rs.1,000/- (Rupees One thousand only) will be paid as Remuneration for conducting Methodology examination, to which Remuneration form is enclosed.

8. All the communications relating to the candidate should be addressed only by the guide and any communication by the candidate directly to the University will not be considered.

In this connection you are requested to direct the candidate to remit a sum of Rs.5000/- towards fee for the conduct of Part I Methodology Examination. The said amount may be remitted through online remittance system - Payment Gateway for students in this University Website www.tnmgrmu.ac.in and submit the fees remittance details to this University for further action in this regard.

Yours Faithfully,

CONTROLLER OF EXAMINATIONS i/c

Encl.: Remuneration Form – 3 Nos.

COPY TO:

Mrs.T.NEETHI SELVAM ,
Ph.D. Scholar,
Department of Medical Surgical Nursing,
Apollo College of Nursing,
Ayanambakkam, Chennai 600 095.

ANNEXURE – D
INSTITUTIONAL ETHICS COMMITTEE APPROVAL CERTIFICATE



Institutional Ethics Committee - Clinical Studies

Reg. No. : ECR/37/Inst/TN/2013

14 July 2015

To,
Mrs. Neethi Selvam T.,
Ph. D. (Nursing),
Apollo College of Nursing, Chennai.

Ref: A study to assess the effectiveness of peak flow self management plan on quality of life for asthma patients.

Sub: Approval of the above referenced project and its related documents.

Dear Mrs. Neethi,

The Institutional Ethics Committee-Clinical Studies has received the following document submitted by you related to the conduct of the above-referenced study -

- Project Proposal

The Institutional Ethics Committee-Clinical Studies, Apollo Hospitals, Chennai reviewed and discussed the document submitted by you related to the conduct of the above-referenced project during the meeting held on 14 July 2015 –

The following members were present at the meeting held on 14 July 2015 at 3:00 pm at Apollo Hospitals Educational Research Foundation, Conference Hall, Room No: 19, 2nd Floor, Krishnadeep Chambers, Wallace Garden, Chennai:

Name	Gender	Designation	Affiliation	Position in the committee
Dr. Rema Menon	F	Blood Bank Transfusion Services	Apollo Hospitals, Chennai	Member Secretary (Clinician)
Dr. Kalpana G.	F	Clinician – Medical Superintendent	Apollo Specialty Hospitals, Chennai	Member (Clinician)
Dr. Pradeep Kumar	M	Pharmacologist	Apollo Specialty Hospitals, Chennai	Member (Pharmacologist)
Ms. Maimoona Badsha	F	Lawyer	Independent Legal Practitioner, Chennai	Member (Lawyer)
Mrs. S. V.	F	Executive- project	Apollo Pharmacy,	Member



Institutional Ethics Committee - Clinical Studies

Reg. No. : ECR/37/Inst/TN/2013

Mathanghi			Chennai	(Layperson)
Dr. K. Sathyamurthi	M	Asst. Professor	Madras School of Social work, Chennai	Member (Social Scientist)

The Institutional Ethics Committee-Clinical Studies reviewed the proposal, its methodology and design of the study. The proposed thesis work is approved in its present proposal without any modifications.

The Institutional Ethics Committee-Clinical Studies review and approval of the report is only to meet their academic requirement and will not amount to any approval of the conclusion / recommendations as conclusive, deserving adoption and implementations, in any form, in any health care institution.

The Institutional Ethics Committee-Clinical Studies is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

Regards,

A handwritten signature in black ink, appearing to read 'Rema Menon'.

Dr. Rema Menon,
Member Secretary,
Institutional Ethics Committee-Clinical Studies,
Apollo Hospitals, Chennai.

Date: 14/11/2015

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE CLINICAL STUDIES
APOLLO HOSPITALS, AHEL
CHENNAI, TAMILNADU.

ANNEXURE – E
CERTIFICATE OF PLAGIARISM CHECK

This is to certify that this thesis work **titled “A study to assess the Effectiveness of Peak Flow Self management Plan for Asthma Patients on Quality of Life in Selected community at Coimbatore”** of the candidate Mrs. Neethi Selvam.T with **Registration Number:** 141420014 for the award of **Ph.D in Nursing** in the branch of Medical Surgical Nursing personally verified the urkund.com website for the purpose of plagiarism check. I found that the uploaded thesis file contains from Introduction to Conclusion pages and result shows 10% percentage of plagiarism in the thesis.

Dr. JANANI SANKAR, MBBS.,DNB.,Ph.D.,M.A.M.S,
Senior Consultant,
Kanchi Kamakoti CHILDS Trust Hospital,
Nungambakkam, Chennai - 600034

(2 unread) - neeth_doss@yahoo.com X D34253636 - CHAPTER 1-6 FINAL N X +

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#3	http://connection.ebscohost.com/c/articles/88176023/asthma-control-quality-life-role-patien...
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Asthma is a chronic disease of the small airways. The hallmarks of asthma are chronic inflammation, reversible obstruction and airflow limitation.

It is a potentially life-threatening or serious airway disease that imposes a substantial burden on patients, their families and the community. Maintaining patent airway has always been vital to life, but asthmatic patients are incapable of keeping their airways clear though air is available in the atmosphere.

While communicable diseases describes mortality and morbidity from major diseases and risk factors to health, "Chronic non communicable diseases are bringing greater disease burden, accounting for more than half of the global mortalities and global morbidity". Sir George Alleyne, calls it the silent tsunami." WHO Director-General warned that asthma is on the rise "everywhere" and referred to it as a festering sore.2 Asthma is also an epidemic. It

has become a disease of interest worldwide because of its impact on individuals and societies.

Asthma is a familiar and growing disease today, and has increasing prevalence, but its story goes back to the ancient world, as we know from accounts in ancient texts from China, India, Greece and Rome. It was treated with acupuncture and Ayurveda.3 There is higher prevalence of asthma in developed than in developing countries and its prevalence increases by 50% every decade.

Globally, it affects 5-10% of population.4 In Saudi Arabia, asthma prevalence has been reported in the proximity of 20% with regional variations. About 8-14% of Saudi children have asthma, and physician-diagnosed asthma in adolescent age

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Date: Saturday 30 December 2017, 11:37:22 PM IST

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Document received: 12/30/2017 7:05:00 PM
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ANNEXURE – F
CERTIFICATE FOR ENGLISH EDITING

CERTIFICATE FOR ENGLISH EDITING

To whomsoever it may concern

This is to certify that the thesis entitled 'A study to assess the Effectiveness of Peak flow Self management plan on Quality of life for Asthma patients in Selected community at in Coimbatore' by Mrs. Neethi Selvam T, Ph.D Nursing student of Apollo college of Nursing was edited for English language appropriateness.


Signature of the English Expert

Name and address MISS Fancy S
James Memorial Hr. Sec. School
Pragasapuram, Nazareth
Seal: Fancy S.M.A.H.S.C.
James Mem. Matriculation, Higher Sec. School,
Prakasapuram, Nazareth - 626 616.
Date: 19. 12. 2017

ANNEXURE – G
CERTIFICATE FOR TAMIL EDITING

CERTIFICATE FOR TAMIL EDITING

To whomsoever it may concern

This is to certify that the thesis entitled 'A study to assess the Effectiveness of Peak flow Self management plan on Quality of life for Asthma patients in Selected community at Coimbatore' by Mrs. Neethi Selvam T, Ph.D Nursing student of Apollo college of Nursing was edited for tamil language appropriateness.

Signature of the Tamil Expert - 12-11

40 B 2nd பாரூஷி நகர்
நாட்டு - 628617.

Name and address (திருவா.ஈ)

இரவி.சி
முதக்கல் பட்டதாரி ஆசிரியி,
பேரூஸ் மெமோரியல் லெப்டிக்
மேல்நிலைப்பள்ளி,
Date: 19.12.17 பிரகாஶபுரம்.

ANNEXURE - H

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY FROM DEPUTY DIRECTOR OF HEALTH SERVICES



R.V.S. COLLEGE OF NURSING **RVS INSTITUTE OF HEALTH SCIENCES**

242-B, Trichy Road, Sulur, Coimbatore - 641 402.

Ph : 0422 - 2687421, 2687480, 2687603, Fax : 0422 - 2687604.

www. nursing.rvshs.ac.in

Mrs. Saramma Samuel
Principal

(Affiliated to the TN Dr. M.G.R. Medical University, Chennai
Recognized by the Indian Nursing Council, New Delhi.)



DINEN ISO 9001 : 2008
CERTIFIED INSTITUTION

Ref No :

21 JUN 2012

13.06.2012

Date.....

To

The Deputy Director of Health Services,
Department of Health Services,
Race Course Road,
Coimbatore.

Sub: Permission to do Research Work – Reg.

Respected Sir / Madam,

This is to inform you that **Mrs. Neethi Selvam PhD**, RVS College of Nursing has to perform a research study as a part of her curriculum.

The topic of her study is:

"A Study to assess the Effectiveness of peak flow self management plan on quality of life for asthma clients in selected community areas at Coimbatore".

Therefore we humbly request you to grant her permission to do the study in your PHC at Somanur. We assure you that all details collected will be kept strictly confidential.

Thanking you

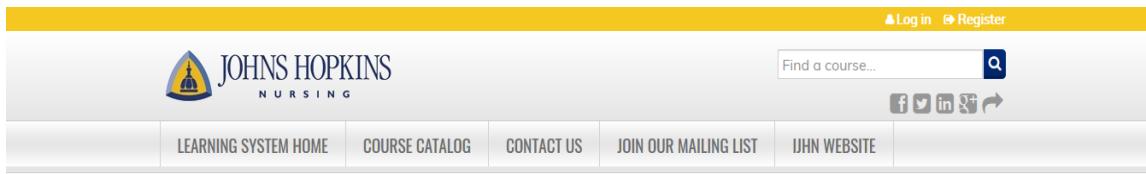
Yours faithfully,


20/6/12

SARAMMA SAMUEL,
PRINCIPAL,
R.V.S.COLLEGE OF NURSING
242B, TRICHY ROAD,
SULUR, COIMBATORE - 641 402

ANNEXURE - I

GRANT OF PERMISSION TO USE THE JOHNS HOPKINS NURSING EVIDENCE BASED PRACTICE MODELS AND TOOLS



The screenshot shows the homepage of the Johns Hopkins Nursing website. At the top right are 'Log in' and 'Register' buttons. The main navigation bar includes 'JOHNS HOPKINS NURSING' with a logo, a search bar with placeholder 'Find a course...', and social media links for Facebook, Twitter, LinkedIn, and YouTube. Below the navigation is a secondary menu with links to 'LEARNING SYSTEM HOME', 'COURSE CATALOG', 'CONTACT US', 'JOIN OUR MAILING LIST', and 'IJHN WEBSITE'. A breadcrumb trail at the bottom left shows 'Home » Johns Hopkins Nursing Evidence-Based...'. The main content area features a large blue header 'JOHNS HOPKINS NURSING EVIDENCE-BASED PRACTICE MODEL AND TOOLS' and a sub-section titled 'HERE ARE YOUR JHNEBP TOOLS (AND A SURPRISE GIFT)!'

Home » Johns Hopkins Nursing Evidence-Based...

JOHNS HOPKINS NURSING EVIDENCE-BASED PRACTICE MODEL AND TOOLS

HERE ARE YOUR JHNEBP TOOLS (AND A SURPRISE GIFT)!

Thank you for your submission. We are happy to give you permission to use the JHEBP model and tool in adherence of our legal terms mentioned noted below:

- You may not modify the model or the tools without written approval from Johns Hopkins.
- All reference to source forms should include "©The Johns Hopkins Hospital/The Johns Hopkins University."
- The tools may not be used for commercial purposes without special permission.
- If interested in commercial use or discussing changes to the tool, please email ijhn@jhmi.edu.

Click [HERE](#) to access the 2013 zipped file of the tools. These tools correspond to the 2nd edition of the book.

Click [HERE](#) to access the 2017 zipped file of the tools. These tools correspond to the 3rd edition of the book.

You can learn more about the 2017 updated model and tools [HERE](#).

Please note: If you choose to use the Johns Hopkins Nursing Evidence-Based Practice Model and Tools in any other way, another form will need to be submitted.

Exclusive offer for users of our JHNEBP model and tools. Did you know we also offer an online course about the JHNEBP model? **We'd like to give you \$20 off this engaging online experience.** The course follows the EBP process from beginning to end and provides guidance to the learner on how to proceed, using the tools that are part of the Johns Hopkins Nursing EBP model. Click [HERE](#) to take online course. Use coupon code **JHNEBPTOOLS** at check out.

Do you prefer hands-on learning? We are offering a 5-day intensive Boot Camp where you will learn and master the entire EBP process from beginning to end. Take advantage of our retreat-type setting to focus on your project, collaborate with peers, and get the expertise and assistance from our faculty. Click [HERE](#) to learn more about EBP Boot Camp. Group rates available, email ijhn@jhmi.edu to inquire.

[Go back to the form](#)

Institute for Johns Hopkins Nursing
http://www.hopkinsmedicine.org/institute_nursing/
IJHN@jhmi.edu
443-287-4746



ANNEXURE - J
EVIDENCE OF PERMISSION TO USE STANDARDIZED AQLQ
QUESTIONNAIRE

Print window

<https://mg.mail.yahoo.com/d/search/keword=Re%3A%20AQLQ%20P...>

Subject: Re: AQLQ Package ordering

From: penny@qoltech.co.uk
To: neeth_doss@yahoo.com
Cc: jill@qoltech.co.uk
Date: Thursday 7 June 2012, 3:17:30 PM IST

Dear Mrs Neethiselvam

Thank you for your email request for the AQLQ English for India translation. We will be happy to prepare this for you and will post by airmail. We do have available several other languages for India which may be of help to you. To check these out please visit our website www.qoltech.co.uk.

Please email us if there are any other languages for India that you would like us to send and we will be pleased to prepare these for you also. Meanwhile, we send you our best wishes.

Regards
Patricia Smith
for

Penny Freeman
Assistant to Jilly Styles
QOL Technologies Ltd
20 Marcuse Fields
Bosham
West Sussex
PO18 8NA. UK
Telephone: + 44 (0) 1243 572124
Facsimile: + 44 (0) 1243 573680
e:mail: penny@qoltech.co.uk

Subject: Re: AQLQ Package ordering

From: neeth_doss@yahoo.com
To: penny@qoltech.co.uk
Date: Thursday 7 June 2012, 5:48:19 PM IST

Dear madam
Thankyou for the positive reply.
Sincerely,
Neethiselvam. T

From: Penny Freeman <penny@qoltech.co.uk>
To: neeth_doss@yahoo.com
Cc: Jilly Styles <jill@qoltech.co.uk>
Sent: Thursday, 7 June 2012 3:17 PM
Subject: Re: AQLQ Package ordering

Dear Mrs Neethiselvam

Thank you for your email request for the AQLQ English for India translation. We will be happy to prepare this for you and will post by airmail. We do have available several other languages for India which may be of help to you. To check these out please visit our website www.qoltech.co.uk.

Please email us if there are any other languages for India that you would like us to send and we will be pleased to prepare these for you also. Meanwhile, we send you our best wishes.

Regards
Patricia Smith
for

Penny Freeman
Assistant to Jilly Styles
QOL Technologies Ltd
20 Marcus Fields
Bosham
West Sussex
PO18 8NA. UK
Telephone: + 44 (0) 1243 572124
Facsimile: + 44 (0) 1243 573680
e:mail: penny@qoltech.co.uk

ANNEXURE – K

The screenshot shows the CORC (Child Outcomes Research Consortium) website. At the top, there is a navigation bar with links for 'Search website' (with a magnifying glass icon), 'Member Sign In' (in an orange box), and 'Join Us' (in an orange box). Below the navigation bar, there are several menu items: 'About CORC', 'What CORC Does', 'Information Hub', 'Outcome & Experience Measures' (which is underlined in blue, indicating the current page), 'Training & Events', 'News & Blog', and 'For Schools'. The main content area has a dark teal background. On the left, the title 'The World Health Organisation- Five Well-Being Index (WHO-5)' is displayed in white. On the right, there is a graphic of a blue pencil writing on a lined sheet of paper. Below the title, the breadcrumb navigation shows 'Home > Outcome & Experience Measures > The World Health Organisation- Five Well-Being Index (WHO-5)'. The main text discusses the WHO-5 as a short self-reported measure of current mental well-being, its introduction in 1998 by the WHO Regional Office in Europe as part of the DEPCARE project, and its psychometric properties. It also mentions populations (children aged 9 and above), normative data (available for some European countries), translations (translated into more than 30 languages), administration (a short questionnaire), scoring and interpretation (five statements rated from 0 to 5), and terms of use (free of charge). Further information and references are provided at the bottom.

The World Health Organisation- Five Well-Being Index (WHO-5)

Home > Outcome & Experience Measures > The World Health Organisation- Five Well-Being Index (WHO-5)

Overview

The World Health Organisation- Five Well-Being Index (WHO-5) is a short self-reported measure of current mental well-being.

The measure was first introduced in its present form in 1998 by the WHO Regional Office in Europe as part of the DEPCARE project on well-being measures in primary health care.

Psychometric properties

The WHO-5 has been found to have adequate validity in screening for depression and in measuring outcomes in clinical trials. Item response theory analyses in studies of younger persons and elderly persons indicate that the measure has good construct validity as a unidimensional scale measuring well-being in these populations (Winther Topp et al., 2015).

Populations

The WHO-5 is suitable for children aged 9 and above.

Normative data is available for some European countries (Winther Topp et al., 2015).

Translation

The WHO-5 has been translated into more than 30 languages. Please see the [WHO-5 website](#) for further information on translated versions.

Administration

The WHO-5 is a short questionnaire that can be reported by children and young people and administered in a variety of settings.

Scoring and interpretation

The WHO-5 consists of five statements, which respondents rate according to the scale below (in relation to the past two weeks).

- All of the time = 5
- Most of the time = 4
- More than half of the time = 3
- Less than half of the time = 2
- Some of the time = 1
- At no time = 0.

The total raw score, ranging from 0 to 25, is multiplied by 4 to give the final score, with 0 representing the worst imaginable well-being and 100 representing the best imaginable well-being.

Terms of use

The WHO-5 is free of charge and does not require permission to use.

Further information

Please see the [WHO-5 website](#) for additional information and references.

References

Topp C.W., Østergaard S.D., Søndergaard S., & Bech P. (2015). *The WHO-5 Well-Being Index: A Systematic Review of the Literature*. Psychotherapy and Psychosomatics, 84, 167-176.

WHO. (1998). Wellbeing Measures in Primary Health Care/The Depcare Project. WHO Regional Office for Europe: Copenhagen.

Share this page

ANNEXURE - L

EVIDENCE OF PERMISSION TO USE STANDARDIZED WHO WELL BEING INDEX (TAMIL TRANSLATION)



Apollo College of Nursing

(Recognised by the Indian Nursing Council and Affiliated to
the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0406/15

29.12.2015

To

Ms.Neethiselvam.T
Ph.D Nursing student
Apollo College of Nursing
Chennai-600 095

Dear Ms.Neethiselvam,

Sub.: Permission to use tool – Reg

Greetings! I am pleased to give permission to use the Tami Version of the WHO General well being index, translated version developed by me in your research study leading to the award of Ph.D in Nursing.

Best wishes for the successful completion of your study.


Dr.LATHA VENKATESAN
PRINCIPAL

IS/ISO 9001:2000



Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095.
Ph. : 044 - 2653 4387 Tele fax : 044 - 2653 4923 / 044- 2653 4386

ANNEXURE - M
LIST OF EXPERTS

1. Dr. Latha Venkatesan, PhD (N)
Principal
Apollo college of Nursing,
Vanagaram to Ambattur Road,
Ayanambakkam,
Chennai- 95.
2. Dr. Janani sankar, M.B.B.S.,DNB, PhD, MA,MS.
Pedia Senior Consultant,
Kancha kamakoti CHILDS Trust Hospital,
Nungambakkam, Chennai-18
3. Dr. Lizy Sony, Ph.D (N),
Vice Principal,
Apollo college of Nursing,
Vanagaram to Ambattur Road,
Ayanambakkam,
Chennai- 95.
4. Dr. Vijaya Lakshmi, Ph.D (N),
HOD (MHN),
Apollo college of Nursing,
Vanagaram to Ambattur Road,
Ayanambakkam,
Chennai- 95.

5. Dr. Surendra Kumar,M.D.,

Chest consultant,

G.K.N.M. Hospital,

Pappanaicken palayam,

Coimbatore.

6. Dr. Anand Kumar, M.D,

Chest Physician,

R.V.S.Hospital,

Trichy Road, Sulur,

Coimbatore

7. Dr. Madhavi, PhD (N)

Principal

KMCH College of Nursing,

Avinasi road,

Coimbatore.

8. Dr. Shanthi Appavu, PhD (N)

Principal

CSI College of Nursing,

Neyyur, Nagercoil

9. Dr. Jean Abraham, PhD (N)

Principal,
P.S.G.College of Nursing,
Peelamedu
Coimbatore.

10. Dr. Malarvizhi, PhD (N)

Vice Principal,
P.S.G.College of Nursing,
Peelamedu
Coimbatore.

11. Dr. Annamma Prabhakar, PhD (N)

Visiting Professor,
R.V.S. College of Nursing,
Trichy Road, Sulur,
Coimbatore.

12. Dr. Bala subramaniam, PhD (N)

Professor
KMCH College of Nursing,
Avinasi road,
Coimbatore.

13. Dr. Ruby, PhD

(Psychology & Sociology),
Professor,
Koshys College of Nursing,
Bangalore.

14. Dr. Janavi Mungala, MBA,

PhD Statistics,
Professor,
Koshys Management Studies
Bangalore.

15. Prof. Suja Santhosh, MSc Statistics,
R.V.S. College of Nursing,
Trichy Road, Sulur,
Coimbatore.

16. Prof. Jennifer, M.Phil in Statistics,
R.V.S. College of Engineering,
Kumaran Kottam, Trichy Road,
Kannampalayam,
Coimbatore.

17. Prof. Valarmathi, MSc Statistics
Research Officer,
The Tamil Nadu Dr. M.G.R. Medical University,
Chennai.

18. Prof. P. Arumugam,
Professor Biostatistics (Retd)
Tirunelveli.

19. Prof. Franklin, MPT,
Professor,
R.V.S. College of Physiotherapy,
Trichy Road, Sulur,
Coimbatore.

ANNEXURE - N

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

From,

Mrs. Neethi Selvam, MSc (N),
Asst. professor,
R.V.S. College of Nursing,
Trichy Road, Sulur,
Coimbatore.

To,

The Principal,
R.V.S. College of Nursing,
Trichy Road, Sulur,
Coimbatore.

Respected Madam,

Subject: Request for permission to conduct data collection

This is to kindly inform you that, I would like to conduct data collection in Ph.D research study which is to be submitted to the Tamil Nadu Dr.M.G.R. Medical University, Chennai. '**A study to assess the effectiveness of peak flow self management plan on quality of life for asthma patients in selected community at Coimbatore**' I need your esteemed help and co-operation as I am interested in conducting the study in the community at Somanur. In this regard I request you to extent possible guidance and support for successful completion of data collection.

Thanking You

Date

Yours sincerely

Place

Neethi selvam.T

ANNEXURE - O

REQUEST FOR OPINIONS AND SUGGESTIONS OF EXPERTS FOR ESTABLISHING CONTENT VALIDITY OF RESEARCH

From

Mrs.Neethi Selvam, Msc,(N)

To

Dr. Janani sankar, M.B.B.S., DNB, PhD, MA,MS. Pedia Senior Consultant,
Kancha kamakoti CHILDS Trust Hospital, Nungambakkam, Chennai-18

Respected sir/madam,

Sub: Requisition to expert opinion and suggestion for the content validity of the research tools.

I, Mrs.Neethi Selvam.T. Msc (N), PhD candidate Apollo College of Nursing, Chennai has selected the topic mentioned below for the research project to be submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

Topic: ‘A study to assess the effectiveness of peak flow self management plan on quality of life for asthma patients in selected community at Coimbatore’
“With regards may I kindly request you to validate my tool for its appropriateness and relevancy and content of demographic &clinical proforma, Level of acceptability on satisfaction Scale, and Observation schedules, AQLQ and WBI give your expert opinion for necessary modification. I would highly obliged and remain thankful for your great help if you could validate and sent it as soon as possible.

Thanking you,

Place: Coimbatore

Yours sincerely,

Date:

Neethi Selvam. T

Encl :

- (1) Background, Need for the study, Statement of problem, Objectives of Study.
- (2) Criteria Check list of evaluation of tool and content
- (3) Tool for collection of data
- (4) Peak flow self management plan
- (5) Certificate of Validation

Criteria Checklist for Evaluation of Tool Requesting Suggestion and Opinion from the Experts

Dear Madam / Sir,

I kindly request you to go through the tool and place a tick mark (✓) in the columns given against each question and give your comments on the items you disagree/ partially agree / to be deleted which will help in modification of tool.

Demographic variable Proforma

Clinical Variable Proforma

CONTENT VALIDITY INDEX OF TOOL

Dear Sir / Madam,

I request you to kindly examine the research tool and give your valuable opinion and suggestions on the developed tools. Please enter the items of each tool in the appropriate column on the basis of relevance. Your valuable opinion and kind suggestion will be highly appreciated.

S.No	Tool	Completely meets the Criteria- Relevant	Meets the Criteria to some extent / Requires Modification	Does not meet the Criteria – Not Relevant	Remarks
I	Demographic variable Proforma				
II	Clinical Variable performa				
III	Asthma Quality of Life Questionnaire (AQLQ)				
IV	WHO Well being Index (1998 version)				
V	Observation schedules: Peak flow graph, peak flow diary				
VI	Level of Satisfaction on acceptability Rating Scale				
VII	Asthma education booklet				

EVALUATION CRITERIA CHECKLIST FOR VALIDATION

Instruction:

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks. Kindly please tick mark (✓) in the appropriate columns and give remarks.

Column I – meets the criteria.

Column II- partially meets the criteria.

Column III- does not meet the criteria.

S.NO	CRITERIA	I	II	III	REMARKS
1	Content Logical Sequence Adequacy Relevance				
2	Language Appropriate Clarity Simplicity				
3	Practicability Easy to score Precise Utility				
4	Scoring Adequacy Clarity Simplicity				

Any other suggestion:

Signature:

Address:

Name:
Designation:

CERTIFICATE OF VALIDATION / CONTENT VALIDITY

This is to certify that the research tool and intervention protocol constructed by Mrs. Neethi Selvam. T currently pursuing her part – time Ph.D programme at Apollo College of Nursing, Chennai under The Tamil Nadu Dr. M.G.R. Medical University, Guindy, Chennai for the research study to "**A study to assess the effectiveness of peak flow self management plan on quality of life for asthma patients in selected community at Coimbatore**" are found to be valid to the best of my knowledge.

Date

Signature

Place

Name: & Designation:

ANNEXURE - P

RESEARCH PARTICIPANT CONSENT FORM

Dear participant,

I am a Ph.D (N) student Apollo college of Nursing, Chennai. As a part of my study a research on ‘A study to assess the effectiveness of peak flow self management plan on quality of life for asthma patients in selected community at Coimbatore’ is selected to be conducted. The findings of study will be helpful for asthma patients to maintain quality of life.

Hence I hereby seek your consent and cooperation to participate in study. Please be frank and honest in your responses. The information collected will be kept confidential and anonymity will be obtained.

Sign of the investigator

I hereby consent to participate in the study.

Sign of the investigator

Place:

Date:

ANNEXURE – Q

TOOL IN ENGLISH

DEMOGRAPHIC VARIABLES PROFORMA FOR ASTHMA PATIENTS

Purpose:

This proforma is used to measure the demographic variable such as age, gender, education, occupation, family monthly income, type of family, area of residence.

Instructions

Kindly read the following questions. Tick mark the appropriate answer. Please describe your responses freely and frankly. The details will be kept confidential and used for research purpose only.

1. Sample No:

2. Age (in yrs)

a) 20-39

b) 40-59

c) ≥ 60

3. Gender

a) Male

b) Female

4. Educational status

a) No formal education

b) Primary school

c) High school

d) Higher secondary

e) Degree

5. Occupation

a) Coolie

b) unskilled

c) Skilled

d) Professional

6. Marital status

a) Married

b) Unmarried

c) Divorced

d) Widow

7. Income (in Rs.) per month

a) \leq 5000

b) 5001- 10,000

c) 10,001-15,000

d) 15,001-20,000

e) $>$ 20,001

8. Residence

a) Rural

b) Urban

9. Type of family

a) Joint

b) Nuclear

CLINICAL VARIABLE PROFORMA FOR ASTHMA PATIENTS

Purpose

This proforma is used to measure the clinical variables such as last consultation, area of living, cooking fuel, abstain from work, medications used, smoking habit.

Instructions

Kindly read the following questions. Tick mark the appropriate answer. Please describe your responses freely and frankly. The details will be kept confidential and used for research purpose only.

1. Day of consulting physician

- a) 1st day (same day of interview)
- b) 2-7 days back
- c) 2 weeks back
- d) 1 month back

2. Area of living (Environment)

Is there any industry around your home

- a) Yes
- b) No

3. Type of cooking fuel used

- a) Wood
- b) cowdung

c) L.P.G.gas

4. How often has your asthma prevented you from working or caused you to take off from work place/school or college? (Total in the past 6 months)

- a) Lost no time off work or college
- b) Lost 1-2 weeks off work or college
- c) Lost 2-4 weeks off work or college
- d) Lost more than 5 weeks off work or college
- e) Lost worked because of asthma

5. Medications used

- a) Budamate
- b) Salbutamol
- c) Deriphylline
- d) Other

6. Smoking habit

- a) Non smoker
- b) Cigarette smoker

7. Family history of asthma

- a) First degree relative
- b) No First degree relative

8. Duration of asthma (yrs)

- a)<6 months
- b) 7-12 months

c) 1-5 years

d) >5 years

9. Severity of asthma

a) Mild

b) Moderate

c) Severe

10. Presence of co-morbid medical illness

a) Diabetes mellitus

b) Hypertension

c) Bone disease

d) Gastro-intestinal disease

e) Nil

11. Are you allergic to any products? If yes, mention the products of allergies.

a) Pets

b) Dust mites

c) Pollen (Flowers)

d) Smoke

e) Fumes and strong odour

f) Cold air

12. Have you used peak flow metre at any time?

a) Yes

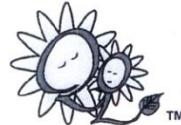
b) No

13. Medical Diagnosis

ASTHMA QUALITY OF LIFE QUESTIONNAIRE WITH STANDARDISED ACTIVITIES (AQLQ(S))

SELF-ADMINISTERED ENGLISH FOR INDIA VERSION (12 years and above)

© 2010
QOL TECHNOLOGIES Ltd.



For further information:

Elizabeth Juniper, MCSP, MSc
Professor
20 Marcuse Fields
Bosham, West Sussex
PO18 8NA, England
Telephone: +44 1243 572124
Fax: +44 1243 573680
E-mail: juniper@qoltech.co.uk
Web: <http://www.qoltech.co.uk>

This translation has been made possible through
a grant from MUNDIPHARMA RESEARCH Ltd
Translated by MAPI INSTITUTE
Senior Translator: Thangaraj Nagasamy

© The Asthma Quality of Life Questionnaire with Standardised Activities
(AQLQ(S)) is copyrighted and all rights are reserved. No part of this
questionnaire may be sold, modified or reproduced in any form without
the express permission of Elizabeth Juniper on behalf of QOL
Technologies Limited

JANUARY 2010

ASTHMA QUALITY OF LIFE QUESTIONNAIRE (S)
(ENGLISH FOR INDIA VERSION)
SELF-ADMINISTERED

PATIENT ID: _____

DATE: _____

Page 1 of 5

Please complete **all** the questions by circling the number that best describes how you have been during the **last 14 days as a result of your asthma**.

HOW LIMITED HAVE YOU BEEN DURING THE LAST 14 DAYS IN THESE ACTIVITIES AS A RESULT OF YOUR ASTHMA?

	Totally Limited	Extremely Limited	Very Limited	Moderate Limitation	Some Limitation	A Little Limitation	Not at all Limited
1. STRENUOUS ACTIVITIES (such as hurrying, exercising, running up stairs, sports)	1	2	3	4	5	6	7
2. MODERATE ACTIVITIES (such as walking, housework, gardening, shopping, climbing stairs)	1	2	3	4	5	6	7
3. SOCIAL ACTIVITIES (such as talking, playing with pets/children, visiting friends/relatives)	1	2	3	4	5	6	7
4. WORK/SCHOOL-RELATED ACTIVITIES* (tasks you have to do at work/in school)	1	2	3	4	5	6	7
5. SLEEPING	1	2	3	4	5	6	7

HOW MUCH DISCOMFORT OR DISTRESS HAVE YOU FELT OVER THE LAST 14 DAYS?

	A Very Great Deal	A Great Deal	A Good Deal	Moderate Amount	Some	Very Little	None
6. How much discomfort or distress have you felt over the last 14 days as a result of CHEST TIGHTNESS?	1	2	3	4	5	6	7

ASTHMA QUALITY OF LIFE QUESTIONNAIRE (S)
 (ENGLISH FOR INDIA VERSION)
 SELF-ADMINISTERED

PATIENT ID: _____

DATE: _____

Page 2 of 5

IN GENERAL, HOW MUCH OF THE TIME DURING THE LAST 14 DAYS DID YOU:

	All of the Time	Most of the Time	A Lot of the Time	Some of the Time	A Little of the Time	Hardly Any of the Time	None of the Time
7. Feel CONCERNED ABOUT HAVING ASTHMA?	1	2	3	4	5	6	7
8. Feel SHORT OF BREATH as a result of your asthma?	1	2	3	4	5	6	7
9. Experience asthma symptoms as a RESULT OF BEING EXPOSED TO CIGARETTE SMOKE?	1	2	3	4	5	6	7
10. Experience WHEEZING in your chest?	1	2	3	4	5	6	7
11. Feel you had to AVOID A SITUATION OR ENVIRONMENT BECAUSE OF CIGARETTE SMOKE?	1	2	3	4	5	6	7

HOW MUCH DISCOMFORT OR DISTRESS HAVE YOU FELT OVER THE LAST 14 DAYS?

	A Very Great Deal	A Great Deal	A Good Deal	Moderate Amount	Some	Very Little	None
12. How much discomfort or distress have you felt over the last 14 days as a result of COUGHING?	1	2	3	4	5	6	7

IN GENERAL, HOW MUCH OF THE TIME DURING THE LAST 14 DAYS DID YOU:

	All of the Time	Most of the Time	A Lot of the Time	Some of the Time	A Little of the Time	Hardly Any of the Time	None of the Time
13. Feel FRUSTRATED as a result of your asthma?	1	2	3	4	5	6	7
14. Experience a feeling of CHEST HEAVINESS?	1	2	3	4	5	6	7

ASTHMA QUALITY OF LIFE QUESTIONNAIRE (S)
(ENGLISH FOR INDIA VERSION)
SELF-ADMINISTERED

PATIENT ID: _____

DATE: _____

Page 3 of 5

IN GENERAL, HOW MUCH OF THE TIME DURING THE LAST 14 DAYS DID YOU:

	All of the Time	Most of the Time	A Lot of the Time	Some of the Time	A Little of the Time	Hardly Any of the Time	None of the Time
15. Feel CONCERNED ABOUT THE NEED TO USE MEDICATION for your asthma?	1	2	3	4	5	6	7
16. Feel the need to CLEAR YOUR THROAT?	1	2	3	4	5	6	7
17. Experience asthma symptoms as a RESULT OF BEING EXPOSED TO DUST?	1	2	3	4	5	6	7
18. Experience DIFFICULTY BREATHING OUT as a result of your asthma?	1	2	3	4	5	6	7
19. Feel you had to AVOID A SITUATION OR ENVIRONMENT BECAUSE OF DUST?	1	2	3	4	5	6	7
20. WAKE UP IN THE MORNING WITH ASTHMA SYMPTOMS?	1	2	3	4	5	6	7
21. Feel AFRAID OF NOT HAVING YOUR ASTHMA MEDICATION AVAILABLE?	1	2	3	4	5	6	7
22. Feel bothered by HEAVY BREATHING?	1	2	3	4	5	6	7
23. Experience asthma symptoms as a RESULT OF THE WEATHER OR AIR POLLUTION OUTSIDE?	1	2	3	4	5	6	7
24. Were you WOKEN AT NIGHT by your asthma?	1	2	3	4	5	6	7
25. AVOID OR LIMIT GOING OUTSIDE BECAUSE OF THE WEATHER OR AIR POLLUTION?	1	2	3	4	5	6	7

ASTHMA QUALITY OF LIFE QUESTIONNAIRE (S)
 (ENGLISH FOR INDIA VERSION)
 SELF-ADMINISTERED

PATIENT ID: _____

DATE: _____

Page 4 of 5

IN GENERAL, HOW MUCH OF THE TIME DURING THE LAST 14 DAYS DID YOU:

	All of the Time	Most of the Time	A Lot of the Time	Some of the Time	A Little of the Time	Hardly Any of the Time	None of the Time
26. Experience asthma symptoms as a RESULT OF BEING EXPOSED TO STRONG SMELL OR PERFUME?	1	2	3	4	5	6	7
27. Feel AFRAID OF GASPING FOR BREATH?	1	2	3	4	5	6	7
28. Feel you had to AVOID A SITUATION OR ENVIRONMENT BECAUSE OF STRONG SMELL OR PERFUME?	1	2	3	4	5	6	7
29. Has your asthma INTERFERED WITH GETTING A GOOD NIGHT'S SLEEP?	1	2	3	4	5	6	7
30. Have a feeling of STRUGGLING TO BREATHE?	1	2	3	4	5	6	7

HOW LIMITED HAVE YOU BEEN DURING THE LAST 14 DAYS?

	Most Not Done	Several Not Done	Very Few Not Done	No Limitation
31. Think of the OVERALL RANGE OF ACTIVITIES that you would have liked to have done during the last 14 days. How much has your range of activities been limited by your asthma?	1	2	3	4

ASTHMA QUALITY OF LIFE QUESTIONNAIRE (S)
(ENGLISH FOR INDIA VERSION)
SELF-ADMINISTERED

PATIENT ID: _____

DATE: _____

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HOW LIMITED HAVE YOU BEEN DURING THE LAST 14 DAYS?

Totally Limited	Extremely Limited	Very Limited	Moderate Limitation	Some Limitation	A Little Limitation	Not at all Limited
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32. Overall, in ALL THE ACTIVITIES that you have done during the last 14 days, how limited have you been by your asthma? 1 2 3 4 5 6 7

DOMAIN CODE:

Symptoms: 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 29, 30

Activity Limitation: 1, 2, 3, 4, 5, 11, 19, 25, 28, 31, 32

Emotional Function: 7, 13, 15, 21, 27

Environmental Stimuli: 9, 17, 23, 26

AQLQ(S)-SA12 - India/English - Version of 13 Jan 10 - Mapi Research Institute.
ID5549 / AQLQ(S)-SA12_AU1.0_eng-IN.doc

Scoring: The overall AQLQ score is the mean of all 32 responses and the individual domain scores are the means of the items in those domains. Each domain score ranges from 1 to 7 representing the greatest impairment possible or most of the time and 7 represents the least or none of the time. Total obtainable score is 32-224.

WHO (Five) Well-Being Index (1998 version)

Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks. Notice that higher numbers mean better well-being.

Example: If you have felt cheerful and in good spirits more than half of the time during the last two weeks, put a tick inthe box with the number 3 in the upper right corner.

S.No	Over the last two weeks	All of the time	Most of the time	More than half of the time	Less than half of the time	Some of the time	At no time
1.	I have felt cheerful and in good spirits	5	4	3	2	1	0
2.	I have felt calm andrelaxed	5	4	3	2	1	0
3.	I have felt active and vigorous	5	4	3	2	1	0
4.	I woke up feeling fresh and rested	5	4	3	2	1	0
5.	My daily life has been filled with things that interest me	5	4	3	2	1	0

Scoring: The raw score is calculated by totaling the figures of the five answers. The raw score ranges from 0 to 25, 0 representing worst possible and 25 representing best possible quality of life. To obtain a percentage score ranging from 0 to 100, the raw score is multiplied by 4. A percentage score of 0 represents worst possible, whereas a score of 100 represents best possible quality of life.

OBSERVATION SCHEDULE

PEAK FLOW DIARY (2 week period)

Date	Am	Pm	Comments

PEAK FLOW GRAPH (2 WEEK PERIOD)

Date

650														
600														
550														
500														
450														
400														
350														
300														
250														
200														
150														
100														
50														

How many times did I wake last time because of asthma?

How many puffs of reliever did I take today?

Were my activities affected by asthma?

LEVEL OF SATISFACTION SCALE ON ACCEPTABILITY

S.No	ITEM	Highly Acceptable 4	Acceptable 3	Unacceptable 2	Highly unacceptable 1
1.	I am happy about the information provided to me regarding description of asthma.				
2.	I am happy about the information provided to me regarding structure and function of lungs				
3.	I am happy about the information provided to me regarding symptoms of chronic, moderate and severe asthma.				
4.	I am happy about the information provided to me regarding controlling triggers of irritants such as smoke, smog, allergens, dust mites, molds,etc				
5.	I am happy about the information provided to me regarding conditions that increase the severity of asthma.				
6.	I am happy about the information provided to me regarding asthma action plan for self management of asthma.				
7.	I am happy about the method of teaching regarding asthma control				
8.	I am satisfied with the methods used for monitoring early symptoms using peak flow graph and peak flow monitoring.				
9.	I am happy with the diet advice given in controlling asthma symptoms.				
10.	I am satisfied with the information provided to me regarding asthma medications.				

Scoring Key:

Highly acceptable – 4

Acceptable – 3

Unacceptable – 2

Highly Unacceptable – 1

Score Interpretation:

Highly Unacceptable – 0-10

Unacceptable – 11-20

Acceptable – 21-30

Highly Acceptable – 31-40

ANNEXURE – R

TOOL IN TAMIL

மக்கள் தொகை விகிதம் மற்றும் பின்னணி பரவலானபடிவம்.

பின்வரும் கேள்விகளை தயவுசெய்து படித்துப் பாருங்கள். வழங்கப்பட்ட இடத்தில் பதில் எதிராக ஒரு டிக் குறி வைத்து உங்கள் பதில்களை இலவசமாகவும் வெளிப்படையாகவும் விளக்கவும். விவரங்கள் இரகசியமாக வைக்கப்பட்டு ஆராய்ச்சி நோக்கத்திற்காக மட்டுமே பயன்படுத்தப்படும்.

1.நோயாளினன்:

2.வயது (ஆண்டுகளில்)

அ) 20-39

ஆ) 40-59

இ)>60

3.பாலினம்

அ) ஆண்

ஆ) பெண்

4.கல்வித்தகுதி

அ) சாதாரணகல்விஇல்லை

ஆ) முதன்மைபள்ளி

இ) உயர்நிலைபள்ளி

ஈ) மேல்நிலை

உ) பட்டம்

5.தொழில்

அ) கூலி

ஆ)திறமையற்ற

இ)திறமையாக

ஈ)தொழிலறிஞர்

6.திருமணநிலை

அ)திருமணமானவர்

ஆ)திருமணமாகாதவர்

இ)விவாகரத்து

ஈ)விதவை

7.மாதத்திற்குவருமானம் (ரூ.)

அ) ≤ 5000

ஆ) 5001- 10,000

இ) 10,001-15,000

ஈ) 15,001-20,000

உ) $> 20,001$

8.குடியிருப்பு

அ)கிராமப்புறம்

ஆ)நகர்ப்புறம்

9.குடும்பவகை

அ)கூட்டுக்குடும்பம்

ஆ)தனிக்குடும்பம்

மருத்துவ பின்னணி பரவலான படிவம்

வழங்கப்பட்ட இடத்தில் பதில் எதிராக ஒரு டிக் குறி வைத்து உங்கள் பதில்களை இலவசமாகவும் வெளிப்படையாகவும் விளக்கவும். விவரங்கள்

இரகசியமாகவைக்கப்பட்டு ஆராய்ச்சிநோக்கத்திற்காகமட்டுமேபயன்படுத்தப்படும்.

1. மருத்துவர் ஆலோசனை தேதி

- அ) நேர்காணலின் அதே நாளில்

- ஆ) 2-7 நாட்களுக்கு முன்

- இ) 2 வாரங்களுக்கு முன்பு

- ## ஈ) ஒரு மாதம் முன்பு

2. வாழும் பகுதி (சுற்றுச்சூழல்)

உங்கள் வீட்டைச் சுற்றியுள்ள பகுதியில் ஏதேனும் தொழிற்கூறை இருக்கிறதா?

- அ) ஆம்

- ### ஆ) இல்லை

3.சமையல் எரிபொருள் வகை

- അവിനക്ക്

- ஆமாடு சாணம்

- இ) எரிவாடு

4. ஆஸ்துமா காரணமாக வேலைக்கு அல்லது கல்லூரிக்கு போக முடியாத நாட்கள்

(கடந்த 6 மாதங்களில்)

- அ) ஒரு நாள் கூட இல்லை

ஆ) 1-2 வாரங்கள் செல்ல முடியவில்லை (இழந்தது)

- இ) 3-4 வாரங்கள் இழந்தது

- ா) 5 வாரங்களுக்கு மேல் இழந்தது

உ) ஆஸ்துமா காரணமாக வேலை செய்யவில்லை

5. பயன்படுத்தப்படும் மருந்துகள்

அ) ப்யூடாமாட்

ஆ) சால்ப்யூடாமால்

இ) டெரிபில்லைன்

ஈ) மற்ற ஏதேனும் மருந்துகள்

6. மயமாதல் பழக்கம்

அ) புகை பிடிக்காதவர்

ஆ) சிகரெட் புகைப்பவர்

7. ஆஸ்துமாவின் குடும்ப வரலாறு

அ) முதல்நிலை உறவினர்

ஆ) முதல்நிலை உறவினர் இல்லாதாவர்

8. ஆஸ்துமாவின் கால நேரம்

அ) <6 மாதங்கள்

ஆ) ≤ 7-12 மாதங்கள்

இ) 1-5 ஆண்டுகள்

ஈ) >5 ஆண்டுகள்

9. ஆஸ்துமாவின் தீவிரம்

அ) லேசான

ஆ) மிதமான

இ) கடுமையான

10.இணை-ஆரோக்கியமற்ற மருத்துவ நோய்களின் இருத்தல்

- அ) நீரிழிவுநோய்
- ஆ) உயர் இரத்தஅழுத்தம்
- இ) எலும்புநோய்
- ஈ) செரிமான-குடல்நோய்
- உ) எதுவுமில்லை

11. எந்தவொரு தயாரிப்புக்கும் நீங்கள் ஒவ்வாதீர்களா? ஆம் என்றால், ஒவ்வாமை பொருட்களின் விவரங்களைக் குறிப்பிடுங்கள்.

- அ) செல்லப்பிராணிகள்
- ஆ) தூசி பூச்சிகள்
- இ) மகரந்தம் (மலர்கள்)
- ஈ) புகை
- உ) இராசயனப் புகை மற்றும் கடுமையான வாசனைகள்
- ஊ) குளிர் காற்று

12. நீங்கள் எப்பொழுதாவது உச்ச ஓட்டம் மீட்டர் பயன்படுத்தினார்களா?

- அ) ஆம்
- ஆ. இல்லை

13.மருத்துவ நோய் கண்டறிதல்

ஆஸ்துமாவுடன் வாழ்க்கைத் தரம் குறித்த கருத்தறியும்
வினாத்தாள் (S)
(TAMIL VERSION FOR INDIA)

சுயமாகப் பூர்த்தி செய்வது

நோயாளியின்

அடையாள எண் _____

தேதி _____

பக்கம் 1 - 5

ஆஸ்துமாவின் காரணமாக கடந்த 2 வாரங்களில் நீங்கள் எப்படி இருந்தீர்கள் என்பதை சிறப்பாக வெளிப்படுத்தும் என்னை வட்டமிட்டு, பின்வரும் அனைத்துக் கேள்விகளுக்கும் தயவு செய்து பதிலளிக்கவும்.

உங்கள் ஆஸ்துமாவின் காரணமாக கீழ்க்கண்ட வேலைகளில் கடந்த 2 வாரங்களில் எந்த அளவு பாதிப்புக்கு உள்ளாண்ர்கள்?

	முழுதாக பாதிப்பு	கடுமையான பாதிப்பு	அதிக பாதிப்பு	மிதமான பாதிப்பு	சிறிதளவு பாதிப்பு	மிகச் சிறிதளவு பாதிப்பு	பாதிப்பே இல்லை
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1. கடினமான வேலைகள்
(விரைவாக நடப்பது,
உடற்பயிற்சி, மாடிப்படிகளில்
விரைந்து ஏறுதல்,
விணையாட்டுகள் போன்றவை)
1 2 3 4 5 6 7
2. மிதமான வேலைகள் (நடத்தல்,
வீட்டு வேலைகள், தோட்ட
வேலை, கடைக்குச் செல்லுதல்,
மாடிப்படிகளில் ஏறுதல்
போன்றவை)
1 2 3 4 5 6 7
3. சமூகச் செயல்பாடுகள்
(உரையாடுதல், செல்லப்
பிராணிகள்/குழந்தைகளுடன்
விணையாடுதல், நண்பர்கள்/
உறவினர்களை சந்திக்கச்
செல்லுதல் போன்றவை)
1 2 3 4 5 6 7
4. பணி/பள்ளி சார்ந்த
செயல்பாடுகள்* (நீங்கள்
வேலை செய்யுமிடத்தில்/
பள்ளியில் மேற்கொள்ள
வேண்டிய பணிகள்)
1 2 3 4 5 6 7
5. உறங்குதல்
1 2 3 4 5 6 7

* நீங்கள் வேலையில் இல்லாதவராக, அல்லது சுயதொழில் செய்பவராக இருந்தால், பெரும்பாலான நாட்களில் செய்ய வேண்டிய வேலைகளாக இவை இருக்க வேண்டும்.

கடந்த 2 வாரங்களில் எந்த அளவுக்கு உடல்ரீதியான அல்லது உணர்வுரீதியான அவஸ்தைக்கு உள்ளாண்ர்கள்?

	மிகமிக அதிகமாக	மிக அதிகமாக	பெரும் அளவு	மிதமான அளவு	சிறிதளவு	மிகச் சிறிதளவு	சுத்தமாக இல்லை
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6. கடந்த 2 வாரங்களில் மார்பு
இருக்கக்கூடிய விளைவாக எந்த
அளவுக்கு உடல்ரீதியான
அல்லது உணர்வுரீதியான
அவஸ்தைக்கு உள்ளாண்ர்கள்?
1 2 3 4 5 6 7

ஆஸ்துமாவுடன் வாழ்க்கைத் தரம் குறித்த கருத்தறியும்
விளாத்தாள் (S)
(TAMIL VERSION FOR INDIA)

சுயமாகப் பூர்த்தி செய்வது

நோயாளியின்
அடையாள எண் _____

தேதி _____

பக்கம் 2 - 5

கடந்த 2 வாரங்களில் பின்வரும் விஷயங்களை பொதுவாக எவ்வளவு நேரம் அனுபவித்தீர்கள்?

	எல்லா நேரமும்	பெரும் பாலான நேரம்	அதிக நேரம்	சில நேரம்	சிறிது நேரம்	அரிதாக நேரம்	ஒருபோதும் இல்லை	
7.	ஆஸ்துமா இருப்பது குறித்த கவலைக்கு ஆளாணீர்களா?	1	2	3	4	5	6	7
8.	ஆஸ்துமாவால் மூச்சுத் திணறல் ஏற்பட்டதா?	1	2	3	4	5	6	7
9.	சிக்ரெட் புகைக்கு உள்ளானதன் காரணமாக ஆஸ்துமா அறிகுறிகளை அனுபவித்தீர்களா?	1	2	3	4	5	6	7
10.	மார்பில் மூச்சிரைப்பு அனுபவித்தீர்களா?	1	2	3	4	5	6	7
11.	சிக்ரெட் புகை காரணத்தால் எந்த ஒரு சந்தர்ப்பத்தையோ அல்லது குழலையோ தவிர்க்க வேண்டும் என்னும் உணர்வு ஏற்பட்டதா?	1	2	3	4	5	6	7

**கடந்த 2 வாரங்களில் எந்த அளவுக்கு உடல்ரீதியான அல்லது உணர்வுரீதியான அவஸ்தைக்கு
உள்ளாணீர்கள்?**

	மிகமிக அதிகமாக	மிக அதிகமாக	பெரும் அளவு	மிதமான அளவு	சிறிதளவு அளவு	மிகச் சிறிதளவு	சுத்தமாக இல்லை	
12.	கடந்த 2 வாரங்களில் இருமினின் விளைவாக எந்த அளவுக்கு உடல்ரீதியான அல்லது உணர்வுரீதியான அவஸ்தைக்கு உள்ளாணீர்கள்?	1	2	3	4	5	6	7

கடந்த 2 வாரங்களில் பின்வரும் விஷயங்களை பொதுவாக எவ்வளவு நேரம் அனுபவித்தீர்கள்?

	எல்லா நேரமும்	பெரும் பாலான நேரம்	அதிக நேரம்	சில நேரம்	சிறிது நேரம்	அரிதாக நேரம்	ஒருபோதும் இல்லை	
13.	ஆஸ்துமாவின் விளைவாக விரக்தி உணர்வு ஏற்பட்டதா?	1	2	3	4	5	6	7
14.	மார்பு கணமாக இருப்பதான உணர்வை அனுபவித்தீர்களா?	1	2	3	4	5	6	7

ஆஸ்துமாவுடன் வாழ்க்கைத் தரம் குறித்த கருத்தறியும்
வினாத்தாள் (S)
(TAMIL VERSION FOR INDIA)

சுயமாகப் பூர்த்தி செய்வது

நோயாளியின்
அடையாள எண் _____

தேதி _____

பக்கம் 3 - 5

கடந்த 2 வாரங்களில் பின்வரும் விஷயங்களை பொதுவாக எவ்வளவு நேரம் அனுபவித்தீர்கள்?

	எல்லா நேரமும்	பெரும் பாலான நேரம்	அதிக நேரம்	சில நேரம்	சிறிது நேரம்	அரிதாக நேரம்	ஒருபோதும் இல்லை
15. ஆஸ்துமாவுக்காக மருந்து எடுத்துக்கொள்ள வேண்டியிருக்கிறதே என்ற கவலை ஏற்பட்டதா?	1	2	3	4	5	6	7
16. தொண்டையை செரும வேண்டும் என்ற உணர்வு ஏற்பட்டதா?	1	2	3	4	5	6	7
17. தூசு நிறைந்த குழலுக்கு உள்ளானதன் விளைவாக ஆஸ்துமாவின் அறிகுறிகளை அனுபவித்தீர்களா?	1	2	3	4	5	6	7
18. ஆஸ்துமாவின் விளைவாக மூச்சை வெளி விடுவதில் சிரமம் ஏற்பட்டதா?	1	2	3	4	5	6	7
19. தூசு உள்ள குழல் அல்லது சந்தர்ப்பத்தைத் தவிர்க்க வேண்டும் என்ற உணர்வு ஏற்பட்டதா?	1	2	3	4	5	6	7
20. காலையில் ஆஸ்துமா அறிகுறிகளுடன் விழுத்துக் கொண்டீர்களா?	1	2	3	4	5	6	7
21. ஆஸ்துமா மருந்துகள் உங்கள் கைவசம் இல்லையே என்ற அச்சத்துக்கு உள்ளானீர்களா?	1	2	3	4	5	6	7
22. பலமான மூச்சிரைப்பின் காரணமாகக் கவலை அடைந்தீர்களா?	1	2	3	4	5	6	7
23. வானிலை அல்லது காற்று மாசுபட்டிருந்ததன் விளைவாக ஆஸ்துமா அறிகுறிகளை அனுபவித்தீர்களா?	1	2	3	4	5	6	7
24. ஆஸ்துமாவினால் இரவுத் தூக்கம் கலைந்து விழித்துக் கொண்டீர்களா?	1	2	3	4	5	6	7
25. வானிலை அல்லது காற்று மாசுடைந்ததன் காரணமாக வெளியே செல்வதைத் தவிர்க்கவோ குறைக்கவோ நேர்ந்ததா?	1	2	3	4	5	6	7

ஆஸ்துமாவுடன் வாழ்க்கைத் தரம் குறித்த கருத்தறியும்
வினாத்தாள் (S)
(TAMIL VERSION FOR INDIA)

சுயமாகப் பூர்த்தி செய்வது

நோயாளியின்
அடையாள எண் _____

தேதி _____

பக்கம் 4 - 5

கடந்த 2 வாரங்களில் பின்வரும் விஷயங்களை பொதுவாக எவ்வளவு நேரம் அனுபவித்தீர்கள்?

எல்லா நேரம்	பெரும் பாலான நேரம்	அதிக நேரம்	சில நேரம்	சிறிது நேரம்	அதிகாக ஒருபோதும் இல்லை
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| 26. வாசனைத் திரவியம்
அல்லது கடும் நெடியை
எதிர்கொள்ள நேர்ந்ததால்
ஆஸ்துமா அறிகுறிகளை
அனுபவித்தீர்களா? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27. சுவாசிக்க இயலாமல்
போகுமோ என்ற
அச்சத்துக்கு ஆளானீர்களா? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28. வாசனைத் திரவியம்
அல்லது கடும் நெடி
நிலவுகிற சூழலை அல்லது
சந்தர்ப்பத்தைத் தவிர்க்க
வேண்டும் என்ற உணர்வு
ஏற்பட்டதா? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29. ஆஸ்துமா இரவுநேர நல்ல
உறக்கத்திற்குத் தடங்கலாக
இருந்ததா? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. சுவாசிப்பதற்குப் போராட
வேண்டியிருந்ததாக
உணர்ந்தீர்களா? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

கடந்த 2 வாரங்களில் எந்த அளவுக்கு வேலைகளில் பாதிக்கப்பட்டீர்கள்?

கடுமையான பாதிப்பு – பெரும்பாலான வேலைகளை செய்யவில்லை	அதிக அளவு பாதிப்பு வேலைகளை செய்யவில்லை	மிதமான பாதிப்பு – பல வேலைகளை செய்யவில்லை	சிறிதளவு பாதிப்பு – சில வேலைகளை செய்யவில்லை	மிகச்சிறிதளவு பாதிப்பு – சில வேலைகளை செய்யவில்லை	அதிகான பாதிப்பு வேலைகளை செய்ய	பாதிப்பே இல்லை – விரும்பிய வேலைகள் அணைத்தடும் செய்ய
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|---|---|---|---|---|---|---|---|
| 31. கடந்த 2 வாரங்களில்
நீங்கள் செய்ய விரும்பிய
எல்லா வகையான
செயல்பாடுகளையும்
எண்ணிப் பாருங்கள். அந்த
வேலைகள் செய்வதற்கு
ஆஸ்துமா எந்த அளவுக்குத்
தடங்கலாக இருந்தது? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|

ஆஸ்துமாவுடன் வாழ்க்கைத் தரம் குறித்த கருத்தறியும்
வினாத்தாள் (S)
(TAMIL VERSION FOR INDIA)

சுயமாகப் பூர்த்தி செய்வது

நோயாளியின்
அடையாள எண் _____

தேதி _____

பக்கம் 5 - 5

கடந்த 2 வாரங்களில் எந்த அளவுக்கு வேலைகளில் பாதிக்கப்பட்டார்கள்?

முழுதாக	கடுமையான	அதிக	மிதமான	சிறிதளவு	மிகச்	பாதிப்பே
பாதிப்பு	பாதிப்பு	பாதிப்பு	பாதிப்பு	பாதிப்பு	சிறிதளவு	இல்லை
					பாதிப்பு	

32. ஒட்டுமொத்தமாகப் பார்த்தால்,
கடந்த 2 வாரங்களில் நீங்கள்
மேற்கொண்ட அனைத்து
செயல்பாடுகளிலும் ஆஸ்துமா
எந்த அளவு பாதிப்பதாக
இருந்தது?
- | | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

கேள்விகளின் வகைபாடுகள்:

அறிகுறிகள்: 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 29, 30
வேலைகளில் பாதிப்பு: 1, 2, 3, 4, 5, 11, 19, 25, 28, 31, 32
உணர்வுகளை செயல்பாடு: 7, 13, 15, 21, 27
சுற்றுச்சூழல் விளைவுகள்: 9, 17, 23, 26

உலக சுகாதார நிறுவனத்தின் பொது நல் வாழ்வு அட்டவணை (1998) ஆம் ஆண்டின் பெயர்ப்பு

கீழே கொடுக்கப்பட்ட 5 வாக்கியங்களில் கடந்த இரண்டு வாரங்களில் உங்களின் உணர்வுகளை பிரதிபலிக்கின்ற வாக்கியங்களை தயவுசெய்து சுட்டிக்காட்டுங்கள். அதிக மதிப்பெண் அதிகமான நல்வாழ்வை குறிப்பிடுகிறது. உதாரணமாக கடந்த இரண்டு வாரங்களில் பாதியைவிட மேலான நேரங்களில், இன்பமாக மற்றும் நல்ல மனநிலையை உணர்ந்து இருந்தால், மூன்றாவது கட்டத்தின் மேல் வலது மூலையில் √ குறியிடவேண்டும்.

கடந்த இரண்டு வாரங்களில் உங்களின் மனநிலை	எப்பொழுதும் 5	மிக அதிக நேரங்களில் 4	பாதியைவிட மேலான நேரங்களில் 3	பாதியை விட குறைந்த நேரங்களில் 2	சில நேரங்களில் 1	ஒரு பொழுதும் இல்லை 0
நான் இன்பமாகவும் நல்ல மனநிலையில் இருப்பதாக உணர்ந்தேன்	5	4	3	2	1	0
நான் அமைதியாகவும் சாந்தமாகவும் இருப்பதாக உணர்ந்தேன்	5	4	3	2	1	0
நான் சுறுசுறுப்புத்துறுமசக் தியுடனும் இருப்பதாக உணர்ந்தேன்	5	4	3	2	1	0
நான் உறங்கி எழும்பொழுது நன்கு ஒய்வெடுத்து புத்துணர்ச்சியுடன் இருப்பதாக உணர்ந்தேன்	5	4	3	2	1	0
எனது அன்றாட வாழ்க்கை நான் விரும்பும் செயல்களால் நிறைந்திருந்தது	5	4	3	2	1	0

மதிப்பீடு: மேலே கொடுக்கப்பட்டுள்ள ஒவ்வொரு வாக்கியத்தின் மதிப்பெண்களை கூட்டுவதின் மூலம் பொது நல் வாழ்வின் தரம் கணக்கிடப்படுகிறது. 0 மதிப்பெண் ஆனது மிகவும் தாழ்ந்த நிலையையும் 25 மதிப்பெண் ஆனது உயர்ந்த வாழ்க்கைத் தரத்தையும் குறிப்பிடுகிறது.

கண்காணிப்புஅட்டவணை
உச்சாட்டவீதம் நாட்குறிப்பு (2 வார காலம்)

தேதி	காலை	மாலை	கருத்துகள்

4.2 உச்ச ஓட்ட வீதம் வரை படம் (2 வார காலம்)

தேதி

650													
600													
550													
500													
450													
400													
350													
300													
250													
200													
150													
100													
50													

- ஆஸ்துமாவின் காரணமாக நான் எத்தனை முறை எழுந்தேன்?
- விரைவுறிவாரணங்களிலிழுக்கப்படும் மருந்துகள் இன்று நான் எத்தனை முறை எடுத்தேன்?
- ஆஸ்துமாவால் என் நடவடிக்கைகள் பாதிக்கப்பட்டுள்ளனவா?

திருப்தி அளவிடுதலுக்கான ஏற்பு அளவேகோல்

S.No	பொருள்	மிகவும் ஏற்றுக் கொள் எத்தக் கது 4	ஏற்கத் தக்கது 3	ஏற்றுக் கொள்ள த்தகாது 2	மிகவும் ஏற்றுக் கொள்ள த்தகாது 1
1.	ஆஸ்துமாவைப் பற்றியவிவரங்களைப் பற்றி எனக்கு திருப்தி யாக இருக்கிறது.				
2.	நுரையீரலின் கட்டமைப்பு மற்றும் செயல்பாடு குறித்து எனக்கு வழங்கப்பட்ட தகவல்கள் பற்றி மகிழ்ச்சியடைகிறேன்.				
3.	நாள்பட்ட, மிதமானமற்றும் கடுமையான ஆஸ்துமாவின் அறிகுறிகளைப் பற்றி எனக்கு கிடைத்ததகவல் குறித்து திருப்தி யடைகிறேன்.				
4.	புகை, பணிப்புகை, ஓவ்வாமை, தூசிப்பூச்சிகள், அச்சுகள் போன்றவை போன்ற ஏரிச்சல்களின் தூண்டுதல்களைக் கட்டுப்படுத்துவதில் எனக்கு கிடைத்திருக்கும் தகவலைப்பற்றி மகிழ்ச்சியடைகிறேன்.				
5.	ஆஸ்துமாவின் தீவிரத்தை அதிகரிக்கும் மற்ற நிலைமைகள் குறித்து எனக்கு வழங்கப்பட்ட தகவல்கள் பற்றி நான் திருப்தியடைகிறேன்.				
6.	ஆஸ்துமாவின்சயனிர்வகிப்பிற்கான ஆஸ்து மாசெயல்திட்டம் தொடர்பாக எனக்கு வழங்கப் பட்டதகவல்கள் பற்றிமகிழ்ச்சியடைகிறேன்.				
7.	நான் ஆஸ்துமா கட்டுப்பாட்டு தொடர்பான போதனை முறை பற்றி மகிழ்ச்சியாக இருக்கிறேன்.				
8.	உச்ச ஓட்டம் வரைபடம் மற்றும் உச்ச ஓட்டம் கண்காணிப்பு ஆகியவற்றைப் பயன்படுத்தி ஆரம்ப அறிகுறிகளை கண்காணிப்பதற்கான முறைகளில் நான் திருப்தி அடைகிறேன்.				
9.	ஆஸ்துமா அறிகுறிகளைக் கட்டுப்படுத்தும் உணவு ஆலோசனையுடன் நான் மகிழ்ச்சியடைகிறேன்.				
10.	ஆஸ்துமா மருந்துகள் பற்றி எனக்கு வழங்கப்பட்ட தகவல்கள் குறித்து மகிழ்ச்சி அடையடைகிறேன்.				

ANNEXURE – S
INFORMATION BOOKLET ON ASTHMA IN ENGLISH

Information booklet on asthma

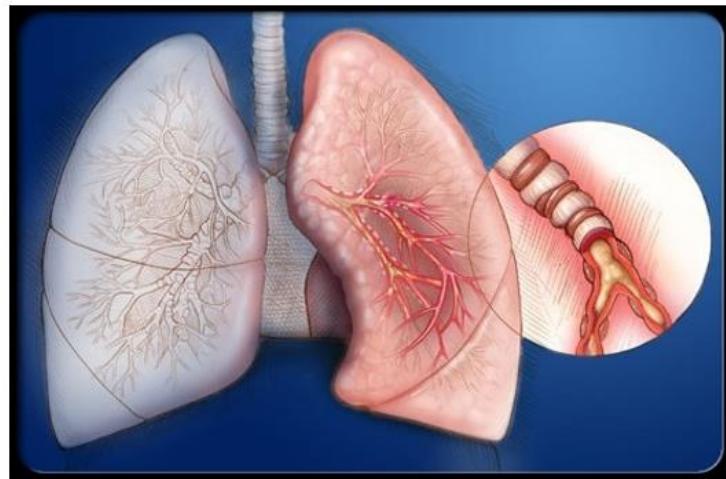
ASTHMA EDUCATION BOOKLET

Introduction

This education on asthma is designed for to help you control Asthma. The booklet consists of the information regarding what is asthma, Anatomy and function of Lungs, Symptoms of inflammation in chronic and moderate, and severe asthma, Controlling Triggers of Irritants such as smoke, smog, allergens, dust mites, molds, pets, pollen, cockroaches, weather, colds, flu, and sinus infections, food additives, medications, Emotion, Exercise and Asthma medications. You can use it to learn more about this condition and how it affects you. It helps you find ways to control asthma and live life the fullest. Be free from severe symptoms day and night, Be satisfied with your asthma care

What is Asthma?

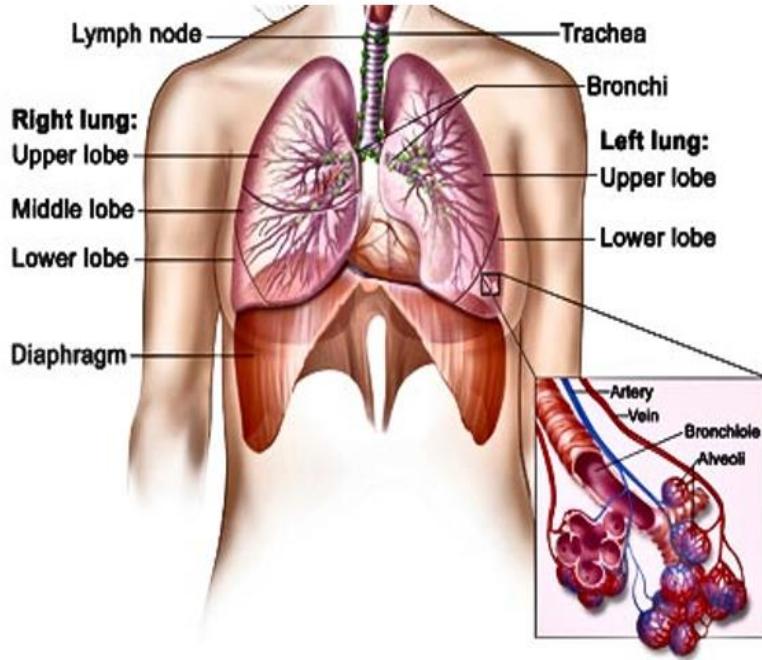
Asthma is a condition that inflames the airways in the lungs, causing them to swell. This narrows the tubes that air passes through. Airways become inflamed and narrow. The inflammation leads to edema or swelling, of the airways. Edema causes cells in the airways to break down resulting in shortness of breath, chest tightness and wheezing. During an asthma flare up, getting waste air out and fresh air in becomes a problem.



Healthy lungs: Anatomy of lungs:

when your lungs are healthy, you breathe without effort. Fresh air (oxygen) flows into your lungs and waste air (carbon dioxide) flows out steadily. Human lungs are a pair of respiratory organs. When you breathe in air enters the lungs through windpipe, called the trachea, and continues en route to each lung via either the right or left bronchus (plural=bronchi).

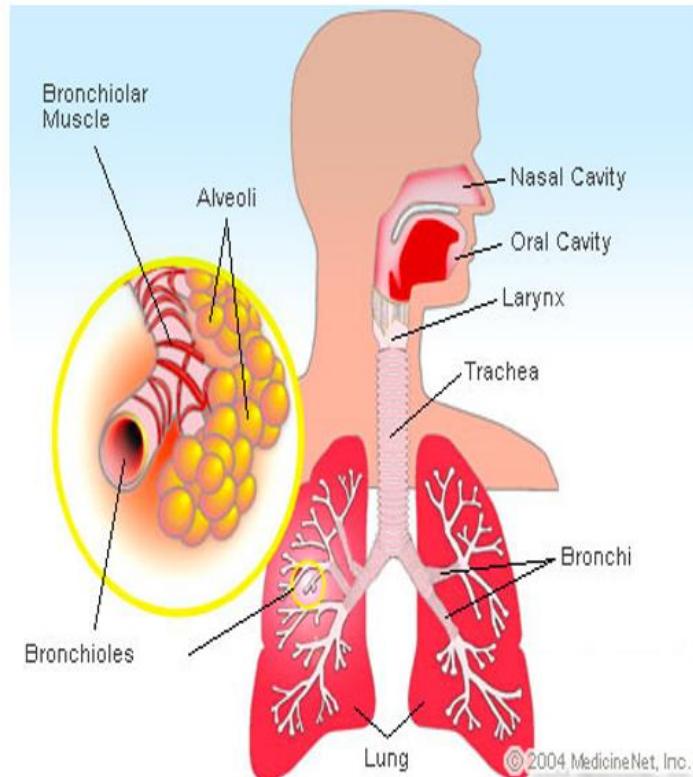
The lungs are separated into sections called lobes, two on the left and three on the right. The air passages continue to divide into ever smaller tubes, which finally connect with tiny air sacs called alveoli. Inside the lungs there are branching airways made of stretchy tissue. Each airway is wrapped with bands of muscle. The smallest airways end in clusters of tiny air sacs. These clusters are surrounded by blood vessels.



Function of lungs: What the Lungs Do

when you breathe in, air enters the lungs. It travels down through the airways until it reaches the air sacs. When you breathe out, air travels up through the airways and out of the lungs. The airways produce mucus that traps particles breathed in. Normally the mucus is then swept out of the lungs to be swallowed or coughed up. Asthma narrows the airway within the lungs. During an asthma flare up, getting waste air out and fresh air in becomes a problem.

The air you breathe in contains oxygen, a gas your body needs. When this air reaches the air sacs, oxygen passes into the blood vessels surrounding the sacs. Oxygen-rich blood then leaves the lungs and travels to all parts of the body. As the body uses oxygen carbon dioxide (a waste gas) is produced. The blood carries this gas back to the lungs through the blood vessels, carbon dioxide then leaves the body with the air you breathe out. The process of getting oxygen into the body and carbon dioxide out is called gas exchange.



When you Have Asthma: Chronic Inflammation

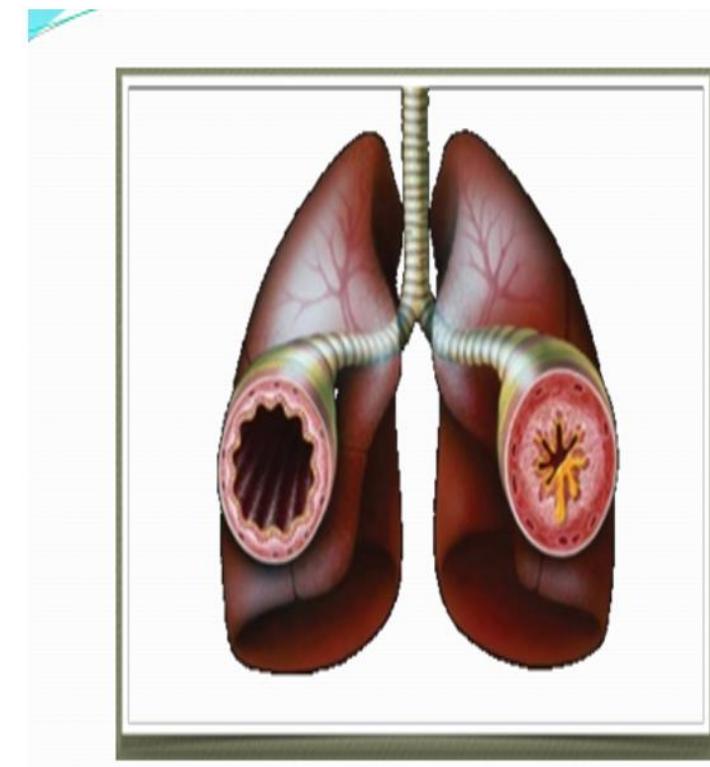
When you have asthma your airways are always slightly inflamed. Asthma narrows the airway within the lungs. The airways may not always be narrowed enough for you to notice breathing problems. But this chronic(long-lasting or recurring)inflammation makes your airways more sensitive then those of other people. As a result certain thing can trigger your airways to inflame even more causing an asthma flare-up. The Symptoms are

A cough

Shortness of breath

Wheezing

Low energy

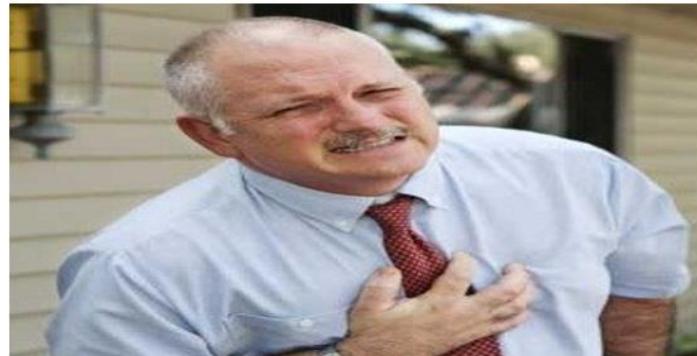
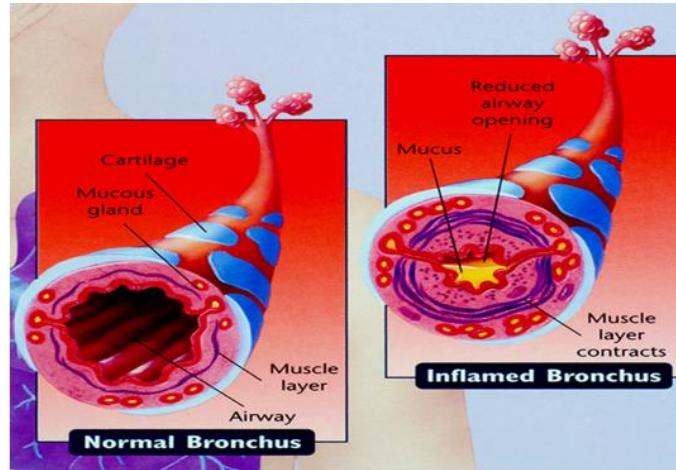


When you have asthma: moderate flare ups

When sensitive airways are irritated by a trigger, the muscles around the airways tighten. This squeezes the airways so that they become even more narrow. The lining of the airways swells. Thick, sticky mucus increases and begins to clog the airways, thus person finds difficult to breathe out and works hard to keep breathing.

Symptoms

- Coughing especially at night
- Getting tired easily
- Wheezing (whistling noise, especially when breathing out)
- Chest tightness
- Fast breathing when at rest.
- low peak expiratory flow rate



When you have severe Asthma

A life-threatening flare-up is due to severe muscle spasm, severe swelling and large amounts of thick, sticky mucus. This blocks the airway. Lung function is severely decreased. Waste gas is trapped in the alveoli, and gas exchange cannot occur. As a result the body does not get enough oxygen. Without oxygen, body tissues, especially brain tissue, begin to die. If this goes on for long, it can lead to brain damage or death. The symptoms are:

- Severe difficulty breathing
- Being too short of breath to speak a full sentence or walk across a room.
- Lips or fingers turning blue
- Feeling as though you are about to pass out
- Very low peak expiratory flow rate



Main causes of asthma: Triggers-how to control

Triggers irritate your lungs and lead to flare-ups. They include:

1. **Irritants**, such as tobacco smoke or air pollutants, smoke from wood stove and burning oil.
2. **Allergens** (substances that cause allergies)
 - i) dust mites,
 - ii) cockroaches
 - iii) pollen,
 - iv) mold or fungus.
3. **Fumes or strong odour**
4. **Pets, animal hair, dander**



Pollen



Dust mites



Mold



Pet dander

ADAM

Conditions that increase the severity of Asthma.

- Cold air, Smog
- Emotions such as anger, worry, fear
- Colds, flu, sinus infections
- Certain medications
- Food additives
- Exercise. This can trigger asthma in some people. This is called as exercise-induced asthma.



Asthma Triggers

Controlling your triggers: 1. Irritants

Smoke Irritants are the products that cause irritation at the air passage. Though sometimes you cannot avoid them. Following are the tips to control them.

Tips to avoid

- Don't smoke and don't let people smoke in your home or car.
- When you travel, ask for non smoking rental cars and hotel rooms.
- Sit in the non-smoking section when eating out.
- Avoid fireplaces and wood stoves. If you can't sit away from them, make sure the smoke is directed outside.
- Don't burn incense indoors.
- Move away from smoky outdoor cooking grills. Wear a mask while doing tasks like sanding, dusting, sweeping and yardwork.
- Use liquid cleaners instead of spray.



2. Allergens: i) Dust mites

Dust mites are small or tiny bugs too small to see. They live on human skin, also in mattress, pillow, bedding, blanket, floor mats, carpets, curtains and indoor dust.

Steps that help to control.

- Wash all the clothes in hot water every week.
- Cover the mattress, pillows with non allergenic or non penetrating covers.
- Remove blanket, floor mats, and thick screen cloths from bed room.
- Remove cotton packed dolls from bed room or place it inside the shelf and close it.



- Reducing scattered things from bed room also will reduce accumulation of dust.
- Use allergy proof filters for air conditioners and furnaces.
- Keep the house humidity below 50 and Use wet duster keeping the house dry as dust mites cannot live in dry surroundings.



Controlling your triggers:

ii) Cockroaches

- Cockroaches are a common household pest. They also produce allergens.
- Keep your kitchen clean and dry. Remove garbage from your home daily.
- Store food in tightly sealed containers. Wash dishes promptly. use bait stations or traps to control roaches. Avoid using chemical sprays.



iii) Pollen

- Pollen is from trees, grasses, weeds. These can travel for several miles. Try to learn what types of pollen affect you most.
 - It is more problematic during spring and summer. If you are allergic to pollen few measures what you should follow are:
 - During the time of pollen falling the most, Use air conditioning instead of opening the windows in your home or car. Set the dial to recirculate the air, so less pollen gets in. Make it dry.
 - You may have to stay inside house when the pollen count is more.
 - You may get to know the news about pollen falling season through television or internet.
- If you have gone outside during the days of pollen falling, take shower bath when you reach home and change your dress.



iv) Moulds or fungus

Mold grows in damp places, such as bathrooms, basements, through out the year.

These can travel to any part of the house.

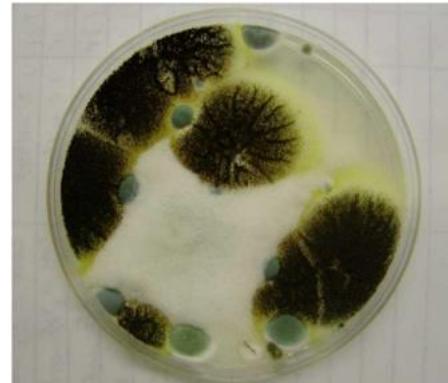
Leave the windows open after shower bath or use exhaust or electric fan.

Repair water leaks in and around your home

Have someone else cut grass or rake leaves

Measures to keep your house without Mold or fungus.

- Clean small damp areas using soap or solution and water.
- Use fungicide like solution for large areas like shower stalls and sinks weekly to prevent mold growth.
- keep your house basement watery areas damp free. Keep humidity below 50%.
- Keep your house well ventilated. Mold will not grow in ventilated areas.



3. Fumes or strong odour

Certain perfumes or chemicals that has strong smell or fumes can irritate the airway. They are:

- Cleaning agents
- Paints
- paint remover medications
- Perfumes
- Bleaching agents, incense
- Air freshners

Ways to protect from these irritants

Stay away from chemical smoke and strong odours.

After painting your rooms, leave the windows open to let the air outside

After the smell goes out, you may get in.

Use scent-free products, such as scent free deodorant and lotion.

Use exhaust fans while cooking to reduce odors.

Avoid perfumes, air freshners, and other scented products.



4. Pets, Animal Hair, Dander

Animals with fur or feathers often produce allergens. These are shed as tiny particles called dander. Dander can float through the air or stick to carpet or clothing, and household furniture.

Tips to prevent trigger

- Choose a pet that doesn't have fur or feathers, such as a fish or a reptile.
- Keep pets with fur or feathers out of your home, be sure to keep them out of your bedroom.
- Wash your hands and clothes after handling pets.



Conditions that increase the severity of Asthma.

Cold air

Weather. Though we cannot control weather you can take more care at times when weather may be an issue.

- Keep track of which type of weather affects you most: cold, hot, humid, or windy.
- Limit outdoor activity during the type of weather that affects you.
- Protect your lungs by wearing a scarf over your mouth and nose in cold weather.

Smog Vehicle exhaust and other air pollutants combine to create smog.

Tips to avoid

- Read or listen to local air quality reports. This lets you know when air quality is poor.
- Stay indoors as much as you can on smoggy days. If possible, use air conditioning instead of opening the windows.
- In your car, set air conditioning to recirculate air, so less pollution gets in.



Emotions - Anger, worry, fear

Laughing, crying or feeling excited are triggers for some people. You can't avoid these normal emotions, but you can learn ways to slow your breathing and avert a flare-up.

- Try this breathing exercise : Start in breathing slowly thorough your nose for a count of 2 seconds. Then pucker you're your lips and breathe out for a count of 4 seconds.
- Try to focus on a smoothing image on your mind. This will help relax you and clam your breathing.
- Remember to take your daily controller medications. When you are upset or under stress, it's easy to forget.



Colds, Flu and Sinus infections

Illnesses that affect the nose and throat can irritate your lungs. You can't prevent all illness but you can prevent some:

- Wash your hands with soap and water or a hand sanitizer.
- Take care of your general health, get plenty of sleep- and vegetables.



Medications

Certain medications cause symptoms in some people with asthma. These include aspirin and aspirin like products such as ibuprofen and naproxen. They also include certain prescribed medicines such as beta-blockers.

- Tell your healthcare provider if you suspect that certain medications trigger symptoms.
- Ask for a list of products that contains those medications.
- Medicines for colds and sinus problems can contain aspirin.



Food Additives Food additives can trigger asthma flare-ups.

- Check food labels for sulfites, metabisulfites and sulfur dioxide. These are often found in foods such as wine, beer, and dried fruit.
- Avoid foods that contain these additives.
- If you are allergic to certain foods, you may have serious symptoms. Mostly Foods such as milk, egg, wheat, soya and fish cause allergy.



Exercise For some people, exercise can trigger asthma symptoms. This is

called exercise-induced asthma. You should be able to exercise without triggering symptoms. These tips(and your doctor's advice)

- Take quick-relief medication a few minutes before exercise, as prescribed.
- Always carry your quick-relief inhaler with you when you exercise.
- Stop and follow your action plan if you notice asthma symptoms.

Exercise-induced asthma

Playing the game—without limits



Asthma medications

Long term control medications

Long term control medications help reduce swelling and inflammation of air ways. This makes the air ways less sensitive to triggers and less likely to flare up (eg. Tab.Singulair). This medications :

- Are taken on a schedule-for most people, every day. They are taken even when you feel fine.
- Helps keep asthma under control so you're less likely to have symptoms.
- Will not stop a flare-up once it has began.

Quick Relief Medications

These work by relaxing the muscles that tighten around the airwaysand ease symptoms such as coughing, wheezing, and shortness. eg. Albuterol (Ventolin), Terbutaline.

- Keep your quick relief inhaler at all times-if you feel okay. They are inhaled when needed .
- They start to open airways within a few minutes after you use them.
- Can help stop a flare-up once it begun.
- Can help prevent flare-ups triggered by exercise.



Tips for taking medications

Develop a routine. For example, take long-term controllers as a part of getting ready for bed

Make sure to refill your prescriptions on time or even ahead of time, so you don't run out.

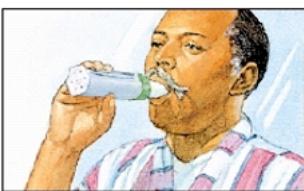
When you travel make sure you have enough medication to last for your entry trip.

When you travel in air keep your medications with you, not packed in your luggage.

Using peak flow

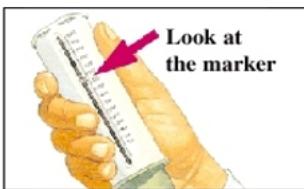


A peak flow metre is a calibrated instrument used to measure lung capacity in monitoring breathing disorders such as asthma.



Step 1. Move the marker to 0 or to the lowest number on the scale.

- Stand up. If you can't stand, sit up straight in a chair. Be sure you're in the same position each time.



Step 2. Take a deep breath. Fill your lungs all the way.

- While holding your breath, put the mouthpiece of the meter between your teeth. Close your lips tightly around it, making a tight seal around the mouthpiece. Be sure your tongue does not block the hole.
- Blow into the mouthpiece once, as hard and fast as you can. Your peak flow meter will measure how fast you can blow air out.
- Take the meter out of your mouth.
- Check where the marker has moved to on the numbered scale. Write this number down.



Step 3: Move the marker back to 0. Repeat the above steps 2 more times.

- Write down the highest of the three numbers. This is your peak flow number.

When to get immediate medical help

Consult physician if you have:

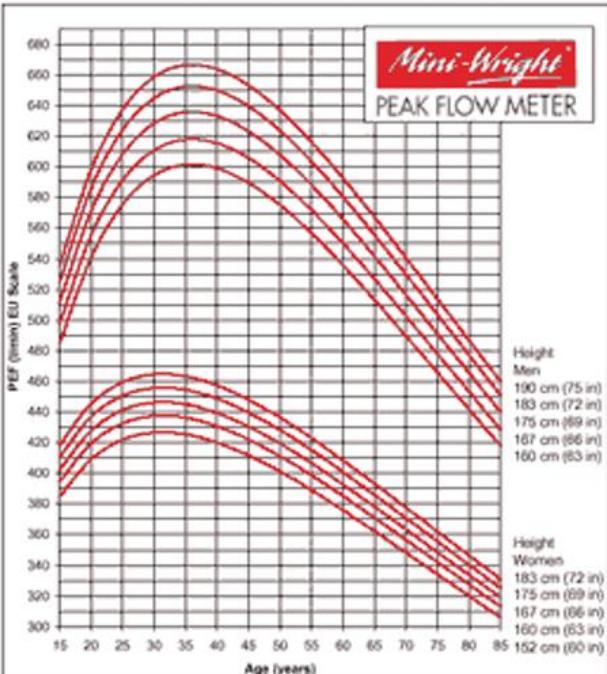
- Shortness of breath that is not relieved by your quick-relief medication
- Trouble walking and talking because of shortness of breath
- Blue lips or fingernails
- Severe wheezing
- A peak flow reading less than 50 percent of your personal best



Name _____	Week Beginning (Date) _____						
Peak Flow Zones:	Green Zone			Yellow Zone		Red Zone	
Prescribed Medications (include dose and frequency)							
Peak Flow Recording Times: _____ AM _____ PM							
Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Time	AM	PM	AM	PM	AM	PM	AM
Your Peak Flow Rates (Liters/minute)	600						
	550						
	500						
	450						
	400						
	350						
	300						
	250						
	200						
	150						
	100						
Changes in Medicine							
Notes							

PEAK EXPIRATORY FLOW RATE - NORMAL VALUES

For use with EN13747 scale PEF meters only



Adapted by Clement Clarke for use with EN 23747/EU scale peak flow meters from Nunn AJ, Gregg I. Br Med J 1989;296:1068-70

My Asthma Action Plan

Age ≥5 years

Patient Name:	Physician's Name:	Medical Record #:		
		DOB:		
	Physician's Phone #:	Completed by:		
		Date:		
Long-Term-Control Medicines		How Much To Take	How Often	Other Instructions
			times per day EVERY DAY!	
			times per day EVERY DAY!	
			times per day EVERY DAY!	
			times per day EVERY DAY!	
Quick-Relief Medicines		How Much To Take	How Often	Other Instructions
			Take ONLY as needed	NOTE: If this medicine is needed frequently, call physician to consider increasing long-term-control medications.
<p>Special instructions when I feel good, not good, and awful.</p> <p>I feel good. (My peak flow is in the GREEN zone.)</p> <p>I do not feel good. (My peak flow is in the YELLOW zone.) My symptoms may include one or more of the following:</p> <ul style="list-style-type: none"> • Wheeze • Tight chest • Shortness of breath • Waking up at night with asthma symptoms • Decreased ability to do usual activities <p>I feel awful. (My peak flow is in the RED zone.) Warning signs may include one or more of the following:</p> <ul style="list-style-type: none"> • It's harder and harder to breathe • Unable to sleep or do usual activities because of trouble breathing <p>PREVENT asthma symptoms everyday:</p> <p><input type="checkbox"/> Take my long-term-control medicines (above) every day.</p> <p><input type="checkbox"/> Before exercise, take _____ puffs of _____.</p> <p><input type="checkbox"/> Avoid things that make my asthma worse like: _____</p> <p>CAUTION. I should continue taking my long-term-control asthma medicines every day AND:</p> <p><input type="checkbox"/> Take _____</p> <p>If I still do not feel good, or my peak flow is not back in the Green Zone within 1 hour, then I should:</p> <p><input type="checkbox"/> Increase _____</p> <p><input type="checkbox"/> Add _____</p> <p><input type="checkbox"/> Call _____</p> <p>MEDICAL ALERT! Get help!</p> <p><input type="checkbox"/> Take _____ until I get help immediately.</p> <p><input type="checkbox"/> Take _____</p> <p><input type="checkbox"/> Call _____</p> <p>Danger! Get help immediately! Call 9-1-1 if you have trouble walking or talking due to shortness of breath or lips or fingernails are gray or blue.</p>				

ANNEXURE – T
INFORMATION BOOKLET ON ASTHMA IN TAMIL

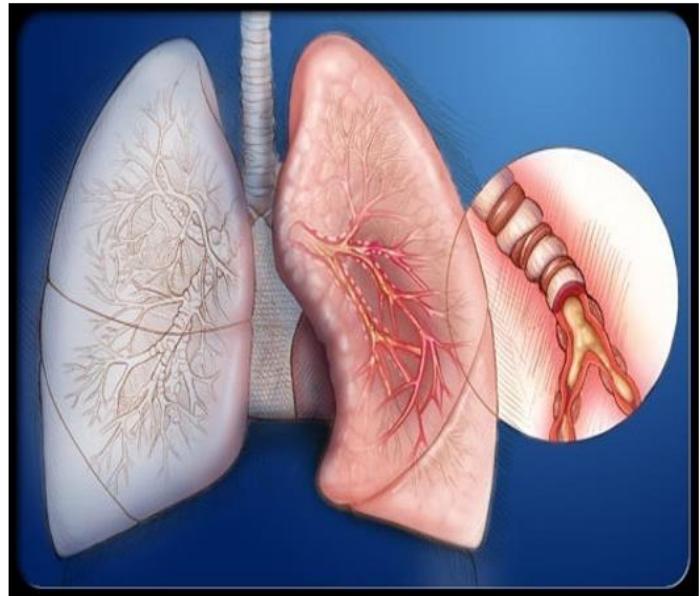
**ஆஸ்துமா பற்றிய
தகவல் கையேடு**

ஆஸ்துமா நோய்க்கான கல்வி

இந்த ஆஸ்துமா நோய்க்கான கல்வி உங்கள் ஆஸ்துமாவை கட்டுப்படுத்த உதவியாக அமைக்கப்பட்டுள்ளது. நீங்கள் இந்த ஆஸ்துமா எங்களும் பாதிக்கிறதென்றும் அறிந்து கொள்ளலாம். இது உங்கள் ஆஸ்துமா நிலையை கட்டுப்படுத்துவதற்கான வழிகளை கண்டுபிடிக்கவும், வாழ்க்கையை முழுமையாக வாழ்வதற்கும் உதவும். இரவிலும் பகலிலும் கடுமையான அறிகுறிகளுக்கு விடுதலையாகி, இரவில் தடையில்லா தூக்கத்தைப் பெறலாம். ஆஸ்துமா கவனிப்புக்கு திருப்தியடையவும்.

ஈழை அல்லது மூச்சுத்தடை நோய் (ஆஸ்துமா) என்றால் என்ன?

ஈழை அல்லது மூச்சுத்தடை நோய் என்பது நூற்றெட்டாவது நூற்று வயதில் வாய்க்காலின் உட்படலத்தில் ஏற்படும் வீக்கத்தால் காற்று உட்சென்று வெளியேறும் பாதையில் ஒடுக்கமேற்பட்டு காற்றின் ஓட்டத்தில் ஏற்படும் வீழ்ச்சியாகும். இதனால் மூச்சுத்திணறல்/மூச்சிரைப்பு நெஞ்சு இறுக்கம் ஏற்படுகிறது.



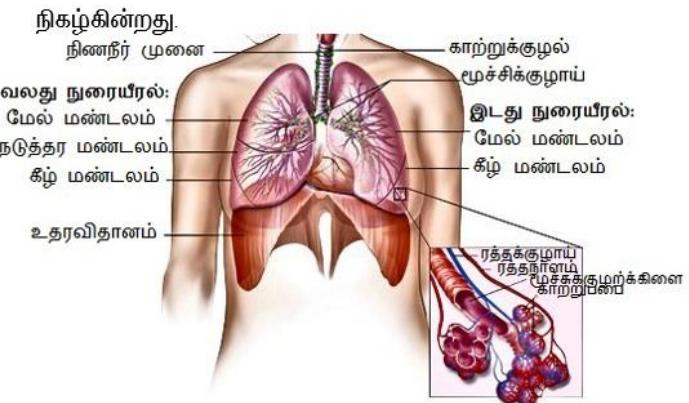
ஆரோக்கியமான நுரையீரல்: நுரையீரல் உடற்சுறியல்

நம்முடைய நுரையீரல் ஆரோக்கியமாக இருக்கும் போது மூச்சுக் காற்றை இழுத்து விடுதல் ஆகிய வாயுப்பரிமாற்றம் பணி குலோபமாக இருக்கும். மூச்சுக்குழாய் மார்புப்பகுதியில் இரண்டாக பிரிந்து வலது, இடது நுரையீரல்களுக்கு செல்கிறது. வலது நுரையீரல் மூன்று பாகமாகவும் (lobes) இடது நுரையீரல் இரண்டு பிரிவாகவும் உள்ளது.

இரண்டாக பிரியும் மூச்சுக் கிளைக் குழாய்கள் (பிரான்கியல் குழாய்கள்) பல நூண் கிளைகளாக பிரிந்து மில்லியன் கணக்கான நூண்காற்றறைகள் ஆகிய அல்லியோல் எனப்படும் காற்றுப்பைகளில் நுண்வளிப்பைகளில் முடிவுறும்.

அல்லியோலை எனப்படும் இவ் நூண்காற்றுப்பைகள் மிக மென்மையான தசைகளை கொண்டவை.

இதில் பல நூண்ணிய இரத்தக்குழாய்கள் இருப்பதால், நுரையீரல் தமனி மூலமாக வந்த கார்பன்-டை-ஆக்சைடு நிறைந்த இரத்தத்தில் உள்ள கார்பன்-டை-ஆக்சைடை வெளியேற்றி, புதிய ஆக்சிசனை ஏற்றுக்கொண்டு, நுரையீரல் சிறைகள் மூலமாக இதயத்திற்கு செல்கிறது. இந்த நுண்வளிப்பைகளில்தான் வளிமப் பரிமாற்றம்

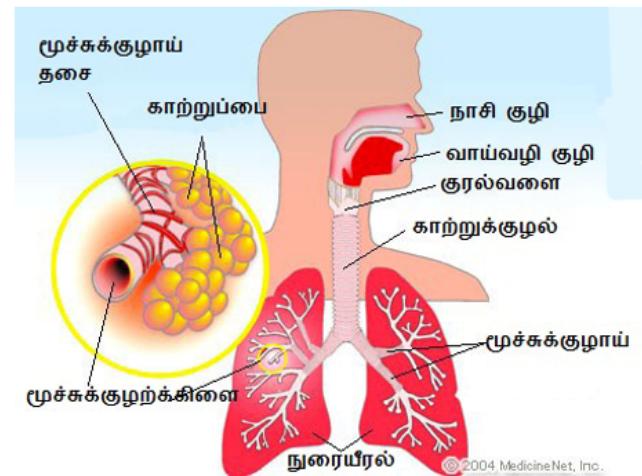


நூரையீரல் செயல்பாடு: நூரையீரல் செய்வதன்ன

நாம் மூச்செடுக்கும் போது ப்ராணவாயு அல்லது ஆக்சிசனை உள் எடுத்துத்தொள்வதற்கும் கார்பன்-டை-ஆக்ஷேடு அல்லது காபன்ரோக்ஷேட்டு வளிமத்தை வெளியேற்றுவதற்கும் நூரையீரல் முக்கிய உறுப்பாக செயல்படுகிறது மூக்கின் வழியாக நாம் உள்ளிழுக்கும் காற்று, மூச்சக்குழாய் வழியாக நூரையீரலுக்கு செல்கிறது.

பொதுவாக நூரையீரலில் கார்க்கும் சளி போன்ற நீர்மம் சில தூசிகளை அகற்றி வெளியேற்றும். காற்றுக்குழாயில் உள்ள சலியா மேல் நோக்கி தூசிகளை கொண்ட மியுக்கசை வெளியேற்ற, நாம் அறியாமலே அவற்றை விழுங்கிவிடுகிறோம்.

உடல் நலம் சரியில்லாமல் போனால் மட்டுமே அவை சளியாக மூக்கின் வழியாக வெளியேறும். மூக்கினுள்ளே உள்ள மயிர் கூட தூசுகளை வடிகட்டும். இதையும் தாண்டி ஏதேனும் தூசு உள் நுழைந்தால் இருமல், தும்முதல் முதலானவற்றால் வெளியேறிவிடும்.



நாட்பட்ட ஈழை அல்லது முச்சுத்தடை (ஆஸ்துமா)நோய்

ஆஸ்துமா இருக்கும் போது முச்சுக்குழலின்
துணைத்தசைகள் பொதுவாக பாவிக்கப்படாது.
முச்சுக்குழாய் சிறிதளவில் புண்பட்டு, அழற்சிகுட்பட்டு
மேலும் முச்சுக்குழாய் சுருக்கமடைவதால் நோயின்
தீவிரத்தை அதிகரிக்க வல்ல நிலையாகும்.

இதன் அறிகுறிகள்

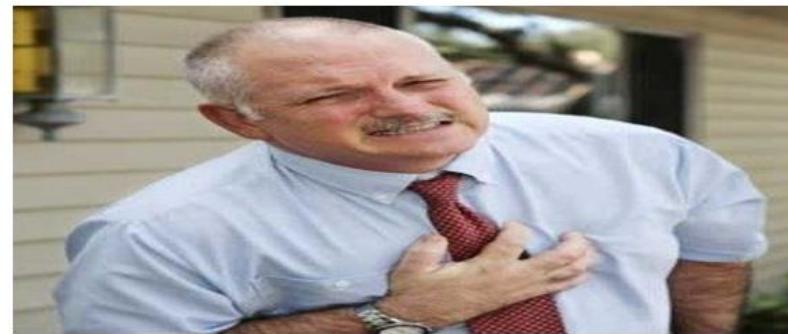
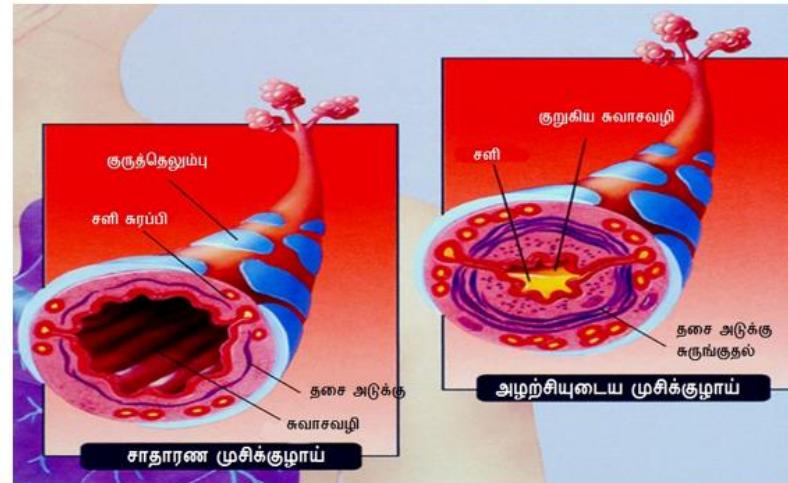
- நெஞ்சு இறுக்கம்
- இரவில் தீவிரமான, நீடித்த இருமல்
- குறுகிய முச்சு
- முச்சிரைப்பில் பெரிய சத்தம்
- களைப்பு



நடுத்தரமான ஈழை நோய்

நோயின் தவிர்த்தை அதிகரிக்க வல்ல நிலைகள் அல்லது பொருட்கள் தூண்டலீனால் சுவாசவழிகளை சுற்றியுள்ள தசை இறுகி மூச்சுக்குழல் மேலும் குறுகலாகி அதிகப்படியான கட்டியான சளி உருவாகுவதால் மூச்சுக்குழல் அடைத்துக் கொள்ளப்படுகிறது. இதனால் வரக்கூடிய அறிகுறிகள்:

- இரவு, பகல் தொடர்ச்சியான நீடித்த இருமல் இருக்கும்.
- தூக்கமின்மையும், ஒய்வு கொள்ள முடியாத நிலையும் ஏற்படும்.
- மூச்சிரைப்பினால் உண்டாகும் சத்தத்தை நோயாளி தானே கேட்கக் கூடியதாக இருக்கும்.
- நெஞ்சு இறுக்கம்
- ஒய்வு நிலையிலும் மூச்சிரைப்பு
- அதியுயர் வெளிமூச்சு ஓட்ட வீதம் (Peak Expiratory Flow Rate, PEFR) குறைதல்



ஆஸ்துமாவின் கடுமையான நிலை

இங்கு ஒப்பு நிலையில் கூட மூச்சு எடுத்தவில்/விடுதவில் சிரமத்தைக் கொடுக்கும். சுவாசக்குழாய்களின் உட்படலத்தில் ஏற்படும் அதிகமான தசை இழுப்பினாலும், வீக்கத்தினாலும் காற்று உட்சென்று வெளியேறும் பாதை அடைப்பட்டு விடுகிறது. நூரையீரவின் பணி மிகவும் குறைகிறது. கழிவு காற்று நுண்காற்றறைகளில் சிக்கி விடுகிறது. எனவே உடலுக்கு போதுமான ஆக்சிசன் கிடைக்கிறதில்லை. ஆக்சிசன் இல்லாமல் உடலின் திசுக்கள் முக்கியமாக மூளை திசு இறக்க தொடங்குகின்றன. ஆகவே மூளை பாதிப்பு அல்லது இறப்பு ஏற்படுகிறது. எனவே அவசர மருத்துவ உதவிக்கு செல்ல வேண்டும்.

அறிகுறிகள்

அதிகமான மூச்சத்தினாற்றல்

இலகுவாகச் செய்யக்கூடிய வேலைகளின்

போது,பேசும் போதும்,நடக்கும் போதும் கூட களைப்பை உணர்தல்.

உதடுகள் அல்லது விரல்கள் நினைவுமாக மாறுதல்.

இறக்கிற உணர்வுகள்

அதியுயர் வெளிமூச்சு ஒட்ட வீதம் (Peak Expiratory Flow Rate, PEFR) மிகவும் குறைந்து ஆபத்தான நிலையை அடையும்.



ஆஸ்துமா நோய்க்கான காரணங்கள். ஊக்கிகளை கட்டுப்படுத்துதல். ஊக்கிகள் என்பது உங்கள் ஆஸ்துமா நோயை அல்லது நுரையீரலை மோசமாக்கும் காரணிகளாகும்.

பொதுவான ஊக்கிகள் பின்வருவனவற்றை உட்படுத்தும்:

1. ஏரிச்சலுண்டாக்கக்கவடிய பொருட்கள் -சிகிரட் புகை, மாசடைந்த காற்று மற்றும் விறகு புகை, எண்ணெய்ப் புகை.
2. அலர்ஜின்ஸ் எனப்படும் ஓவ்வாப் பொருட்கள்
 - தூசியிலுள்ள நுண்ணுயிர்கள், கரப்பான் பூச்சிகள்.
 - மகரந்தப்பொடிகள்
 - பூஞ்சனம் போன்ற ஓவ்வாமை ஊக்கிகள்
3. இராசயனப் புகை அல்லது கடுமையான வாசனைகள்
4. செல்லப்பிராணிகளின் முடி, இறகு, செதில்.



மேலும் இந்நோயைத் தீவிரப்படுத்தக் கூடிய ஏனைய
காரணிகளாவன:

1. குளிர் காற்று, பனிப்புகை
2. கோபம், கவலை, பயம் போன்ற உணர்ச்சிவசப்படும் நிலைகள்.
3. சளி மற்றும் காய்ச்சல் சைனல்ஸ் போன்ற தொற்றுநோய்கள்.
4. உணவு சேர்க்கைகள்
5. சில மருந்துகள்
6. உடற் பயிற்சி



எரிச்சலுண்டாக்கக்கூடிய பொருட்கள்

சிகிரெட் புகை, மாச்சைந்த காற்று மற்றும் விறகு புகை, எண்ணேயும் புகை.

- நிங்கள் சிகிரெட் புகை பிடித்தல் கூடாது
- மற்றவர்களையும் உங்கள் விட்டிலோ வாகனத்திலோ சிகிரெட் புகையை அனுமதிக்க கூடாது.
- பிரயானத்திலும் வாடகைக்கு புகையிலா மோட்டார் வாகனம் மற்றும் உணவுகம் கேட்டு கொள்ள வேண்டும்.
- புகையிலா பகுதியில் உணவு அருந்த வேண்டும்.
- உள்ளரவுக்குள் தூபம் எரிக்காதீர்



தூசியிலுள்ள நுண்ணுயிர்கள் கட்டுப்படுத்துதல்.

தூசியிலுள்ள நுண்ணுயிர்கள் உதிரும் மனிதத் தோலில் உயிர்வாழும் மிகச் சிறிய பூச்சிகளாகும். தூசுக்கு ஒவ்வாமையுள்ள தூசியிலுள்ள நுண்ணுயிர்களின் எச்சங்களும் ஒவ்வாமையைக் கொடுக்கும்.

தூசியிலுள்ள நுண்ணுயிர்கள் பெரும்பாலும் மெத்தை, தலையணை, படுக்கை, கம்பளம், தரைவிரிப்புகள், மற்றும் தளபாடங்களின் உறைகள் போன்ற வெப்பமான மற்றும் ஈரவிப்பான மனிதத் தோல் அதிகமாக உதிரும் இடங்களில் வசிக்கும்.

உதவிசெய்யக்கூடிய சில நடவடிக்கைகள் பின்வருமாறு:

ஒவ்வொரு வாரமும் துணிகள் எல்லாவற்றையும் கொதிந்றால் கழுவவும்

மெத்தை, பொக்ஸ் ஸ்ப்ரிங், மற்றும் தலையணைகள் என்பனவற்றை விசேஷ ஒவ்வாமையை எதிர்க்கும் உறைகளால் அல்லது ஊடுருவ முடியாத உறைகளினால் முழுமையாக மூடவும்.

படுக்கையறையிலிருந்து கம்பளங்கள், தரைவிரிப்புகள், மற்றும் பாரமான திரைச்சீலைகள் என்பனவற்றை அகற்றிவிடவும்.



- படுக்கையறையிலிருக்கும் பஞ்சடைக்கப்பட்ட பொம்மைகளை அகற்றிவிடவும் அல்லது அவற்றை அலுமாரியில் வைத்து மூடிவிடவும். படுக்கையறையில் சிதறிக்கிடக்கும் பொருட்களைக் குறைத்தால் அங்கு தூசி சேர்வதும் குறையும்.
- வீட்டின் ஈரப்பத நிலையை 50%க்குக் கீழாக வைத்துக்கொள்ளவும்.
- ஈரமான பகுதிகளில் ஈரப்பதமகற்றியை நீங்கள் உபயோகிக்கலாம். உலர்ந்த சுற்றுச் சூழலில், தூசியிலுள்ள நுண்ணுயிர்கள் நன்கு உயிர் வாழ முடியாது.



wikiHow

**அலர்ஜின்ஸ் எனப்படும் ஓவ்வாப் பொருட்கள்
கரப்பான் பூச்சிகள்.**

கரப்பான் பூச்சிகள் கரப்பான் பூச்சிகள் ஒரு பொதுவான வீட்டு பூச்சி. அவை ஓவ்வாமையைக் கடித்திக்கும்.

உங்கள் சமையலறையை குத்தமான மற்றும் உலர் நிலையில் வைக்கவும். தினமும் உங்கள் வீட்டில் இருந்து குப்பையை நீக்கவும்.

இறுக்கமாக சீல் கொள்கலன்களில் உணவு வைக்கவும். பாத்திரங்களைக் கடன்டியாக கழுவவும். கரப்பான் பூச்சிகளை கட்டுப்படுத்த தூண்டில் நிலையங்கள் அல்லது பொறிகளை பயன்படுத்தவும். இரசாயன ஸ்ப்ரே பயன்படுத்துவதைத் தவிர்க்கவும்.



மகரந்தப் பொடிகள்

மரங்கள், புற்கள், மற்றும் களைகளில் மகரந்தப்பொடிகள் இருக்கின்றன. அவற்றால் காற்றில் பல மைல்களுக்குப் பயணம் செய்யமுடியும். அவை வசந்த காலம் மற்றும் வெப்பகாலங்களில் அதிக பிரச்சினையுள்ளதாயிருக்கும்.

மகரந்தப் பொடி ஓவ்வாமை இருந்தால், அதைத் தவிர்ப்பதற்காக நீங்கள் செய்யவேண்டிய சில காரியங்கள் பின்வருமாறு:

மகரந்தப் பொடிகள் அதிகமாக விழும் காலங்களில் முடிந்தளவுக்கு உங்கள் வீட்டு யன்னல்கள் மற்றும் மோட்டார் வண்டியின் யன்னல்கள் என்பனவற்றை முடிவிடுங்கள். தேவைப்பட்டால் குளிர் சாதனப்பெட்டியை உபயோகிக்கவும் மற்றும் வடிகட்டியை ஒழுங்காக மாற்றவும்.

மகரந்தப் பொடி விழும் எண்ணிக்கையை அவதானிக்கவும், மற்றும் அதிகமான மகரந்தப் பொடி விழும் நாட்களில்

வீட்டிற்குள் இருக்கவேண்டுமா என்பதையும் தர்மானிக்கவும் மகரந்தப் பொடி விழுவதைப் பற்றிய அறிக்கையை தொலைக்காட்சி அல்லது இணையதளத்தில் பார்த்துத் தெரிந்து கொள்ளவும்.

- மகரந்தப்பொடி அதிகமாக விழும் நாட்களில் வெளியே சென்றிருந்தால், வீட்டிற்குத் திரும்பி வந்தவுடன் வெளியே குளித்து உங்களின் உடைகளை மாற்றவும். ஆடைகளை வெளியே தொங்கவிடுவதற்குப் பதிலாக அவற்றை துணி உலர்த்தியைக் கொண்டு உலர்த்தி விடவும்.



பூஞ்சணங்கள்

பூஞ்சணங்கள் பேஸ்மன்ட் மற்றும் குளியலறை போன்ற ஈரமான பிரதேசங்களில் வருடம் முழுவதும் வளருகின்றன. காற்றின் மூலமாக விட்டின் எப்பகுதிக்கும் அவற்றால் பயணம் செய்யமுடியும்.

உங்கள் விட்டை பூஞ்சணங்கள் இல்லாது வைத்துக்கொள்ள சில வழிகள் பின்வருமாறு:

சோப் அல்லது மருந்து மற்றும் தண்ணீர் உபயோகித்து உங்கள் விட்டின் சிறிய பூஞ்சணப் பகுதிகளைச் சுத்தம் செய்யவும். பெரிய பகுதிகளுக்கு பூஞ்சணக் கொல்லி போன்ற பூஞ்சணத்தை அழிக்கக்கூடிய குறிப்பிட்ட சில பொருட்களை உபயோகிக்கவேண்டும். உங்கள் விட்டின் பேஸ்மன்ட் போன்ற ஈரமான பகுதிகளுக்கு ஒரு ஈரப்பதமகற்றி யை உபயோகிக்கவும். உங்கள் விட்டின் ஈரப்பதத்தை 50% க்குக் குறைவாக வைத்துக்கொள்ளவும்.

- உங்கள் விட்டை நல்ல காற்றோட்ட முள்ளதாக்கவும்; பூஞ்சணம் காற்றோட்டமுள்ள பிரதேசங்களில் நன்கு உயிர் வாழாது.
- ஏவர்க் குளியலின்பின் யண்ணல்களைத் திறந்துவிடவும் அல்லது ஒரு குளியலறை மின்விசிரியை உபயோகிக்கவும்.
- கவரையில் தண்ணீர் கசிவு அல்லது தண்ணீர்க்குழாய்க் கசிவு போன்றவற்றை உடனே சரி செய்யவும்.



இரசாயனப் புகை மற்றும் கடுமையான வாசனைகள்

சில கடுமையான வாசனையுள்ள வாசனைத் திரவியங்கள் மற்றும் இரசாயனப் புகைகள் என்பன சுவாசப் பாதையில் உறுத்தலை உண்டாக்கக் கூடும். சில உதாரணங்கள் பின்வருவனவற்றை உட்படுத்தும்:

- சுத்தம் செய்யும் பொருட்கள்
- பெயின்ட்கள் மற்றும் பெயின்டை உரிக்கும் மருந்துகள்
- வாசனைப் பொருட்கள்
- ப்ளஷ்
- காற்றைப் புத்துணர்ச்சியடையைச் செய்யும் வாசனைப் பொருட்கள்
- கிருமிநாசினிகள்

இந்த ஏரிச்சலூட்டும் பொருட்களிலிருந்து பாதுகாக்க சில வழிகள் பின்வருமாறு:

இரசாயனப் புகைகள் மற்றும் கடுமையான வாசனைகளிலிருந்து தூர விலகுவது அவசியம்.

உங்கள் அறைக்கு வர்ணம் பூசிய பின்னர் உங்கள் அறையன்னல்களை திறந்து காற்றை வெளியேறவிட முயற்சி செய்யுங்கள். வாசனை வெளியேறிய பின்னர் அறையினுட்செல்லலாம்.



செல்லப் பிராணிகளின் முடி, இறகு மற்றும் செதில்கள்

பெர் கொண்ட விலங்குகள் அல்லது சிறகுகள் ஓவ்வாமையைக் கூறும் தீவிரமாக உற்பத்தி செய்யலாம்.

ஓவ்வாமையைக் கூறுப்பதற்கான சில வழிகள் பின்வருமாறு

உங்கள் செல்லப் பிராணிகளுக்கு வேறொரு விட்டைத் தயார் செய்வது சிறந்த முறையாகும். செல்லப் பிராணிகள் வெளியேற்றப்பட்டின்னர் உங்கள் விட்டை முழுமையாகச் சுத்தம் செய்வது மிகவும் முக்கியம்,

ஏனென்றால், நீண்ட காலங்களுக்கு அவை வாழ்ந்த இடங்களில் அவற்றின் அடிச்சுவட்டின் அறிகுறிகள் காணப்படும்.



குளிர் காற்று

வெப்பநிலையில் ஒரு திசை மாற்றம் ஏற்படும்போது ஆஸ்துமா நோய் மோசமாகலாம். ஒரு ஆஸ்துமா நோய்த் தொடர் நிகழ்வை தூண்டும்.

குளிர் காற்றைத் தூண்டும் காலங்களில் வெளியேற்றப்பட்டின்னர் பின்வருமாறு:

குளிரான காலநிலையில் வெளியே போவதற்கு முன், மூக்கு மற்றும் வாயை மூடக்கூடிய, கழுத்தில் சூற்றும் சால்வையை அணிந்திருப்பதை நிச்சயப்படுத்திக் கொள்ளுங்கள். இது சுவாசிக்கும் காற்றை வெப்பமாக்க மற்றும் ஈரவிப்பாக்க உதவும். குளிர் காலங்களில் உள்ளாங்குக்குள் உடற்பயிற்சி செய்யலாம்.



பணிப்புகை

வாகன வெளியேற்றம் மற்றும் காற்றின் இணைந்து பணிப்புகை உருவாகிறது.

தவிர்க்க குறிப்புகள்

உள்ளூர் காற்று தரம் அறிக்கைளை கேட்டு இந்த விமான தரத்தை தெரிந்துகொள்ளவும்

பணிப்புகை நாட்களில் எவ்வளவு முடியுமோ அவ்வளவு விட்டினுள் தங்க முயற்சிக்கவும். உங்கள் காரில், குறைவான மாசு பெற ஏர் கண்டிடவினால் பயன்படுத்தவும்.



கோபம், கவலை, பயம் போன்ற உணர்ச்சிவசப்படும் நிலைகள்.

இவற்றை கட்டுப்படுத்த சில வழிமுறைகள்

- சவாச பயிற்சியை முயற்சிக்கவும்
- இரண்டு நொடி மெதுவாக காற்றை மூக்கால் சுவாசித்து நானகு நொடிகளில் காற்றை உதடுகளால் வெளியிடவும்
- உங்கள் மனதில் ஒரு வழுவழுப்பான படத்தை கவனம் செலுத்த முயற்சிக்கவும். இது நிங்கள் ஒப்பெடுக்க உதவும்.
- உங்கள் தினசரி கட்டுப்படுத்தும் மருந்துகளை எடுக்க நினைவில் கொள்ளவும்.



சளி மற்றும் காய்ச்சல் ஈசனஸ் போன்ற தொற்றுநோய்கள்.

- இவை முக்கையும் தொன்னடையையும் பாதித்து நுரையீரலுக்கு உறுத்தலை உண்டாக்கும்.
- இவற்றை கட்டுப்படுத்த சில வழிகள் பின்வருமாறு:
- உங்கள் கைகளை சோப்பு நீரால் கழுவி சுத்தமாக வைத்துக்கொள்ளவும்.
- போதுமான தூக்கம் அவசியம், மற்றும் நிறைய காய்கறிகளை புசிக்கவும்.



உணவுகள்

பெரும்பாலும், உணவு ஓவ்வாமை, ஆஸ்துமா அறிகுறிகளை ஏற்படுத்தாது. ஆனால் உணவு ஓவ்வாமையுள்ள பிள்ளைகள் ஆஸ்துமாவை பெறுவதற்கு அதிக சாத்தியமுள்ளது. மேலுமாக, உணவு ஓவ்வாமையுள்ள பிள்ளைகளுக்கு கடுமையான ஆஸ்துமா உண்டாக்க கூடும். ஆகவே உணவு ஓவ்வாமை இருந்தால் ஆஸ்துமாவை நல்ல கட்டுப்பாட்டுக்குள் வைத்துக்கொள்ள வேண்டியது மிகவும் முக்கியம். பால், முட்டை, கொட்டைகள், கோதுமை, சோயா, மட்டி, மற்றும் மீன்கள் போன்றவை மிகவும் பொதுவாக ஓவ்வாமையை ஏற்படுத்தும் உணவுகளாகும்.



மருந்துகள்

- ASA (அசெடில்சாலீசிலிக் அசிட் அல்லது அஸ்பிரின்) மற்றும் ஜிபியூப்ரோஃபென் போன்ற குறிப்பிட்ட சில மருந்துகள், ஆஸ்துமா நோயுள்ள சிலருக்கு ஆஸ்துமா நோய் அறிகுறிகளை ஏற்படுத்தலாம்.

இந்த மருந்துகளுக்கு மிகுந்த உணர்வைக் (சென்சிடிவ்) காண்பித்தால், உங்கள் மருந்தானுள்ளிடம் அதைப் பற்றிப் பேசவும். நிங்கள் எடுக்கும் மருந்தின் மேலுள்ள விபரச் சீட்டில் ஜிபியூப்ரோஃபென், அஸ்பிரின், ASA, அல்லது அசெடில்சாலீசிலிக் அசிட் போன்ற வார்த்தைகள் இல்லாதிருப்பதை நிச்சயப்படுத்திக் கொள்ளுங்கள்.



உடற் பயிற்சி

சிலருக்கு உடற்பயிற்சியும் கூட ஆஸ்துமா அறிகுறிகளை ஏற்படுத்தாலாம்.

உடற்பயிற்சிக்கு முன் உங்கள் உள்ளிழுப்பு மருந்துகளை எடுத்துக்கொள்ளவும்.

நோயை கட்டுப்படுத்தும் மருந்துகளை முறையாக பயன்படுத்துதல் அவசியம்

Exercise-induced asthma

Playing the game—without limits



சிகிச்சை நெறிமுறைகள்

நின்ட கால கட்டுப்பாடு மருந்துகள்:

இந்த மருந்துகள் அழற்சியை ஒடுக்கி சுவாசவழிகளின் அகவுரையில் உள்ள வீக்கத்தை குறைக்க உதவுகிறது. உதவுகிறது எனவே காற்று வழிகளில் தூண்டுதல்களை மற்றும் சிறிவரும் வாய்ப்புகளை குறைக்க உதவும். (எ.கா.. Tab.Singulair).

இம்மருந்துகள்:

- பெரும்பாலான மக்கள் அட்டவணை படி நினமும் பயன்படுத்தப்படும் தடுப்பு மருந்துகளாகும்.
- நீங்கள் நன்றாக உணரும் போது கூட எடுக்கப்படும். அதனால் கட்டுப்பாடின் கீழ் ஆஸ்துமா வைத்திருக்க உதவுகிறது.
- உள்ளிழுக்கப்படும் இம்மருந்துகளை எப்போதும் கை வசம் வைத்துக்கொள்ளவும்.
- இவை ஒரு சில நிமிடங்களில் காற்றுவழிகளை திறக்க உதவும்.
- அது தொடங்கியுள்ள சிறிவரும் ஆஸ்துமா தாக்குதலை தடுக்க உதவும்.

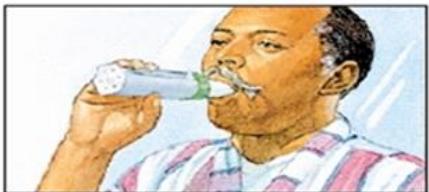
விரைவு நிவாரண மருந்துகள்:

சுவாசப்பாதையில் இறுக்கமான தசைகள் ஒய்வெடுக்க உதவுகிறது. இதனால் இருமல், மூச்சிரைப்பு மற்றும் நினைவு அறிகுறிகள் எளிதாகிறது. எ.கா.. அல்ப்புட்ரோலை (வெண்டோலின்), டெர்ப்புடாலின்.



மருந்துகளை எடுப்பதற்கு குறிப்புகள்

ஒரு வழக்கத்தை உருவாக்கவும். உதாரணமாக, படுக்கை தயாராக்கிக்கொண்டு ஒரு பகுதியாக நின்ட கால கட்டுப்பாட்டு மருந்துகளை எடுக்கவும். உங்கள் பரிந்துரைப்பு மருந்துகளை நிரப்ப உறுதிகொள்ளவும். நிங்கள் பயணம் செய்யும் போது போதுமான மருந்து வைத்துக்கொள்ள வேண்டும். காற்று பயணம் செய்யும் போது நிங்கள் உங்கள் மருந்துகளை கை வசம் வைத்துக்கொள்ளவும்.



ஒரு உச்ச ஓட்டம் மீட்டர் என்பது ஆஸ்துமா போன்ற சுவாச கோளாறுகளை கண்காணிப்பதில் நுரையீரல் திறன் அளவிட பயன்படுத்தப்படுகிறது. அளவுநிர்ணயிக்கப்பட்ட கருவியாகும்.

படி.1 மார்க்கரை 0 - விற்கு அல்லது மிக குறைந்த எண்ணிக்கையிலான அளவில் நகர்த்தவும். எழுந்து நில. நீங்கள் நிற்க முடியவில்லை என்றால், ஒரு நாற்காலியில் நேராக உட்கார்ந்துக்கொள்ளவும். நீங்கள் அதே நிலையில் ஒவ்வொரு முறையும் உட்கார உறுதிக்கொள்ளவும்.

படி.2 ஆழமான மூச்சு எடுத்து உங்கள் நுரையீரலை அனைத்து வழி நிரப்பவும். உங்கள் மூச்ச வைத்திருக்கும் போது, மீட்டர் ஊதுகுழலை உங்கள் பற்கள் இடையே வைத்து அதை சுற்றி இறுக்கமாக உங்கள் உதடுகளை மூடி ஒரு முறை கடினமாக மற்றும் வேகமாக ஊதவும்.

- உங்கள் உச்ச ஓட்டம் மீட்டர் நீங்கள் எவ்வளவு வேகமாக காற்று வெளியே கொட்ட முடியும் என்பதை அளவிட உதவும்.
- உங்கள் வாயிலிருந்து மீட்டரை நிக்கி விட்டு மார்க்கர் எங்கு நகர்ந்து வந்துள்ளது என்பதை பாருங்கள். இந்த எண்ணை எழுதிக்கொள்ளவும்.

படி 3: மீண்டும் மார்க்கரை 0 - விற்கு நகர்த்தி, மீண்டும் மேலே கூறிய 2 படிகளை இருமுறை மூன்று எண்களில் அதிகமானதை எழுதவும். இது உங்கள் உச்ச ஓட்ட எண்.

எப்பொழுது உடனடி உதவி பெறுவது

துழுநிலைகளில் மருந்துவர் ஆலோசனை

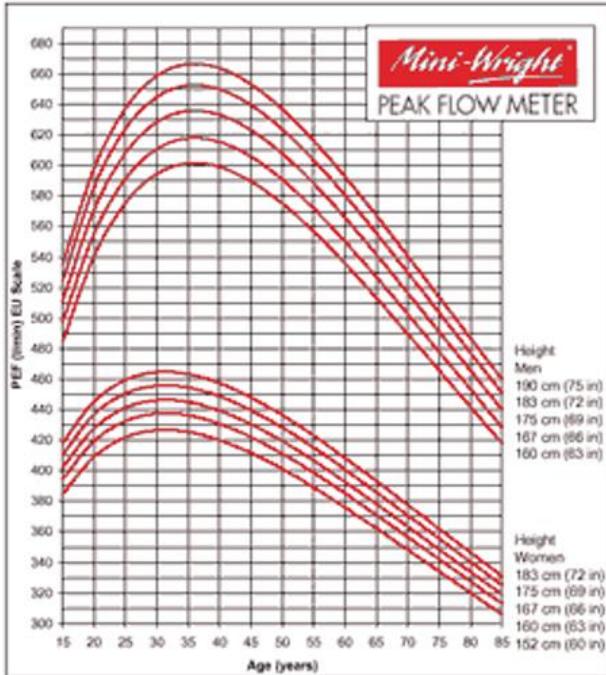
- உங்கள் விரைவான நிவாரண மருந்து மூலம் ஆறாத மூச்சு திணறல்
- நடைபயிற்சியின் போது மற்றும் பேசும் போது மூச்சு பற்றாக்குறை
- உதடுகள் அல்லது விரல்கள் நளநிறமாக மாறுதல்
- கடுமையான மூச்சுத்திணறல்
- ஒரு உச்ச ஓட்ட வீதம் 50 சதவீதம் (50%) க்கும் குறைவாக



Name _____	Week Beginning (Date) _____						
Peak Flow Zones:	Green Zone _____	Yellow Zone _____	Red Zone _____				
Prescribed Medications (include dose and frequency) _____							
Peak Flow Recording Times:	AM _____	PM _____					
Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Time	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
600							
550							
500							
450							
400							
350							
300							
250							
200							
150							
100							
Your Peak Flow Rates (Liters/minute)							
Changes in Medication							
Notes							

PEAK EXPIRATORY FLOW RATE - NORMAL VALUES

For use with EUMEN 23747 scale PEF meters only



Adapted by Clement Clarke for use with EN 23747 / EU scale peak flow meters from Nunn AJ, Gregg I, Br Med J 1989;288:1068-70

My Asthma Action Plan

Age ≥ 5 years

Patient Name: _____ Physician's Name: _____ Medical Record #: _____

Physician's Phone #: _____ Completed by: _____ Date: _____

Long-Term-Control Medicines	How Much To Take	How Often	Other Instructions
		times per day EVERY DAY!	
		times per day EVERY DAY!	
		times per day EVERY DAY!	
		times per day EVERY DAY!	
Quick-Relief Medicines	How Much To Take	How Often	Other Instructions
		Take ONLY as needed	NOTE: If this medicine is needed frequently, call physician to consider increasing long-term-control medications.

Special instructions when I feel good, not good, and awful.

GREEN ZONE	<p>I feel good. (My peak flow is in the GREEN zone.)</p> 	<p>PREVENT asthma symptoms everyday:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Take my long-term-control medicines (above) every day. <input type="checkbox"/> Before exercise, take _____ puffs of _____. <input type="checkbox"/> Avoid things that make my asthma worse like: _____
YELLOW ZONE	<p>I do not feel good. (My peak flow is in the YELLOW zone.)</p> <p>My symptoms may include one or more of the following:</p> <ul style="list-style-type: none"> • Wheeze • Tight chest • Cough • Shortness of breath • Waking up at night with asthma symptoms • Decreased ability to do usual activities 	<p>CAUTION. I should continue taking my long-term-control asthma medicines every day AND:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Take _____ <input type="checkbox"/> If I still do not feel good, or my peak flow is not back in the Green Zone within 1 hour, then I should: <ul style="list-style-type: none"> <input type="checkbox"/> Increase _____ <input type="checkbox"/> Add _____ <input type="checkbox"/> Call _____
RED ZONE	<p>I feel awful. (My peak flow is in the RED zone.)</p> <p>Warning signs may include one or more of the following:</p> <ul style="list-style-type: none"> • It's getting harder and harder to breathe • Unable to sleep or do usual activities because of trouble breathing 	<p>MEDICAL ALERT! Get help!</p> <ul style="list-style-type: none"> <input type="checkbox"/> Take _____ until I get help immediately. <input type="checkbox"/> Take _____ <input type="checkbox"/> Call _____

Danger! Get help immediately!

Call 9-1-1 if you have trouble walking or talking due to shortness of breath or lips or fingernails are gray or blue.

ANNEXURE – Y
MASTER CODING SHEET

Group	No	Demographical Variable								Clinical Variables								Pre Test And Post Test Assessment Of Quality Of Life											
		AG	GENDER	ED	MS	OCU	MFI	RS	TF	LC	IAH	TCF	ADA	MU	UPFM	HS	FHA	DA	SA	PCI	AL	PT AQLQ	POT I AQLQ	POT II AQLQ	POT III AQLQ	PT WBI	POT I WBI	POT II WBI	POT III WBI
1	1	3	1	2	1	1	1	2	1	1	1	2	1	1	2	1	1	1	1	5	5	107	90	111	113	8	8	10	13
1	2	2	1	1	1	1	1	2	1	2	1	2	1	2	2	1	1	2	2	2	3	86	98	103	116	10	9	10	8
1	3	3	1	3	1	1	2	2	2	1	1	1	1	2	2	1	1	2	2	2	1	107	108	127	113	8	5	9	14
1	4	2	1	1	1	2	2	2	1	2	1	1	1	2	2	1	2	3	2	4	2	96	97	114	121	9	9	8	17
1	5	3	1	1	1	1	1	2	1	1	1	1	2	2	2	1	1	3	2	5	1	91	102	112	136	5	9	8	12
1	6	3	2	1	1	1	1	2	2	2	1	1	1	2	2	1	2	2	2	5	3	111	77	116	122	5	5	11	14
1	7	2	1	3	1	1	2	2	1	2	1	3	1	2	2	1	1	1	2	1	2	79	100	120	121	13	8	7	12
1	8	3	1	3	1	1	2	1	1	1	1	3	2	2	2	1	1	2	2	2	3	99	91	127	121	12	14	12	16
1	9	2	1	3	1	1	1	2	2	4	1	1	1	2	2	1	1	1	2	2	5	95	103	114	132	10	7	10	9
1	10	2	2	1	4	2	2	1	1	4	1	3	2	2	2	1	1	2	2	1	1	93	107	117	115	7	8	12	13
1	11	2	1	1	1	2	2	2	1	4	1	1	3	3	2	1	2	4	2	1	1	96	101	124	128	3	5	14	12
1	12	2	2	3	1	2	1	2	2	1	1	1	3	1	1	2	1	1	2	2	1	102	87	103	122	7	10	10	9
1	13	3	2	1	1	3	2	1	1	3	1	2	1	2	2	1	1	3	1	1	2	97	114	85	123	6	5	10	12
1	14	3	1	1	1	2	2	2	2	4	1	1	1	2	2	1	2	1	1	5	2	96	98	109	115	5	7	10	12
1	15	3	2	3	1	3	3	1	1	1	1	3	1	2	2	1	1	3	1	4	3	103	91	106	122	14	13	11	13
1	16	3	1	3	1	2	2	2	1	3	1	2	1	2	2	1	1	1	2	2	3	92	103	102	116	7	9	9	10
1	17	2	2	1	1	2	2	2	1	3	1	3	1	2	2	1	1	3	2	5	1	101	92	91	116	11	9	9	13
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