Research Article

Maser the Role of Health Education and Self Action Plan in Improving the Drug Adherence in Asthma Children's in Tamilnadu

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ABSTRACT

Considering the prevalence and associated burden of disease due to asthma, it is mandatory to obtain an optimal control of the disease and to improve outcomes for these patients. But it has been observed that there is very poor adherence to the therapy which leads to the suboptimal control of the disease. The objective of the study is to study the adherence for therapy in asthma patients and to assess the impact of health education and self-action plan in improving the compliance to the therapy. A prospective study was done in a total of 532 bronchial asthma patients over a period of 2 years. Once included in the study, the patients were followed up for a total of 12 weeks for calculation of non-adherence to the therapy. In non-adherent patients, we employed various health education strategies to improve the compliance in these cases. A total of 532 patients who were started on therapy over duration of 6 months were included in the study. At the end of 12 weeks, it was observed that, only 46 patients (9.46%) had regular compliance and 486 patients (91.35%) were noncompliant to the therapy as prescribed for asthma. Factors that were associated with poor compliance were: Lower educational level status, poor socioeconomic status, cumbersome regimens, and patient's ill attitudes toward health. After employing the various strategies for improving the compliance in these patients, the compliance increased in patients (61.32%) among the earlier defaulted patients, while the remaining 188 patients (38.68%) were found to be noncompliant even after various educational techniques. Noncompliance in asthma management is a fact of life and no single compliance improving strategy probably will be as effective as a good physician and patient relationship. Optimal self-management allowing for optimization of asthma control by adjustment of medications may be conducted by either self-adjustment with the aid of a written action plan or by regular medical review.

Keywords: Asthma, Drug adherence, compliance, Educational techniques, Optimal self-management.

INTRODUCTION

Bronchial asthma is a major public health problem affecting a large number of individuals of all ages. Globally, 100-150 million people suffer from asthma. India has 20-28 million asthmatics and the prevalence amongst children (5-11 years) is 10-15%.Being a chronic medical condition, management of bronchial asthma requires continuous medical care. Modern management of bronchial asthma requires prolonged medications. A key issue in proper management of bronchial asthma is adherence to treatment. Poor compliance to prescribed therapy increases morbidity and mortality and it is increasingly being documented that long-term compliance or adherence to prescribed therapy is difficult to attain.[1] Studies have reported that 50% of patients with a chronic disease do not use their medication at all or do not use it as prescribed.[2] Important reason for poor compliance is that patients with a chronic disease do not have a satisfactory understanding of their condition. The economic burden of bronchial asthma to the society is well documented in industrialized countries,[3] and is a great burden to the health services. Poor asthma control is responsible for a large proportion of the total cost of the disease, for the patient as well as to the society, and thus responsible for the both direct and indirect cost of therapy. The present study was undertaken to study the factors that influence patient's compliance with prescribed medications, and to assess the impact of health education and self-action plan in improving the compliance in bronchial asthma patients.

MATERIALS AND METHODS

The present study was a prospective study done at a tertiary care hospital over a period of 2 years from June 2015 to September 2017.Children below 15 years of age with the diagnosis of bronchial asthma as per Global Initiative for Asthma (GINA)guidelines[4] were included in the study. Patients with acute severe asthma, chronic obstructive pulmonary disease (COPD), and cardiac asthma were excluded. All patients were interviewed using a standard interview schedule and requested to maintain a diary regarding the therapy. Apart from a detailed history, physical examination, pulmonary function test, and peak expiratory flow rate were measured during the first visit. All the patients were treated according to GINA guidelines under the supervision of physicians. Regarding the use of medications, the choice was left to the treating physician. All patients were followed-up every 15 days for 12 weeks. At the end of 12 weeks, compliance to treatment was calculated after studying the patient diary noting and frequency of the hospital visits. Control of the disease was assessed by pulmonary function testing and peak expiratory flow rate measurements. Compliant day was

defined as one in which the prescribed number of puffs (metered dose inhalers (MDI)) or dry powder inhalation capsules were taken each day. Patient was said to be compliant if he/she had taken more than 80% of the prescribed medicines during the study period.

Second step in this study was to impart health education in the non-adherent patients. We tried to improve the compliance by imparting the patient education program with the help of health educator. Various strategies which were employed for the patient education included verbal praise, interactive communication skills, tailoring the medications to the patient's routine, conducting asthma awareness camps for the defaulted patients, distribution of literature regarding asthma, and its consequences in the local languages and answering to the family's worries regarding bronchial asthma. At this stage, all the non-adherent patients were given detail health education regarding bronchial asthma, its allergy status, chronicity of the disease, and duration of treatment, nature of quick relief and long term medications, and preventive aspects of the disease with the help of health educator.

All the patients were asked to keep a diary of any symptoms occurring during this period. Also an action plan was provided by the treating physician for all the noncompliant cases, explaining what to do in case of increase in the symptoms, or during any exacerbations, when to take oral steroids, and when to call the doctor. This will help the patient to be more interactive and be more communicable with the doctor. In the second step, all the patients were followed-up for another 12 weeks. Final assessment was done at the end of this period only. The study was approved by the Institutional Ethical Board. The economic status was classified as per modified B. G. Prasad classification.[5]

Statistical analysis

Data are expressed as the mean (standard deviation (SD)).Comparison of parameters between two groups was done by Student's *t*-test. Comparisons among three groups were done by one-way analysis of variance (ANOVA) with Bonferroni's multiple comparison tests. Differences in frequency between compliance and noncompliance patients were assessed by the Chi-square test. A *P* value of less than 0.05 was considered significant.

RESULTS

A total of 532 patients were studied during the period. The majority of the patients (42.18%) were in the age group of10-15 years. The male: female ratio was 3:2. Majority of patients184 (39.85%) had secondary education and 21.60% were illiterate. The majority of the patients belonged to middle socioeconomic status [Table 1].Among male patients; regular compliance was observed in 315 patients. A higher number of male patients missed more doses over duration of12 weeks (56.6%) as compared to female patients (43.3%). There was significant correlation between the educational status and the compliance to the therapy. Socioeconomic status of the patient was a significant risk factor associated with the noncompliance to the therapy.

Table 1: Baseline characteristics of the patients

	N (%)
*In the total 532*respondent 486 are having adherence *Gendre*	486(91.35)
Male	315(64.81)
Female	171(35.18)
Age	
>5	127(26.13)
5-10	154(31.68)
10-15	205(42.18)
Education of parents	
Illiterate	98(20.16)
Primary	116(23.84)
Secondary	184(37.80)
Degree	88(18.10)
Economic status of guardians Lower Middle Upper	 179(36.83) 195(40.12) 112(23.04)

Factors were the key reasons for non-adherent to the therapy [Table 2]. The major factors associated with poor compliance were: cost of the medication (83.33%), beliefs (74.07%), duration of therapy (75.01%), lack of immediate benefit of therapy (71.6%), feeling of well-being on therapy (61.31), Fear about side effects to the medications (44.23%), and negligence on the part of the patients (7%).

Table 2: Causes for Non-adherence for asthma therapy

Factors	No (%)
Complexity of medication	165(33.95)
Frequent changes in regimen	346(71.19)
Treatment requiring certain techniques	236(48.55%)
Unpleasant side effects	215(44.23%)
Duration of therapy	365(75.01%)
Lack of immediate benefit of therapy	348(71.60%)
Medications with social stigma	245(50.41%)
Medication cost	405(83.33%)
Lack of family or social support	189(38.88%)
beliefs and behavior	360(74.07%)
Feeling of well being	298(61.31)

*Many patients had more than one reason for non-compliance.

Various strategies were employed with the help of a health educator after 12 weeks of therapy to improve the patient's compliance to the therapy, and these patients were followed-up for a further duration of 12 weeks to evaluate the response to the intervention. We have tried to educate these bronchial asthma patients in different ways, so that it will help in improving the adherence to the therapy. These different ways included: Verbal praise (15.80%), interactive communication skills (14.70%), tailoring the medications to the patient's routine (7.72%), conducting asthma awareness camps for the defaulted patients (15.80%), distribution of literature regarding asthma and its consequences in local languages (25%), answering to the family's worry (11.02%), and written self-action plan (26.47%) [Table 3].

After 12 weeks of therapy, it was observed that the compliance improved in additional 298 patients (55.96%) who had defaulted earlier. The remaining 188 patients were found to be still non-adherent to the therapy. It was also observed that direct interaction with the patients or with the parents of asthma patients improved the compliance to a significant level.

Table 3: Strategies employed for health education and its impact on compliance

Health education strategies	Total (%) 486	Compliant No (%) 298(100)	Non complaints No (%) 188(100)	P value
Written action plan	110(22.63)	62(20.80)	54(28.72)	1.12
Distribution of paints leaflets about asthma in local language	105(21.60)	77(25.83)	34(18.08)	0.08
Asthma awareness camp	64(13.16)	33(11.07)	24(12.76)	0.92
Verbal praise	64(13.16)	23(7.71)	32(17.02)	0.85
Interactive communication skill	58(11.93)	44(14.76)	8(4.25)	0.01
Answering to family worries	48(9.87)	33(11.07)	15(7.97)	0.16
Tailoring the medication to patients needs	37(7.6)	26(8.72)	21(11.17)	1.05

DISCUSSION

Bronchial asthma, a chronic lung disease that affects people of all ages, races, and ethnic groups, is a growing concern throughout the world. There is a need for educating the patient about asthma disease and medications used like DPI/MDI to be taken on regular basis as prescribed. In the study[6]conducted in Trinidad regarding the understanding and use of inhaler medication by asthmatics, it was observed that educating patients with a focus on children and the elderly, inhaler techniques, and reinforcing understanding of asthma medications could improve asthma management to a great extent. Noncompliance to treatment programs is common in patients with bronchial asthma. Noncompliance is more common than usually suspected and rates vary from 20%to 80%.[7] True rates of noncompliance are hard to come by because patients do not accurately report and physicians often do not inquire critically. The rule of thumb in chronic nonlethal disease (i.e., asthma, hypertension, etc.) is that one-third of patients are compliant, one-third are somewhat compliant, and one third are noncompliant. This is important because compliant patients are significantly less likely to experience exacerbations than less compliant patients.[8]

The present study was conducted to know compliance with therapy in bronchial asthma patients and reasons for noncompliance. An effort was also made to improve the patient compliance via the patient education program. In the present study a total of 486 patients (91.35%) were observed to be noncompliant to the asthma therapy. Gibson *et al.*, [11]conducted a study to study the compliance with asthma medications in preschool children. In preschool children, the parents supervise and are responsible for drug administration. In this study it was observed that parental supervision would result in good compliance. It was concluded that compliance with prophylactic therapy is poor in preschool children with asthma whose medication is administrated under parental supervision. Noncompliance depends on many factors and they are difficult to sort out Beliefs, perceptions, and experience constitutes some of the variables associated with compliant medication taking behavior. It had been suggested that race, crime, age, and other environmental factors are associated with compliance and noncompliance; but these are speculative[9-12]. Lindberg *et al.*, [13]studied various factors affecting the compliance in asthma patients and have identified five important factors regarding self-reported compliance with prescribed medications in patients with asthma: Age, gender, length of time with airway problems, whether the staff listen and take into account the patient's views concerning his/her asthma, and whether the patient has received information and education concerning asthma.

Educational status

There were 88 patients with higher education (graduation) and all these patients had regular compliance with the therapy. Patient's having secondary education had a default rate of 62.28%, patients having primary education had a high default rate of 76.14%, while illiterate patients had a higher default rate 80%.

Education status was thus a significant factor for the noncompliance to the therapy for asthma medications. Valid educational program for asthmatics can improve the knowledge of the disease and to understand how they look after themselves by careful evaluation of their own symptoms and respiratory function. Patients attending two lessons with helpful training tools can increase significantly asthma knowledge, treatment compliance, and patient self-management.[14] In the present study economic status was significant and there was moderate correlation to compliance and low socioeconomic status. It was observed that there were higher default rates among lower socioeconomic class patients.

Patient education in bronchial asthma is to provide the patient and the patient's family with suitable information and training so that the patient can keep well and adjust according to a planned medication. The factors involved in noncompliance in the present study are multifactorial. The most common reasons for the higher noncompliance rates were cost of the medication (83.33%), beliefs (74.07%), duration of therapy (75.01%), lack of immediate benefit of therapy (71.6%), feeling of well-being on therapy (61.31), Fear about side effects to the medications (44.23%), and negligence on the part of the patients (7%). Various strategies were employed with the help of a health educator after 12 weeks of therapy to improve the patient's compliance to the therapy, and these patients were followed-up for a further duration of 12 weeks to evaluate the response to the intervention. We have tried to educate these bronchial asthma patients in different ways, so that it will help in improving the adherence to the therapy. These different ways included: Verbal praise (15.80%), interactive communication skills (14.70%), tailoring the medications to the patient's routine (7.72%), conducting asthma awareness camps for the defaulted patients (15.80%), distribution of literature regarding asthma and its consequences in local languages (25%), answering to the family's worry (11.02%), and written self-action plan (26.47%). They also had greater confidence that current management would keep their illness under control. Dowell and Hudson[19] concluded that accepting the recommended treatment, especially long=term treatment perceived as powerful, requires an acceptance of the illness.

The major methods that have been proposed and tried to improve compliance include improved dosing schedules, patient education, and improved communication between physician and the patient. It has been well-established that less frequent dosing and simple schedules works best.[16]It is less certain that patient education and/or provider involvement by themselves make a significant difference in the long run. The following are thought to improve compliance: Specific patient written instructions, patient diaries, physician/provider interest, less frequent dosing, long acting drugs, a simplified dose schedule, pro re nata (p.r.n.) dosing, self=management, and shorter course of therapy. Patient education plays an important role in improving the adherence in such a chronic disease like bronchial asthma. Hence, every effort should be made to motivate these patients at every visit.

Motivational interviewing (MI) is one approach to building patient motivation for adherence.[17] MI is a patient-centered style of communication specifically geared toward resolving ambivalence and building motivation for change. It focuses on creating a comfortable atmosphere without pressure or coercion to change. MI was originally described by Miller,[18]and the theory and practice of MI has been expanded upon in several seminal texts and in several hundred peer reviewed papers. MIviews ambivalence as part of the natural process of change—a phase that people must go through before fully committing toa decision.[19]Although extensive research has been done in efforts to understand and improve compliance in asthma, little progress has-been made in cutting the rate of noncompliance. It is frustrating and goes against our intuition and training that spending time and effort, interacting with patients, and building rapport does not seem to be very effective in improving compliance. It is better to design programs that are more convenient and comfortable. Patients take drugs only if they agree that these agents are more beneficial than disruptive.[20]

CONCLUSION

The percentage of regular compliance on therapy in asthma is 8.65%, and noncompliance is 91.35% which is significantly high. Regular compliance is an important aspect in the management and control of bronchial asthma, so patients should be advised to take regular and long term aerosol therapy for reducing the acute attacks of asthma and maintaining the disease state. Patients who have faith in the physician and the prescribed method of treatment are more likely to adhere to the treatment than patients who have a negative attitude toward treatment. The same is true of the parents of children with asthma. People with asthma should be offered education and written asthma action plans that focus on their individual needs this is a reinforcement of earlier advice.

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