A Comparison Study of Self Management Plan & Traditional Treatment of Asthma

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Summary :

We have tested the hypothesis that in the management of asthma the efficacy of self management plan is better than traditional treatment as most of the mortality and morbidity from asthma is due to underestimation of its severity both by the patients as well as by the physician. A prospective randomized single blind study was carried out over 12 months at the Asthma Centre, IDCH, Mohakhali, Dhaka. A total 133 patients with moderate to severe chronic asthma but not taking oral steroid regularly were included in the study but 105 patients ultimately completed the study. Self management plan was based on Patients education & adjustment of preventers drugs guided by peak flow measurements.

Unscheduled visits & number of admission at hospital, days off work, courses of antibiotics & Prednisolone and quality of life were the main outcomes measured at the end of study.

The mean number of unscheduled visits to Doctors' clinic or asthma centre (0.47 v 1.09, ratio = 1: 2.3), days off work (0.65 v 0.96 ratio = 1:1.48), courses of Prednisolone (0.45 v 0.98 ratio = 1:2.18) courses of antibiotics (0.41 v 1.19, ratio = 1: 2. 90). Total no of hospital admission (0.06 v 0.20 ratio = 1 : 3.3), Death over one year (0.02 v 0.06, ratio = 1:3). Quality of life is higher in the self management group than in the traditionally treated group. So, it can be concluded that self management plan reduces incidents caused by asthma, improves quality of life & decreases number of death from asthma.

Introduction :

Bronchial Asthma is a common and chronic inflammatory disease of the airways whose cause is not completely known[1]. Narrowing of the airways is usually reversible, but in some cases with chronic asthma the inflammation leads to irreversible airway obstruction[2].

Deaths from asthma have been associated with under estimation of its severity, delays in starting treatment in exacerbation unsatisfactory routine management & treatment of asthma[1,2].

Proper Prior Medical Care may Prevent 73% hospital admission 80% death from asthma. Even in UK 40% people with asthma don't react appropriately when symptoms of asthma worsen and 50% patients with severe acute asthma admitted to hospital have had alarming symptoms for a week before admission[3]. It is now clearly documented that patients with severe or life threatening attacks may not be distressed and may not have all the life threatening abnormalities. British Thoracic Association first recommended that patients with asthma should measure their own peak flow rates and treat deteriorating symptoms themselves[2]. Results of self management is still conflicting as methodology

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varies from one centre to another4-6. A one year trial was carried out at the Asthma Centre, IDCH to see the efficacy of self management plan in the management of asthma and effectiveness in the context of Bangladesh.

Materials and Method :

We have conducted this study to compare the efficacy of self management plan of asthma with traditional treatment. This is a 12 months, prospective, randomized, single blind study done as an out patient basis at the Asthma Centre, Institute of Diseases of the Chest and Hospital (IDCH). Patients with moderate to severe chronic asthma not steroid dependent were randomized into self management or traditional treatment groups. At first they were evaluated by a chest physician. Spirometric evidence of moderate to severe obstruction & improvement of FEV1 ≥ 200 ml & or PEF > 60 L/min. 1/2 an hour after 200 µg Sulbutamol & /or evidence of improvement of PEF by anti asthma medication over one month at least 60 L/min. At least 4 weeks had to have elapsed since the last course of oral corticosteriods. In both groups during the study year the following incidents caused by asthma were recorded1 :

Unscheduled admissions to hospital', 'unscheduled visits to ambulatory care facilities in Doctors' chamber, or any emergency centre', days off work, courses of oral antibiotics, & courses of oral Prednisolone. Quality of life was evaluated at the start of the trial on the basis of symptoms- daily attack with nocturnal symptoms, 2-3 attack/week, and infrequent attack, to classify asthma in to mild, moderate and severe variety.

During follow up quality of life was measured as minimum control i.e. symptoms persist as before or increasing symptoms, partial control means symptoms improved but not controlled & full control means no nocturnal symptoms & patients's need of ß agonist 2 or less puff/day.

The assessment performed at the scheduled visits at the start of the trial & 3,6,9 &12 months follow up included PEF, spirametry, checks of the patients' diaries in self management group & possible adverse events were also registered in both groups during their scheduled visits.

Criteria for Exclusion :

1. Patients' level of education less than SSC, to homogenize the patient group.
2. Economic condition of patient income/ month less than TK. 5000/=, as poor patient sometimes fail to procure asthma medicine.
3. Steroid dependent asthma.
4. Asthma with complications like COPD, cor-pulmonale, DM, HTN
5. Patients with acute attack not controlled without steroids.
6. One month over peak flow study showed persistently low peak flow, that is peak flow ≤ 200 L/min. &/or improvement < 60 L/lim.

Design

* Patients recurited for self management were given personal education. During these sessions they received basic information about asthma, it's causes, types of asthma medicine, effects & purpose of asthma drugs & the principles of self management. During 1st visit each patient in the self management group spent about 1 hour in the centre & each patient in the traditionally treated group about 15 min.

* Guided asthma self management included daily morning (after getting up & night before sleep) peak expiratory flow measurements. The patients were instructed to blow 3 times every time into a peak flow meter (Mini wright's peak flow meter) & to record the beast reading in a prescribed form. They also recorded frequency of symptoms, possible causes & supplemental salbutamol was used per day.

According to the changes of peak flow values, the following actions were advised.

1. If the peak flow 80% to 100% they were to keep the asthma treatment stable all the times
2. If the peak value fell suddenly below 80% to 50% of the optimal value, the patients would take salbutamol as per need.

If improvement was transient (last only for 4-6 hours or less) then the patient doubled his or her inhaled corticosteroid dose for 1 week.

If the pt. did not reach the optimal peak expiratory values i.e. 70% with in 2 weeks or there situation is deterioration he or she had to contact to our centre.

1. If the peak expiratory flow value fell below 50% of the optimal value the patient would start an oral Prednisolone 45 mg/day for 10 days and immediately contacted to the centre.

All patients in the self management group used Beclomethasone aerosol (MDI) (200 µg/ dose). As rescue medication salbutamol were used.

The patients in the traditional group were advised how to use their inhalers correctly & given general information on their disease with a booklet asthma guide during their routine visits to the outpatients department. The patients did not have peak flow meters & they were not instructed to make any changes in their medication by themselves. During their scheduled out patients visits every 3 months, their clinical state & the treatment were evaluated in the usual way by a doctor.

Results :

Initially a total of 133 patients with moderate to severe chronic asthma were included in this study but 105 patiens were completed the study. The number of patients fulfilling the required criteria to be included for the final comparisons was 51 in the self management group & 54 in the taditional treatment group (Table-I). The groups were comparable in terms of demography & clinical characteristics. No. significant difference was observed between the 2 groups.

Table - I

Baseline characteristics of patients included in analysis. Values are described as means (±SE)

Variables	Self Management (n=51)	Traditional management (n=54)
Sex (M/F)	30/21	29/25
Age (Years)	32.4 (±2.3)	30.6 (±2.7)
Weight (Kg)	56.7 (±3.1)	62.2 (±2.9)
Employed (%)	24 (47.0%)	26 (48.1%)
Smoking (%)		
Non-smokers	33(64.7%)	36(66.7%)
Smokers	7 (13.7%)	4(7.4)
Ex-smokers	11 (21.6%)	14 (25.9%)
Duration of asthma (years)	9.6 (±2.1)	7.4 (±1.6)
H/O Allergy Present	30 (58.8)	34 (63.0%)
PEFR (L/min.)	381(±7.8)	364 (±6.8)
FVC L	3.3 (± 0.089)	3.1 (±0.087)
FEV_1	2.4 (±0.072)	2.2 (±0.071)
FEV_1 /FVC (%)	71.0%	66.7%

After one year all patients data were analyzed retrospectively.

At the end mean daily dose of Beclomethasone was 765 µg (SE ± 7.9 µg) in 51 patients of in the self management group & 685 µg (SE ± 7.08 µg) in 54 traditionally treated group.

The difference between self management group & traditional group shown in Table-II

Table - II

Total mean incidents caused by asthma in self-management & traditional treatment groups during one year.

Variables	Self Management n = 51 (mean)	Traditional Treatment n=54 (mean)	Ratio
Total unscheduled visit	24 (0.47)	59 (1.09)	1. 2.3
Total episode of days off work (Mean)	33(0.65)	52 (0.69)	1: 1.48
Total episode of course of Prednisolone	23 (0.45)	53 (0.68)	1: 2.18
Total episode of course of antibiotics	21 (0.41)	64 (1.19)	1 : 2.90
Total no. of hospital admission	93 (0.06)	11 (0.20)	1 : 3.3
Full Control	46 (0.9)	39(0.72)	1 : 0.8
Partial control	3 (0.06)	7 (0.13)	1 : 2.16
Minimum control	1 (0.02)	3 (0.06)	1:3
Total Death	1 (0.02)	3(0.06)	1 :3

Discussion :

This study showed that self management plan reduced highly significant number of incidents caused by asthma when compared with traditional treatment. Patients with severe chronic asthma were more associated with various incidents than that with moderate asthma. Patients with mild and episodic asthma were not included because Peak Flow meter has little role in their management.

Antibiotics were used significantly more often in the traditional group in the self management group, suggesting that during exacerbation a false diagnosis of bacterial infection is easily made leading to unnecessary use of antibiotics. But it is documented that, compared with viral infections, the role of bacterial infections are minimal in exacerbation of asthma[7,8]. The early introduction of anti-inflammatory treatment during exacerbation's in our self-management group probably reduced useless antibiotic treatment.

The usefulness of daily measurements of peak expiratory flow in asthma self management has been questioned[9-11]. Contrary to the findings presented here, the Grampian study of integrated care gave negative results for their routine[12]. However the elements of these patients' self management practies were poorly described and it is unclear whether they used their peak expriatory flow meters daily or only sporadically.

Different limits for peak expiratory flow values guiding the intervention have been used in previous studies. In 2 studies 70% of the potential normal peak expiratory flow value was the threshold for doubling the dose of inhaled steroid and 50% for starting oral steriods[4,6,] While in the New Zealand "Credit Card" study the corresponding limits were 80% & 60%[13,14]. The International consensus report and Canadian guidelines10 use 50% as the cut off peak expiratory value for advising the paitent to go to the emergency department. National Asthma campaign protocol is 33% as the cut off PEF for advising the patient to go to the emergency department[1]. A previous self management study has shown symptoms to be as good an indicator of deterioration as peak flow measurements6. We have used peak, expiratory flow measurement, because we considered it difficult to assign definitive intervention levels by relying only of symptoms. As many as 60% of patients are bad at judging their dyspnoea[11], and poor perception of pulmonary function cannot be altered through training in peak expiratory flow measurements[11]. On the other hand, we found that patients adherence to the self management instructions was strongly related to the severity of symtoms.

In self management the positive impact of patients education has been better documented than the use of peak expiratory flow measurements, although here too there are controversies[5,13]. Clear and definitive instructions in self management and good general patients education must be considered fundamental for a successful self management program.

No objective measurement for general treatment compliance was available in our study so it is impossible to say to what extent possible differences in treatment compliance explain our results. Studies of adherence with mediation in adults with chronic asthma have found adherence levels of 30-40%[14-16] and self management has been shown to improve this[5].

We suggest that supervised self management using patient education and adjustment of anti-inflammatory treatment on the basis of peak expiratory measurements reduces incidents caused by asthma and improves quality of life. There were, however, four elements in our study : early treatment of airway inflammation (which previously have shown to result in good control

of asthma[5,15]), peak expiratory flow measurements per se (changed lifestyle), patient education about asthma, and possibly improved general compliance with treatment. We have not determined which of these is most important to the success of self management of asthma.

Conclusions :

* Supervised self management using patient education & adjustment of anti-inflammatory treatment on the basis of PEF measurements reduces incidents caused by asthma, improves quality of life & decreases mortality rate.
* 4 factors responsible for this results in self managment group :

1. Adequate preventers drugs used by the patients themselves
2. Adequate patients education was given in this group.
3. PEF measurement for self assessment was carried out by the all patients
4. Improvement of compliance to treatment due to adequate patients education

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